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TOCALO

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Executive summary

Business overview

TOCALO Co., Ltd. (TOCALO) provides surface treatments that improve the performance of materials used across a range of industries by adding properties such as abrasion and heat resistance, conductivity, insulation, and heat shielding and dissipation. Its core technology is thermal spraying, which involves coating target surfaces by spraying metals or ceramics that have been melted using high temperature heat sources (e.g., plasma and gas). The company particularly excels in functional thermal spraying that provides both growth potential and high added value, and leads the Japanese market for thermal spraying with a share of 40% (Shared Research estimate based on data from Yano Research Institute, Digital Research, and other sources). The company also offers other surface treatments as ancillary services. These include the Toyota diffusion (TD) process, zinc alloy coating (ZAC), plasma transferred arc (PTA) process, and physical vapor deposition (PVD) process. (See the box on the next page for details.)

TOCALO's surface treatments are made to order. Accordingly, selling volume is not a business priority. The company procures coating materials and generates sales by applying surface treatments to goods and parts provided by customers. In FY03/22, it reported a GPM of 37.9%, an SG&A ratio of 14.4%, and an OPM of 23.4%, on a consolidated basis. Over half of the parent company's total manufacturing costs in FY03/22 were labor (29% of the total) and outsourcing costs (25%). Other manufacturing costs included materials (14%), consumables (11%), utilities (4%), depreciation (8%), and other costs (10%). TOCALO's business is labor-intensive, with personnel expenses accounting for about 50% of SG&A expenses.

The thermal spraying industry divides into companies that conduct thermal spraying internally and companies that perform thermal spraying as a contracted service. In 2018, the market for contracted treatment in Japan was worth approximately JPY60.0bn, while the global market was about JPY700.0bn (source: Yano Research Institute). Some overseas competitors sell thermal spraying materials and equipment in addition to providing contracted treatment services, but TOCALO specializes in services. Overseas sales accounted for 21.1% of sales in FY03/22 and mainly came from Japanese companies that have expanded abroad. The company also receives royalty income from licensing agreements with overseas companies, including competitors.

By area of application, 20% of thermal spraying in Japan is associated with industrial equipment, 20% semiconductors and flat panel displays (FPDs), 13% steelmaking, 10% bridges and structures, 10% paper manufacturing, and 27% other uses (2018 actual; Yano Research). At TOCALO, semiconductor/FPD-related sales at the parent made up about 47% of consolidated sales in FY03/22. The bulk of sales are to the Tokyo Electron Limited group (TSE Prime: 8035). Semiconductor-related business is TOCALO's growth driver, and TOCALO and Tokyo Electron have built a close relationship that allows them to conduct joint development.

In September 2004, TOCALO acquired all shares of Japan Coating Center Co., Ltd. (JCC), expanding into the thin coating technology known as the physical vapor disposition (PVD) process. PVD is a surface treatment method in which metals (e.g., titanium and chromium) are ionized with reactive gases in a vacuum to form highly adhesive ceramic coatings that are hard and dense but thin. Applied to surfaces of cutting tools, metallic molds, and other items, these coatings add functionality such as abrasion and corrosion resistance. JCC's profit margin is high (19.6% in FY03/22; before segment profit adjustments), but not as high as that of the Thermal Spraying (Parent) business. Shared Research notes that synergies between the parent and the subsidiary have generated.

By segment, Thermal Spraying (Parent) accounted for 75.4% of sales in FY03/22, Domestic Subsidiary (JCC) for 5.5%, Overseas Subsidiaries for 13.0%, Other Surface Treatments for 5.7% and Royalty Income 0.4%. The segment profit margins (recurring profit basis) were 24.5% in Thermal Spraying, 19.6% in Domestic Subsidiary, 27.0% in Overseas Subsidiaries, and 18.7% in Other Surface Treatments (before segment profit adjustments).

Trends and outlook

- In FY03/22, sales were JPY43.8bn (+11.5% YoY), operating profit JPY10.3bn (+15.4% YoY), recurring profit JPY10.6bn (+18.6% YoY), and net income attributable to owners of the parent JPY6.9bn (+26.5% YoY). Thermal spraying for industrial machinery struggled somewhat, but business in the core semiconductor and FPD fields grew, driving increased performance. Performance at subsidiaries worldwide also contributed, such that the company posted record highs for two consecutive years in sales and all forms of profit, including recurring profit. Annual dividends will be JPY45.0 per share (JPY40.0 per share in the previous plan), and the payout ratio is expected to be 39.6%.

- The company plan for FY03/23 calls for sales of JPY48.2bn (+10.0% YoY), operating profit JPY11.2bn (+9.2% YoY), recurring profit JPY11.4bn (+7.8% YoY), net income attributable to owners of the parent JPY7.4bn (+7.7% YoY), and EPS of JPY122.4. In July 2022 the company upwardly revised its FY03/23 forecast based on Q1 results and orders received. When it released 1H (April—September) results in October 2022, TOCALO left its forecast for FY03/23 unchanged, and it still expects to post new record profits at every level (including recurring profit) for a third straight year. The company is planning an annual dividend of JPY45.0 per share, the same as in FY03/22, and expects a payout ratio of 36.8%.

- On November 9, 2021, the company publicly announced its medium-term management plan for the first time ever. This medium-term management plan clearly defines the company's vision for 2030 and outlines the growth strategy the company plans to implement over the five-year duration of the plan, which concludes with FY03/26. For FY03/26, the company has set a sales target of JPY53.0bn (versus actual sales of JPY39.3bn in FY03/21) and a recurring profit target of JPY12.0bn (versus actual recurring profit of JPY8.9bn in FY03/21). In addition to maintaining and enhancing its financial strength and profitability, the company also clearly indicated that it would aim to increase shareholder returns. However, the company additionally stated that it would periodically monitor and review expansion associated with its business operations targeting semiconductors (expected to be a major driver of results during this medium-term management plan), as it is highly subject to impact from changes in trends within the semiconductor market.

- In May 2022, the company announced the progress made on its medium-term management plan. Since only half a year had passed since the plan was created, there had basically been no change. However, the company has indicated that both sales and recurring profit are growing faster than originally envisioned. The company suggested that semiconductor-related sales and recurring profit would be revised when the financial results for FY3/23 were announced, but it has maintained a cautious stance to date.

Strengths and weaknesses

Shared Research believes that TOCALO's three main strengths are its portfolio of diverse surface treatments that makes the company the leader in a niche market; its ability to acquire top-class customers in major industries through joint development focused on meeting future needs; and stable earnings due to high domestic repeat demand for technologies with added value.

Shared Research has identified three notable weaknesses: a lack of peripheral technologies and mass production bases necessary to process large orders; lackluster cultivation of overseas markets; and low profitability of the Other Surface Treatments business. (See the "Strengths and weaknesses" section for details.)

Surface treatment technologies offered by TOCALO

Thermal spraying
A surface treatment technology that involves forming coatings on the workpieces by spraying them with molten metals, ceramics, cermet*, and other materials.
*Cermet: a composite material that is created by combining powder from hard compounds (metal carbide, nitride, etc.) with metal bonding materials, then sintering the mixture

Chemically defined zinc alloy coating (CDC-ZAC)
A chemical densification treatment for forming composite ceramic coatings through chemical reactions. It is characterized by excellent corrosion resistance and high degrees of hardness, which are unique properties of ceramics.

Toyota diffusion (TD) process
A surface treatment method that enables the formation of super-hard coatings. It is essential to the metallic mold industry as a surface treatment technology.

Plasma transferred arc (PTA) process
An overlay-welding method that utilizes plasma and produces excellent impact resistance.

Physical vapor deposition (PVD) process
This process minimizes heat deformation of the workpiece because it allows for a wide selection of temperature ranges, enabling treatments that best suit the substrate (the material to which spraying deposit is applied).
Source: Shared Research based on company data

Key financial data

Income statement	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22	FY03/23
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Est.
Orders	**23,097**	**27,137**	**28,343**	**29,506**	**36,851**	**38,915**	**38,011**	**39,021**	**45,394**	
YoY	10.2%	17.5%	4.4%	4.1%	24.9%	5.6%	-2.3%	2.7%	16.3%	
Order backlog	**2,774**	**3,843**	**3,440**	**3,983**	**6,725**	**6,081**	**6,195**	**6,143**	**7,896**	
YoY	21.9%	38.5%	-10.5%	15.8%	68.8%	-9.6%	1.9%	-0.8%	28.5%	
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,294**	**43,813**	**48,200**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	11.5%	10.0%
Gross profit	**7,564**	**8,964**	**9,727**	**10,536**	**12,646**	**13,761**	**12,780**	**14,593**	**16,585**	
YoY	10.8%	18.5%	8.5%	8.3%	20.0%	8.8%	-7.1%	14.2%	13.7%	
Gross profit margin	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.1%	37.9%	
Operating profit	**3,483**	**4,568**	**4,806**	**5,646**	**7,110**	**7,741**	**6,550**	**8,890**	**10,255**	**11,200**
YoY	19.9%	31.2%	5.2%	17.5%	25.9%	8.9%	-15.4%	35.7%	15.4%	9.2%
Operating profit margin	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.6%	23.4%	23.2%
Recurring profit	**3,657**	**4,890**	**5,028**	**5,801**	**7,363**	**8,076**	**6,812**	**8,914**	**10,571**	**11,400**
YoY	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%	18.6%	7.8%
Recurring profit margin	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.7%	24.1%	23.7%
Net income	**2,176**	**3,031**	**3,016**	**4,070**	**4,836**	**5,441**	**4,404**	**5,463**	**6,909**	**7,444**
YoY	16.2%	39.3%	-0.5%	34.9%	18.8%	12.5%	-19.1%	24.0%	26.5%	7.7%
Net margin	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	13.9%	15.8%	15.4%
Per-share data										
Issued shares FY-end('000 shares)	63,200	63,200	63,200	63,200	63,200	63,200	63,200	63,200	63,200	
EPS	35.8	49.9	49.6	67.0	79.6	89.5	72.5	89.9	113.6	122.4
Dividend per share	12.5	15.0	18.8	21.3	26.3	30.0	25.0	35.0	45.0	45.0
Payout ratio	34.9%	30.1%	37.8%	31.7%	33.0%	33.5%	34.5%	38.9%	39.6%	36.8%
DOE	3.3%	3.7%	4.2%	4.4%	4.9%	5.1%	3.9%	5.0%	5.9%	5.3%
Book value per share	390.2	427.4	456.9	504.1	562.1	617.8	662.3	727.1	807.3	
Balance sheet (JPYmn)										
Cash and cash equivalents	10,181	8,404	8,197	8,387	9,234	12,660	16,889	16,227	17,110	
Total current assets	**19,700**	**21,527**	**20,830**	**23,000**	**25,941**	**27,749**	**31,837**	**33,140**	**36,365**	
Tangible fixed assets	12,735	14,055	16,151	20,305	24,589	27,395	26,786	28,594	30,740	
Investments and other assets	553	597	914	911	1,871	1,838	2,160	2,183	2,180	
Intangible assets	519	467	97	115	260	295	338	264	231	
Total assets	**33,507**	**36,647**	**37,992**	**44,331**	**52,664**	**57,278**	**61,122**	**64,183**	**69,517**	
Accounts payable	2,442	3,189	3,036	1,229	1,434	1,271	1,157	1,194	1,397	
Short-term debt	1,137	943	511	905	879	1,218	2,153	1,802	1,460	
Total current liabilities	**7,393**	**8,383**	**7,877**	**8,884**	**14,054**	**13,362**	**11,323**	**12,193**	**13,334**	
Long-term debt	653	284	117	2,419	1,701	3,337	6,045	4,267	2,825	
Total fixed liabilities	**1,421**	**1,112**	**1,045**	**3,195**	**2,470**	**4,250**	**7,163**	**5,097**	**3,723**	
Total liabilities	**8,814**	**9,495**	**8,922**	**12,079**	**16,524**	**17,613**	**18,487**	**17,291**	**17,058**	
Total liabilities and net assets	**33,507**	**36,647**	**37,992**	**44,331**	**52,664**	**57,278**	**61,122**	**64,183**	**69,517**	
Total interest-bearing debt	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069	4,285	
Cash flow statement(JPYmn)										
Cash flows from operating activities	3,465	4,546	4,534	5,238	7,611	8,044	6,621	10,588	9,873	
Cash flows from investing activities	-177	-4,889	-895	-6,537	-4,681	-4,617	-4,217	-4,615	-5,044	
Cash flows from financing activities	-165	-1,475	-1,743	1,581	-2,217	40	1,871	-3,798	-4,547	
Financial ratios										
ROA (RP-based)	11.5%	13.9%	13.5%	14.1%	15.2%	14.7%	11.5%	14.2%	15.8%	15.7%
ROE	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%	14.8%	14.5%
Equity ratio	70.8%	71.5%	73.3%	69.1%	64.9%	65.6%	65.9%	68.9%	70.6%	71.0%
Capex, other (JPYmn)										
Capital expenditures	2,513	2,678	3,730	5,936	6,361	5,965	2,313	4,822	4,385	5,500
Depreciation	1,388	1,440	1,560	1,703	1,948	2,658	2,991	2,771	2,783	3,000
R&D expenses	653	746	862	834	905	1,003	1,159	1,296	1,296	1,425
R&D ratio	2.9%	2.9%	3.0%	2.9%	2.7%	2.5%	3.1%	3.3%	3.0%	3.0%
Employee data (JPYmn)										
No. of employees (ex. temp. workers)	802	824	857	898	955	1,021	1,060	1,121	1,176	
Temporary workers	242	243	239	245	236	251	263	253	265	
Total no. of employees (incl. temp. workers)	1,041	1,056	1,080	1,123	1,163	1,239	1,304	1,344	1,414	
Sales per employee	21.7	24.7	26.6	25.8	29.3	31.9	29.1	29.2	31.0	
Operating profit per employee	3.3	4.3	4.5	5.0	6.1	6.2	5.0	6.6	7.3	

Source: Shared Research based on company data

Notes: Per- share data is adjusted for stock splits. Figures may differ from company materials due to differences in rounding methods.

Citing the application of the accounting standard for revenue recognition from FY03/22, the company has not released YoY growth rates, but Shared Research has provided estimates as the size of the impact appears to be limited.

Trends and outlook

Quarterly trends and results

Cumulative	FY03/22				FY03/23		FY03/23	
Cumulative (JPYmn)	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	% of Est.	FY Est.
Sales	10,736	21,098	32,227	43,813	11,906	23,996	49.8%	48,200
YoY	7.9%	9.9%	10.1%	11.5%	10.9%	13.7%		10.0%
Gross profit	4,311	8,218	12,338	16,585	4,444	8,931		
YoY	17.3%	15.2%	12.2%	13.7%	3.1%	8.7%		
Gross profit margin	40.2%	39.0%	38.3%	37.9%	37.3%	37.2%		
SG&A expenses	1,551	3,106	4,783	6,329	1,720	3,349		
YoY	7.2%	6.1%	6.9%	6.8%	10.9%	7.8%		
SG&A ratio	14.4%	14.7%	14.8%	14.4%	14.4%	14.0%		
Operating profit	2,759	5,111	7,555	10,255	2,724	5,581	49.8%	11,200
YoY	21.6%	21.6%	15.8%	15.4%	-1.3%	9.2%		9.2%
Operating profit margin	25.7%	24.2%	23.4%	23.4%	22.9%	23.3%		23.2%
Recurring profit	2,839	5,222	7,738	10,571	2,948	6,033	52.9%	11,400
YoY	24.7%	25.1%	19.4%	18.6%	3.8%	15.5%		7.8%
Recurring profit margin	26.4%	24.8%	24.0%	24.1%	24.8%	25.1%		23.7%
Net income	1,865	3,448	4,997	6,909	1,912	3,919	52.6%	7,444
YoY	27.2%	28.3%	19.6%	26.5%	2.5%	13.7%		7.7%
Net margin	17.4%	16.3%	15.5%	15.8%	16.1%	16.3%		15.4%
Cumulative	FY03/22				FY03/23		FY03/23	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	% of Est.	1H Est.
Sales	10,736	10,362	11,129	11,586	11,906	12,090	101.7%	23,600
YoY	7.9%	12.0%	10.5%	15.7%	10.9%	16.7%		11.9%
Gross profit	4,311	3,907	4,120	4,247	4,444	4,487		
YoY	17.3%	13.0%	6.5%	18.2%	3.1%	14.8%		
Gross profit margin	40.2%	37.7%	37.0%	36.7%	37.3%	37.1%		
SG&A expenses	1,551	1,555	1,677	1,546	1,720	1,629		
YoY	7.2%	5.0%	8.4%	6.7%	10.9%	4.8%		
SG&A ratio	14.4%	15.0%	15.1%	13.3%	14.4%	13.5%		
Operating profit	2,759	2,352	2,444	2,700	2,724	2,857	103.4%	5,400
YoY	21.6%	21.6%	5.3%	14.2%	-1.3%	21.5%		5.7%
Operating profit margin	25.7%	22.7%	22.0%	23.3%	22.9%	23.6%		22.9%
Recurring profit	2,839	2,383	2,516	2,833	2,948	3,085	107.7%	5,600
YoY	24.7%	25.6%	9.2%	16.3%	3.8%	29.5%		7.2%
Recurring profit margin	26.4%	23.0%	22.6%	24.5%	24.8%	25.5%		23.7%
Net income	1,865	1,583	1,549	1,912	1,912	2,007	107.1%	3,660
YoY	27.2%	29.5%	4.0%	48.7%	2.5%	26.8%		6.1%
Net margin	17.4%	15.3%	13.9%	16.5%	16.1%	16.6%		15.5%

Source: Shared Research based on company data

Note: Figures may differ from company materials due to differences in rounding methods.

Note: From FY03/22, royalty income has been reclassified from non- operating income to sales. FY03/21 results are retroactively adjusted.

By segment	FY03/22				FY03/23		FY03/23	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	% of Est.	FY Est.
Sales	10,736	10,362	11,129	11,586	11,906	12,090	49.8%	48,200
YoY	7.9%	12.0%	10.5%	15.7%	10.9%	16.7%		10.0%
Thermal Spraying (Parent)	8,238	7,762	8,322	8,721	9,010	9,195	49.5%	36,788
YoY	4.6%	9.4%	7.5%	17.2%	9.4%	18.5%		11.3%
Domestic Subsidiary	611	595	606	587	591	606	48.7%	2,457
YoY	32.3%	38.4%	12.4%	0.0%	-3.3%	1.8%		2.4%
Overseas Subsidiaries	1,265	1,350	1,572	1,508	1,577	1,563	51.2%	6,137
YoY	22.8%	14.9%	27.7%	10.6%	24.7%	15.8%		7.8%
Other Surface Treatments	597	598	606	701	697	670	51.8%	2,638
YoY	9.3%	23.8%	14.1%	27.0%	16.8%	12.0%		5.4%
Royalty income	23	57	24	67	29	57	47.8%	180
YoY	-45.2%	-17.4%	-35.1%	-8.2%	26.1%	0.0%		5.3%
Segment profit (recurring profit)	2,839	2,383	2,516	2,833	2,948	3,085	52.9%	11,400
YoY	24.7%	25.6%	9.2%	16.3%	3.8%	29.5%		7.8%
Recurring profit margin	26.4%	23.0%	22.6%	24.5%	24.8%	25.5%		23.7%
Thermal Spraying (Parent)	2,148	1,830	1,986	2,122	2,278	2,185		
YoY	15.5%	18.1%	7.8%	40.7%	6.1%	19.4%		
Recurring profit margin	26.1%	23.6%	23.9%	24.3%	25.3%	23.8%		
Domestic Subsidiary	152	93	107	119	85	90		
YoY	117.1%	78.8%	-23.6%	-17.4%	-44.1%	-3.2%		
Recurring profit margin	24.9%	15.6%	17.7%	20.3%	14.4%	14.9%		
Overseas Subsidiaries	353	336	445	403	437	448		
YoY	0.9%	31.8%	30.5%	14.8%	23.8%	33.3%		
Recurring profit margin	27.9%	24.9%	28.3%	26.7%	27.7%	28.7%		
Other Surface Treatments	117	107	107	137	122	122		
YoY	116.7%	-	127.7%	251.3%	4.3%	14.0%		
Recurring profit margin	19.6%	17.9%	17.7%	19.5%	17.5%	18.2%		
Adjustments	68	-	-	7	-	-		

Source: Shared Research based on company data

Note: Figures may differ from company materials due to differences in rounding methods.

Note: From FY03/22, royalty income has been reclassified from non- operating income to sales. FY03/21 results are retroactively adjusted.

Orders		FY03/22			FY03/23	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2
Orders	10,869	10,607	12,166	11,752	12,627	12,418
YoY	15.3%	16.5%	16.7%	16.8%	16.2%	17.1%
Thermal Spraying (Parent)	8,265	7,913	9,218	8,816	9,533	9,246
YoY	10.5%	12.4%	14.3%	16.4%	15.3%	16.8%
Domestic Subsidiary	591	604	605	586	585	621
YoY	29.3%	36.7%	11.6%	-2.0%	-1.0%	2.8%
Overseas Subsidiaries	1,364	1,438	1,678	1,632	1,864	1,843
YoY	39.5%	23.1%	33.3%	21.5%	36.7%	28.2%
Other Surface Treatments	647	653	664	719	644	707
YoY	26.4%	43.5%	18.4%	31.9%	-0.5%	8.3%

Order backlog		FY03/22			FY03/23	
(JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2
Order backlog	6,300	6,602	7,662	7,896	8,647	9,031
YoY	10.2%	17.2%	27.2%	28.5%	37.3%	36.8%
Thermal Spraying (Parent)	4,864	5,015	5,910	6,005	6,527	6,578
YoY	9.8%	14.7%	25.7%	24.2%	34.2%	31.2%
Domestic Subsidiary	39	49	48	46	40	56
YoY	18.2%	11.4%	2.1%	-22.0%	2.6%	14.3%
Overseas Subsidiaries	1,140	1,228	1,334	1,458	1,744	2,025
YoY	9.4%	18.8%	25.6%	40.1%	53.0%	64.9%
Other Surface Treatments	255	310	368	386	333	370
YoY	20.9%	69.4%	73.6%	88.3%	30.6%	19.4%

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

Factors affecting RP change		FY03/22			FY03/23	
Cumulative (JPYmn)	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2
Recurring profit	2,839	5,222	7,738	10,571	2,948	6,033
YoY change	563	1,048	1,259	1,657	109	811
Sales	523	1,259	1,881	2,888	717	1,775
Variable cost ratio	5	-80	-245	-203	-65	-90
Personnel expenses	-71	-219	-468	-1,017	-336	-721
Depreciation	42	48	40	11	-76	-116
Forex impact	74	155	259	339	194	431
Other	-12	-116	-208	-360	-325	-468
Factors affecting RP change		FY03/22			FY03/23	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2
Recurring profit	2,839	2,383	2,516	2,833	2,948	3,085
YoY change	563	485	211	398	109	702
Sales	523	736	622	1,007	717	1,058
Variable cost ratio	5	-85	-165	42	-65	-25
Personnel expenses	-71	-148	-249	-549	-336	-385
Depreciation	42	6	-8	-29	-76	-40
Forex impact	74	81	104	80	194	237
Other	-12	-104	-92	-152	-325	-143

Source: Shared Research based on company data

1H FY03/23 results (out October 31, 2022)

1H FY03/23 (April—September) performance overview

Results for 1H FY03/23 (April—September) were as follows.

- Sales: JPY24.0bn (+13.7% YoY, company forecast JPY23.6bn)
- Operating profit: JPY5.6bn (+9.2% YoY, JPY5.4bn)
- Recurring profit: JPY6.0bn (+15.5% YoY, JPY5.6bn)
- Recurring profit margin: 25.1% (up 0.3pp YoY, 23.7%)
- Net income attributable to owners of the parent: JPY3.9bn (+13.7% YoY, JPY3.7bn)

- Orders: JPY25.0bn (+16.6% YoY)
- Order backlog: JPY9.0bn (+36.8% YoY)

- The company upwardly revised its initial forecast at the time of the release of its Q1 (April—June) results on July 29, 2022.

Sales

- Thermal Spraying (handled by TOCALO, the parent company) is the company's mainstay business and accounts for about 76% of consolidated sales. Revenue from it increased 13.8% YoY, driven by growth in semiconductor and flat panel display (FPD) applications against a backdrop of high semiconductor demand. Overseas Subsidiaries (mainly in China and Taiwan) also posted a 20.1% YoY increase in sales as a result of growth in semiconductor and steel industry business. This offset the 0.7% YoY decline in sales at Domestic Subsidiary, which was affected by a decline in automobile production.

- Other Surface Treatments also grew 14.4% YoY. As a result of these factors, consolidated sales increased 13.7% YoY to JPY24.0bn, a record high for cumulative 1H (April—September). Sales also exceeded the company's revised forecast.

Recurring profit and recurring profit margin

- Segment profit grew 12.2% YoY for Thermal Spraying (Parent), 28.4% YoY for Overseas Subsidiaries, 28.6% YoY for Domestic Subsidiary, and 8.9% YoY for Other Surface Treatments. Segment profit at the company is linked to recurring profit on the income statement. Thermal Spraying segment profit, which accounts for about 74% of consolidated recurring profit, maintained an upward trend due to growth in sales for semiconductors and FPDs. Profit at Overseas Subsidiaries also increased, absorbing the decline at Domestic Subsidiary. As a result of these factors, consolidated recurring profit increased 15.5% YoY to JPY6.0bn. Like sales, this was a record high for 1H. The recurring profit margin also increased 0.3pp to 25.1%, which also marked the highest ever for 1H. Both recurring profit and the recurring profit margin exceeded the company's revised forecast.

- The contributing factors for recurring profit to surpass the company's forecast were higher operating profit and non-operating income, largely thanks to forex gains from the weaker yen.

Orders, order backlog

- 1H (April—September) orders rose 16.6% YoY to JPY25.0bn, a new 1H record. Orders for Thermal Spraying segment's mainstay semiconductor- and FDP-related products continued to increase, and orders at overseas subsidiaries also rose 32.3%. On the other hand, orders at its domestic subsidiary were roughly flat due to the impact of production cuts in the automobile industry, which is its main customer base. The breakdown of the JPY25.0bn of orders received in 1H is shown below.

    - Thermal Spraying (parent): JPY18.8bn (+16.1% YoY)
        - Semiconductor/FPD-related: JPY12.1bn (+22.5% YoY)
        - Industrial machinery-related: JPY1.9bn (+4.0% YoY)
        - Steel making-related: JPY2.0bn (+15.8% YoY)
        - Other businesses: JPY2.8bn (+1.3% YoY)
    - Domestic subsidiary: JPY1.2bn (+0.9% YoY)
    - Overseas subsidiaries: JPY3.7bn (+32.3% YoY)
    - Other Surface Treatments: JPY1.4bn (+3.9% YoY)

- In conjunction with this increase in orders, the order backlog grew 36.8% to JPY9.0bn as of end-Q2 (end-September 2022), the highest figure ever for any quarterly closing. The breakdown of the JPY9.0bn order backlog as of end-Q2 is shown below.

    - Thermal Spraying (parent): JPY6.6bn (+31.2% YoY)
        - Semiconductor/FPD-related: JPY4.5bn (+39.9% YoY)
        - Industrial machinery-related: JPY476mn (+35.6% YoY)
        - Steel making-related: JPY837mn (+3.6% YoY)
        - Other businesses: JPY803mn (+20.6% YoY)

    - Domestic subsidiary: JPY56mn (+14.3% YoY)
    - Overseas subsidiaries: JPY2.0bn (+64.9% YoY)
    - Other Surface Treatments: JPY370mn (+19.4% YoY)

Results by segment

- The results by business segment are as follows. The segment profit of each business is linked to the company's consolidated recurring profit.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY18.2bn (+13.8% YoY)
- Segment profit: JPY4.5bn (+12.2% YoY)
- Segment profit margin: 24.5% (-0.4pp YoY)

Sales

- The Thermal Spraying segment (parent only) is TOCALO's largest segment, accounting for 75.9% of its consolidated net sales (1H FY03/23). Sales in the Thermal Spraying (parent) segment grew, driving the increase in overall consolidated earnings. The JPY18.2bn in sales generated through this segment breaks down as follows.

- Semiconductors and Flat Panel Displays (FPDs): JPY12.1bn (+21.8% YoY)
    - Of which, thermal spraying for semiconductors: JPY11.2bn (+22.8% YoY)
    - Of which, thermal spraying for FPDs: JPY905mn (+10.5% YoY)
- Industrial machinery-related: JPY1.7bn (-1.0% YoY)
- Steel making-related: JPY1.8bn (+9.4% YoY)
- Other Purposes: JPY2.6bn (-3.4% YoY)

- Driving overall growth in thermal spraying sales and offsetting the decline in industrial machinery-related and other thermal spraying sales, high-margin semiconductor- and FPD-related thermal spraying sales were up 21.8% YoY. Steel making-related sales were also up from 1H FY03/22. Semiconductors account for more than 90% of thermal spraying sales for semiconductors and FPDs (92.5% in Q2), with sales for FPDs continuing to decline.

- In order to keep up with robust thermal spraying demand for semiconductors and FPDs, the company has been increasing capacity in stages since FY03/22, and its ability to fill the large volume of orders received resulted in it booking over JPY6.0bn in sales in Q1. Working closely with its customers, the company has been able to avoid a sudden expansion in production capacity that would directly increase costs and lower productivity, while at the same time leveling operations. As such, it has been able to expand sales on the back of enhanced production capacity. Management noted that while keeping an eye on orders in Q3 (October—December) onward, it aims to further expand production capacity as it continues to pursue operational leveling.

- As it continues to expand production capacity, the company targets quarterly sales of JPY6.5bn without overburdening operations. According to the company, it believes that it already has the means to achieve quarterly sales of JPY6.5bn. However, in line with its emphasis on operational leveling, the company is prioritizing steady operations as it works with its leading customers.

- In areas other than the semiconductor/FPD-related business, steel making-related sales grew 9.4% YoY, marking the first 1H increase in three years. Sales decreased YoY in Q1 (April—June), but the Q2 (July—September) gain in sales made up for this. The automobile industry (a major customer for the steel industry) continued to reduce output, but a rebound in crude steel production destined for other industries contributed to the gain in sales. However, TOCALO is not overly optimistic because sales have not yet recovered to pre-pandemic levels (JPY2.0bn in April—September 2019).

- On the other hand, industrial machinery-related sales were somewhat weak, declining 1.0% YoY. Although sales were up 21.2% YoY in Q1 (April—June), the Q2 (July—September) decline had an impact. However, according to TOCALO, this is because there was an increase in work-in-process as of end-Q2, not ready to book sales. It has seen an increase in orders from key customers in the bearing and energy industries, so it does not see a reason to be concerned about the 1H decrease in sales. In fact, industrial machinery-related orders have been recovering, along with the order backlog, and the company expects to book these orders as sales in Q3 (October—December) and beyond. Sales to other types of businesses were lower than 1H FY03/22, but this was because they fell back after a major project was booked in Q1 (April—June) FY03/22. Q2 (July—September) is already ahead of the Q2 FY03/22 level.

Segment profit, segment profit margins

- Backed mainly by an increase in semiconductor- and FPD-related sales, Thermal Spraying segment profit (segment profit is linked to consolidated recurring profit) rose 12.2% YoY. However, the segment profit margin dipped 0.4pp YoY to 24.5%. The decline in the segment profit margin was mainly due to higher labor costs and energy costs, including electricity costs. That said, the company at the beginning of the fiscal year expected these costs to rise, and noted that progress remained in line with its expectations. In fact, the segment profit margin of 23.8% in Q2 (July—September) was higher than the 23.6% of a year earlier. TOCALO believes that the fact that the profit margin was 24.5% in 1H (April—September), when costs were noticeably increasing, indicates that profitability is on the upswing.

- The company believes it was able to produce a segment profit margin of 24.5%, even amid rising costs, thanks to an increase in thermal spraying sales for semiconductors and FPDs and progress in operational leveling. In the past, the company's semiconductor-related business activities were often affected by inconsistency in factory operations during busy periods, which would result in lower production efficiency. However, since Q1 FY03/22 (April—June 2021) the

- company has become increasingly adept at leveling order sizes from each of its customers during peak periods (about JPY6.0bn from October-December 2021), including its largest customer Tokyo Electron Limited (TSE Prime: 8035), which are disclosed in the company's annual securities report.

- By smoothing orders, the company has been able to increase its number of factory personnel and reduce overtime work, thereby ensuring stable operations with higher production efficiency, even when orders are running high. The company believes this has contributed to growing earnings and improving profitability. According to TOCALO, by leveling operations while it boosts production capacity in stages, it will continue to enhance profitability thanks to the effect of increased sales. Therefore, it expects that the impact of higher electricity and other energy costs will be limited because it will be covered by the effect of higher sales.

Semiconductor- and FPD-related orders and order backlog

- Mainstay semiconductor- and FPD-related orders and order backlog (as of end-Q1) in the Thermal Spraying segment are as follows.

- Orders: JPY12.1bn (+22.5% YoY)
- Order backlog: JPY4.5bn (+39.9% YoY, JPY4.7bn at end-Q1 FY03/23)

- Semiconductor- and FPD-related orders account for about 64.4% of thermal spraying orders. Semiconductor- and FPD-related orders are considered a key leading indicator for earnings, with the company prioritizing them over industrial machinery, iron and steel, and other orders. Orders in 1H FY03/23 (April—September) totaled JPY12.1bn, the highest level recorded for any 1H to date. The order backlog of 4.5bn as of end-September 2022 was also the highest for any Q2 to date. The order backlog decreased slightly from end-Q1 (end-June 2022), but it was still close to a record high. However, in view of the gradual expansion of the company's production capacity, the company expects that the semiconductor/FPD-related order backlog will clear gradually and return to normal levels.

Domestic Subsidiary

- Sales: JPY1.2bn (-0.7% YoY)
- Segment profit: JPY175mn (-28.6% YoY)
- Segment profit margin: 14.6% (-5.7pp YoY)

- Orders: JPY1.2bn (+0.9% YoY)
- Order backlog: JPY56mn (+14.3% YoY, JPY40mn as of end-Q1 FY03/23)

Sales

- The company's domestic subsidiary (Japan Coating Center Co., Ltd.) mainly conducts physical vapor deposition (PVD) processing (a surface modification process for cutting tools, knives, and molds) and primarily serves clients in the automotive industry. Sales in 1H FY03/23 (April—September) were down 0.7% YoY, or roughly flat, as strength in construction machinery components was insufficient to offset the negative impact from reduced production among domestic automakers. The subsidiary had a rocky road up to Q1 due to the impact of automobile production cuts, but in August—September 2022 domestic automobile production turned upwards (+21.6% YoY in August and +76.0% in September), so there are signs that the sales of Domestic Subsidiary segment has also begun to bottom out. In the company's analysis, sales ended up at roughly the same level as the previous year, thanks to the Q2 (July—September) rebound in automobile-related sales and sales growth in other non-automobile related areas.

Segment profit, segment profit margin

- While sales declined by just 0.7% YoY, segment profit declined more than the decrease in sales. This was mainly due to the auto production cutbacks up to July, as well as a bigger than usual costs, such as higher depreciation, as the company started up new production facilities at a new factory that was built the previous year (FY03/22). The new plant is rather small compared to facilities in the Thermal Spraying segment, and while its impact on overall earnings is therefore relatively limited, its impact on the Domestic Subsidiary segment is rather large. Within this environment, segment profit fell 28.6% YoY to JPY175mn, with the segment profit margin dropping 5.7pp YoY to 14.6%. While this was lower than a year earlier, it was above the 13.7% figure recorded in April—June 2020, when COVID-19 was rapidly spreading.

Overseas Subsidiaries

- Sales: JPY3.1bn (+20.1% YoY)

- Segment profit: JPY885mn (+28.4% YoY)
    - Segment profit margin: 28.2% (+1.9pp YoY)

- Orders: JPY3.7bn (+32.3% YoY)
- Order backlog: JPY2.0bn (+64.9% YoY, JPY1.7bn at end-Q1 FY03/23)

Sales

- This segment includes two subsidiaries in China, one in Taiwan, and one in the US, but essentially consists of subsidiaries in China and Taiwan, as the US business is not fully operational. Sales expanded 20.1% YoY on forex gains in line with yen depreciation, improved iron and steel-related sales in China, and semiconductor- and FPD-related re-coating sales. Sales were JPY3.1bn, the highest level recorded for any 1H (April—September) to date. The company noted the improvement in sales was due not only to the weaker yen, as sales also rose on a local currency basis.

Segment profit, segment profit margin

- Segment profit grew 28.4% YoY to JPY885mn thanks to yen depreciation and enhanced sales on a local currency basis. Sales also benefitted from a recovery in iron and steel-related sales in China and semiconductor- and FPD-related re-coating sales. Segment profit of JPY885mn was the highest ever for a 1H (April—September). The segment OPM for Overseas Subsidiaries has been higher than that for Thermal Spraying (parent only). This is because semiconductor/FPD-related activities represent the majority of business in the Overseas Subsidiaries segment, and the investment burden is not as heavy as the burden in Japan (Thermal Spraying). However, the company plans to increase capital investment overseas as well (mainly to boost production capacity), so it will be unable to maintain the current segment OPM (roughly 28%)unless sales continue to increase.

Other Surface Treatments

- Sales: JPY1.4bn (+14.4% YoY)
- Segment profit: JPY244mn (+8.9% YoY)
- Segment profit margin: 17.8% (-0.9pp YoY)

- Orders: JPY1.4bn (+3.9% YoY)
- Order backlog: JPY370mn (+19.4% YoY, JPY333mn at end-Q1 FY03/23)

Sales, segment profit, segment profit margin

- Both segment sales and profit increased YoY amid generally strong order bookings. Orders for surface treatments used on agricultural equipment parts grew, contributing to the rise in sales. TOCALO applies surface treatments to agricultural equipment parts and supplies these to Japanese agricultural equipment makers. Agricultural equipment makers sell their products in the US and other locations, and TOCALO believes that they have benefitted from the expansion of the agricultural industry in North America. It expects the agricultural equipment part business to continue to expand in the future. However, it still does not significantly contribute to profits, and segment profits are not growing as fast as sales. As a result, the segment OPM decreased 0.9pp to 17.8%.

Factors affecting change in recurring profit

- Recurring profit, which is closely linked to segment profit, increased by JPY811mn YoY, from 5.2bn in 1H FY03/22 to JPY6.0bn. Factors contributing to the increase included upward impacts of JPY1.8bn stemming from growth in sales and JPY431mn from forex factors. On the other hand, profit was depressed by JPY90mn due to a higher variable cost ratio, JPY721mn on an uptick in labor costs, JPY116mn on an increase in depreciation, and JPY468mn on other factors.

    - Given the sales boost, the company managed to limit the increase in its variable cost ratio (which is a factor for decreases in profits). The main reason behind this was the maintenance in its marginal profit ratio that stemmed primarily from the aforementioned leveling of operations. While there were a number of factors contributing to higher costs in 1H (April—September), the company was able to maintain the marginal profit margin at the prior year level.

    - The JPY721mn increase in labor costs was due to an expansion in headcount (about 50 workers, including temporary hires) and improved compensation (increased bonuses and base pay hikes) so that the company could better take on the increase in orders. The company believes this increase in costs are reasonable in line with the expansion in sales.

- The JPY468mn increase in other factors was due to higher R&D costs, increased costs associated with sales activities, including business trips, and the hike in energy costs. The increase in electricity costs, which accounts for the majority of energy costs, depressed profit by JPY176mn, and an increase in the valuation loss on inventories also depressed profit by JPY131mn.

- Forex impacts increased profits by JPY431mn, and about JPY330mn of this amount was due to valuation gains on foreign currency-denominated bonds, which were booked as non-operating income. The remaining amount of approximately JPY100mn was due to the conversion rates for consolidated subsidiaries.

Q2 performance overview (July–September)

Results for Q2 FY03/23 (July–September) were as follows.

- Sales: JPY12.0bn (+16.7% YoY)
- Operating profit: JPY2.9bn (+21.5% YoY)
- Recurring profit: JPY3.1bn (+29.5% YoY)
- Recurring profit margin: 25.5% (up 2.5pp YoY)
- Net income attributable to owners of the parent: JPY2.0bn (+26.8% YoY)

- In Q1 (April–June) FY03/23, operating profit fell by 1.3% YoY while recurring profit increased only 3.8% YoY, weighed down by higher manufacturing costs. In Q2 (July–September), the rates of both operating and recurring profit resumed their growth. Recurring profit margin—which TOCALO considers a key management indicator—rose 2.5pp YoY to 25.5%. Sales, recurring profit, and recurring profit margin all posted record highs, regardless of quarter. Moreover, both sales and recurring profit rose YoY for the 11th consecutive quarter.

Results by segment

- Q2 results by segment are as follows. Please note that each business's segment profits are linked to the company's consolidated recurring profit.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY9.2bn (+18.5% YoY)
- Segment profit: JPY2.2bn (+19.4% YoY)
- Segment profit margin: 23.8% (+0.2pp YoY)

Sales

- Thanks to growth in semiconductor-related sales and a rebound in steel making-related sales, sales rose 18.5% YoY to JPY9.2bn, a record level for any quarter, not just Q2 (July–September). This was the second straight quarter that sales exceeded JPY9.0bn, after the JPY9.0bn reported for Q1 (April–June).

- Breakdown of sales of JPY9.2bn is as follows.

- Sales generated by thermal spraying for:
- Semiconductors and Flat Panel Displays (FPDs): JPY6.2bn (+25.7% YoY)
- Industrial Machinery: JPY745mn (-20.5% YoY)
- Iron and Steel: JPY1.0bn (+36.5% YoY)
- Other Purposes: JPY1.2bn (+7.0% YoY)

- Sales generated by thermal spraying for semiconductors and flat-panel displays (FPDs), the company's mainstay business, rose 25.7% to JPY6.2bn, exceeding JPY6.0bn on a quarterly basis for the first time thanks to the production capacity that was increased in FY03/22. While leveling operations, TOCALO has set its sights on achieving quarterly basis semiconductor/FPD-related sales of JPY6.5bn in Q3 (October–December) and beyond. Against the backdrop of a rebound in crude steel production, steel making-related sales also rose 36.5% to JPY1.0bn. This was the first time that steel making-related sales exceeded JPY1.0bn on a quarterly basis since the JPY1.1bn booked in Q4 FY03/20 (January–March 2020). Industrial machinery-related sales fell 20.5% YoY due to shipping delays at the end of the

- quarter (resulting in a delay in booking sales due to the increase in work-in-progress), and TOCALO views this as a transitory phenomenon.

Segment profit

- Segment profit rose 19.4% YoY to JPY2.2bn, mainly due to the increase in sales and lower costs thanks to productivity improvements which helped to absorb higher costs such as labor and electricity costs. The segment profit of JPY2.2bn was the second highest ever, after the JPY2.3bn booked in Q1 (April–June). Segment OPM improved 0.2pp to reach 23.8%, a new record for Q2 (July–September). Segment OPM was lower than the 25.3% figure for Q1 (April–June), but the Q2 (July–September) tends to be lower than Q1 due to the lower number of operating days. TOCALO believes that it was able to achieve a higher profit margin than Q2 FY03/22, even amid rising costs, because it has continued to improve profitability by leveling its operations.

Domestic Subsidiary

- Sales: JPY606mn (+1.8% YoY)
- Segment profit: JPY90mn (-3.2% YoY)
- Segment profit margin: 17.9% (-0.7pp YoY)

Sales

- In Q2 (July–September), sales rose 1.8% YoY to JPY606mn as automobile production rose in Japan (+24.4% YoY) and sales for industrial machinery and other non-automotive uses grew. This was the highest figure for Q2 sales since July–September 2018, when the segment booked JPY613mn in sales.

Segment profit

- Despite the increase in sales, segment profit declined 3.2% YoY to JPY90mn, the fourth straight decline (YoY) on a quarterly basis. Nevertheless, the decline was narrower than the 44.1% YoY drop posted in Q1 (April–June). Segment OPM deteriorated 0.7pp to 14.9%, but this was better than the 14.4% figure for Q1.

Overseas Subsidiaries

- Sales: JPY1.6bn (+15.8% YoY)
- Segment profit: JPY448mn (+33.3% YoY)
    - Segment profit margin: 28.7% (+3.8pp YoY)

Sales

- This segment encompasses two subsidiaries in China, one in Taiwan, and one in the US, but it effectively consists of just the subsidiaries in China and Taiwan (three companies) because the US subsidiary is not yet fully operational. Sales grew 15.8% YoY to JPY1.6bn thanks to growth areas such as steel-related services in China and semiconductor/FPD-related re-coating, as well as the forex impact of the weaker yen on conversions. This represents new all-time record sales for a Q2 (July–September), and the second highest sales for any quarter.

Segment profit

- Segment profit increased 33.3% YoY to JPY448mn, mainly due to higher sales. The segment profit margin grew 3.8pp to 28.7%. These were both record highs for any quarter, not just Q2 (July–September). According to TOCALO, besides higher sales, the forex impact of the weaker yen also contributed, but profits grew even on a local currency basis.

Other Surface Treatments

- Sales: JPY670mn (+12.0% YoY)
- Segment profit: JPY122mn (+14.0% YoY)
    - Segment profit margin: 18.2% (+0.3pp YoY)

Sales

- Sales rose 12.0% YoY to JPY670mn thanks to growth in orders for surface treatments for agricultural equipment parts. Besides agricultural equipment parts, there was also growth in surface treatments for semiconductor manufacturing equipment parts, but according TOCALO, this made only a limited contribution. Sales were a record level for Q2 (July–September), but came up short of the JPY697mn booked in Q1 (April–June).

Segment profit

- Thanks to the growth in orders, mainly in the area of agricultural equipment parts, segment profit rose 14.0% YoY to JPY122mn, and segment OPM improved 0.3pp to 18.2%. The segment OPM had fluctuated up until FY03/21 (including a negative margin and an OPM as high as 13.9%), but it became more stable from the April–June 2021 quarter onwards, and has ranged from 17.5% to 19.6%.

Full-year FY03/23 company forecast (out July 29, 2022)

	FY03/21			FY03/22			FY03/23		
(JPYmn)	1H	2H	Full year	1H	2H	Full year	1H Act.	2H Est.	FY Est.
Sales	**19,205**	**20,089**	**39,294**	**21,098**	**22,715**	**43,813**	**23,996**	**24,204**	**48,200**
YoY	2.2%	5.2%	3.7%	9.9%	13.1%	11.5%	13.7%	6.6%	10.0%
Thermal Spraying (Parent)	14,965	15,176	30,141	16,000	17,043	33,043	18,205	18,583	36,788
Semiconductor and FPD equipment parts	9,019	9,157	18,176	9,938	10,705	20,643	12,100	11,868	23,968
Semiconductor equipment	7,827	8,203	16,030	9,119	9,871	18,990			22,355
FPD equipment	1,191	954	2,145	819	834	1,653			1,613
Industrial machinery	2,075	1,890	3,965	1,757	1,950	3,707	1,739	2,080	3,819
Steelmaking machinery	1,739	1,427	3,166	1,623	1,827	3,450	1,775	1,864	3,639
Other applications	2,131	2,701	4,832	2,680	2,562	5,242	2,588	2,774	5,362
Other Surface Treatments	1,029	1,083	2,112	1,195	1,307	2,502	1,367	1,271	2,638
Domestic Subsidiary	892	1,126	2,018	1,206	1,193	2,399	1,197	1,260	2,457
Overseas Subsidiaries	2,205	2,595	4,800	2,615	3,080	5,695	3,140	2,997	6,137
Royalty income	111	110	221	80	91	171	86	94	180
Cost of sales	12,074	12,627	24,701	12,880	14,348	27,228	15,065		
Gross profit	**7,131**	**7,462**	**14,593**	**8,218**	**8,367**	**16,585**	**8,931**		
YoY	11.2%	17.2%	14.2%	15.2%	12.1%	13.7%	8.7%		
Gross profit margin	37.1%	37.1%	37.1%	39.0%	36.8%	37.9%	37.2%		
SG&A expenses	2,928	2,775	5,703	3,107	3,223	6,330	3,350		
YoY	-4.4%	-12.4%	-8.5%	6.1%	16.1%	11.0%	7.8%		
SG&A ratio	15.2%	13.8%	14.5%	14.7%	14.2%	14.4%	14.0%		
Operating profit	**4,203**	**4,687**	**8,890**	**5,111**	**5,144**	**10,255**	**5,581**	**5,619**	**11,200**
YoY	25.5%	46.4%	35.7%	21.6%	9.8%	15.4%	9.2%	9.2%	9.2%
Operating profit margin	21.9%	23.3%	22.6%	24.2%	22.6%	23.4%	23.3%	23.2%	23.2%
Recurring profit	**4,174**	**4,740**	**8,914**	**5,222**	**5,349**	**10,571**	**6,033**	**5,367**	**11,400**
YoY	22.7%	39.0%	30.9%	25.1%	12.8%	18.6%	15.5%	0.3%	7.8%
Recurring profit margin	21.7%	23.6%	22.7%	24.8%	23.5%	24.1%	25.1%	22.2%	23.7%
Net income	**2,688**	**2,775**	**5,463**	**3,448**	**3,461**	**6,909**	**3,919**	**3,525**	**7,444**
YoY	25.1%	23.0%	24.0%	28.3%	24.7%	26.5%	13.7%	1.8%	7.7%
Net margin	14.0%	13.8%	13.9%	16.3%	15.2%	15.8%	16.3%	14.6%	15.4%

Source: Shared Research based on company data

Notes: Figures may differ from company materials due to differences in rounding methods.

Citing the application of the accounting standard for revenue recognition from FY03/22, the company has not released YoY growth rates, but Shared Research has provided estimates as the size of the impact appears to be limited.

Overview of the company's revised forecast (at the time of Q1 results)

In light of the 1H (April–September) results, TOCALO left its forecast for FY03/23 unchanged. It had already revised up its initial forecast when it released earnings results for Q1 (Apil–June) in July 2022. The unchanged company forecast (upwardly revised forecast released with Q1 results) is shown below.

- Sales: JPY48.2bn (+10% YoY, previous forecast JPY47.5bn)
- Operating profit: JPY11.2bn (+9.2% YoY, JPY11.0bn)
  - Operating margin: 23.2% (down 0.2pp YoY, 23.2%)
- Recurring profit: JPY11.4bn (+7.8% YoY, JPY11.0bn)
  - Recurring profit margin: 23.7% (down 0.4pp YoY, 23.2%)
- Net income attributable to owners of the parent: JPY7.4bn (+7.7% YoY, JPY7.2bn)

- The upwardly revised EPS forecast is JPY122.4. The annual dividend forecast remains unchanged at JPY45.0 per share (also JPY45.0 per share in FY03/22). Based on the company's forecast, the dividend payout ratio will be 36.8% (vs. 39.6% in FY03/22).

Sales

- When it released its Q1 (April–June) results in July 2022, TOCALO revised up its initial forecast for FY03/23 sales from JPY47.5bn to JPY48.2bn, and it left this revised forecast unchanged at the time of its 1H (April–September) results. In the mainstay Thermal Spraying segment, orders in the semiconductor/FPD area have continued to grow in Q2 (July–September) and beyond, and sales in the Overseas Subsidiaries segment continue to expand, so it is on track to meet its forecast. In fact, 1H (April–September) sales came in ahead of the forecast that was released at the time of Q1 results. Nonetheless, the company has taken a cautious view of the risk factors in the external environment from Q3 (October–

- December) onward, and it has left the forecast unchanged. The unchanged forecast of JPY48.2bn would represent a second consecutive year of record sales for the company.

Recurring profit, recurring profit margin, others

- Alongside the upward revision to its 1H sales forecast, the company lifted its 1H forecasts for profit from the operating line down. For recurring profit, which the company views as a key management indicator, it raised its 1H forecast from JPY11.0bn to JPY11.4bn. However, as with its sales forecast, the company made no change to its 2H recurring profit forecast. Management lifted its recurring profit margin forecast from 23.2% to 23.7%. On the other hand, when announcing Q1 results and making other forecast revisions, the company made no change to its initial dividend forecast.

- As was the case with sales, TOCALO had already revised up its initial forecast for FY03/23 recurring profit from JPY11.0bn to JPY11.4bn when it released its Q1 (April—June) results in July 2022. In light of the 1H (April—September) results, it left the revised forecast unchanged. Although the 1H result exceeded the company forecast released at the time of Q1 earnings results, in light of risk factors such as cost increases and foreign currency fluctuations from Q3 (October—December) onward, TOCALO left the earlier forecast (company forecast released at the time of Q1 earnings results) unchanged. The company forecast of JPY11.4bn would represent a third straight record profit. However, given the impact of higher costs, such as labor and electricity costs, the company expects the recurring profit margin to shrink 0.4pp YoY to 23.7%. The company forecast of 23.7% is the second highest ever.

- TOCALO expects operating profit to rise 9.2% YoY to JPY11.2bn, and OPM to decrease 0.2pp YoY to 23.2%. The projected increase in recurring profit (7.8%) is lower than the projected increase in operating profit (9.2%) because it used a conservative assumption for foreign exchange (JPY128/USD) for Q3 (October—December) onward, so it does not project an increase in non-operating income. TOCALO uses recurring profit and recurring profit margin as performance indicators, but the forecast for operating profit also represents a new record high. Net income attributable to owners of the parent is also expected to reach a new record high, so under this forecast TOCALO expects to see record sales for a second straight year, and record profits at every level for a third consecutive year.

Progress against forecast as of end-1H (April—September)

- TOCALO left its forecast for FY03/23, which it had revised up in July 2022 when it released its Q1 (April—June) results, unchanged when it released its 1H results. 1H revenue was at 49.8% of the unchanged company forecast (progress rate), operating profit at 49.8%, recurring profit at 52.9%, and net income (net income attributable to owners of the parent) at 52.6%. The progress rate is already at 50% or higher (a target for every line) for recurring profit, which is something TOCALO focuses on. Since profits tend to be higher in 2H (October—March) than in 1H (April—September), it believes that it has no major concerns about achieving the company forecast. However, the company is taking a cautious view of risk factors such as rising electricity and other energy costs, and this is one reason that it left its forecast unchanged when it released 1H (April—September) results.

Sales forecasts by segment

- The company releases sales projections for its individual reporting segments. Effective from FY03/22, the company has established a royalty income segment in addition to its previously existing four segments: thermal spraying (parent company), domestic subsidiaries, overseas subsidiaries, and other surface modification. However, the company projects that the royalty income segment will account for only 0.4% of net sales in FY03/23.

- TOCALO left its forecast for FY03/23 unchanged when it released its 1H (April—September) results. The company's revised sales projections for each segment are as follows.

  - Thermal Spraying (parent) JPY36.8bn (+11.3% YoY, previously JPY36.5bn)
  - Domestic Subsidiary: JPY2.46bn (+2.4% YoY, previously JPY2.53bn)
  - Overseas Subsidiaries: JPY6.1bn (+7.8% YoY, previously JPY5.7bn)
  - Other Surface Treatments: JPY2.64bn (+5.4% YoY, previously JPY2.60bn)
  - Royalty Income: JPY180mn (-5.3% YoY, previously JPY180mn)

  - In the mainstay Thermal Spraying (parent only) segment, TOCALO expects semiconductor/FPD-related sales to continue to grow, so it sees sales rising 11.3% from FY03/22 to JPY36.8bn. The company says there are no clear signs of a correction in global semiconductor demand, but because it does not believe that the upward trend will continue indefinitely, it is wary about FY03/24 and beyond. However, based on the order trend, TOCALO does not expect to see any major impact in FY03/23.

- The semiconductor/FPD-related business is also the mainstay of the Overseas Subsidiaries segment, and this segment is expected to see the second biggest gain in sales after Thermal Spraying (parent only). The company uses a conservative forex assumption of JPY128/USD (versus about JPY136/USD as of December 9, 2022) for its earnings forecast, so sales could be higher, depending on the forex market in Q3 (October—December) onward.

- On the other hand, the Domestic Subsidiary segment posted the lowest gain of any segment due to the impact of reduced automobile production. TOCALO is taking a cautious view about the timing of a rebound in automobile production in Japan, but domestic output was up YoY in August and September 2022, so there are signs that the business environment is improving. Based on the sales projections for each segment, the company is forecasting consolidated-basis sales of JPY48.2bn for FY03/23.

Breakdown of sales forecasts for the Thermal Spraying (parent) segment

- The company's sales forecast for its mainstay Thermal Spraying (parent) segment breaks down as follows.
TOCALO left the forecast sales breakdown for Thermal Spraying (parent) unchanged when it released its Q1 (April—June) results.

  - Thermal spraying for:
  - Semiconductors and FPDs: JPY24.0bn (+16.1% YoY)
    Semiconductor-related thermal spraying: JPY22.4bn (+17.7% YoY)
    FPD-related thermal spraying: JPY1.6bn (-2.4% YoY)
  - Industrial Machinery: JPY3.8bn (+3.0% YoY)
  - Iron and Steel: JPY3.6bn (+5.5% YoY)
  - Other purposes: JPY5.4bn (+2.3% YoY)

  - The company's forecast for mainstay semiconductor- and FPD-related sales is about JPY24.0bn, reflecting expectations for quarterly sales to remain on average at about JPY6.0bn. According to management, it appears possible to book average quarterly sales of JPY6.5bn if it increases its workload, so the sales forecast of JPY24.0bn is based on a plan that prioritizes leveling operations. Outside of semiconductor/FPD-related business, it expects sales to grow YoY in the steel making-related and industrial machinery-related areas.

Breakdown of recurring profit projections in the company's forecast and factors affecting change in recurring profit

- The company has not disclosed by-segment breakdowns of its recurring profit forecast (JPY11.4bn). However, the company believes that profits will continue to grow in the Thermal Spraying (Parent) segment and no change to the composition driving consolidated business results. Nevertheless, as a result of taking into account some concerns about the impact of material shortages due to semiconductor shortages on the company's customers, the company set the recurring profit margin to 23.7%, a decrease of 0.4pp YoY. TOCALO achieved a recurring profit margin of 25.1% in 1H (April—September), but it has factored in the risk of higher electricity and other costs from Q3 (October—December) onward. The company initially targeted a recurring profit margin of 23.2%, but lifted that forecast 0.5pp when announcing Q1 (April—June) results in July 2022 and other upwardly revised forecasts.

- In lieu of its usual by-segment recurring profit breakdown, the company has released its forecast for factors that it expects to impact recurring profit on a consolidated basis. The company released this as usual, for the initial forecast released in May 2022. However, it has not released a breakdown of the factors affecting the upwardly revised forecast that it released at the time of its Q1 results (August 2022); that is to say, the forecast that was left unchanged in November 2022.

  - However, in August 2022 the company increased its forecast for recurring profit by JPY400mn (from the previous JPY11.0bn to JPY11.4bn), and this suggests that there has been no significant change in the factors increasing or decreasing profits from the time of the initial forecast. In the initial forecast, recurring profit was expected to increase by about JPY428mn from JPY10.6bn in FY03/22 to JPY11.0bn. The factors behind this were: 1) a JPY2.4bn positive impact from higher sales; 2) a JPY430mn negative impact from a higher variable cost ratio; 3) a JPY910mn negative impact from higher labor costs; 4) a JPY216mn negative impact from higher depreciation expenses; and 5) a JPY416mn negative impact due to other reasons.

Capital expenditures, depreciation, and R&D expenses

Plans for FY03/23 are as follows. The company made no change to its initial outlook when announcing 1H (April—September) results.

- Capital expenditures: JPY5.5bn (actual expenditures for FY03/22: JPY4.4bn)
- Depreciation: JPY3.0bn (actual depreciation for FY03/22: JPY2.8bn)
- R&D: JPY1.4bn (actual R&D for FY03/22: JPY1.3bn)

- The company forecasts FY03/23 capital expenditures at JPY5.5bn (+25.4% YoY), its highest level in four years. This breaks down to JPY3.5bn at Thermal Spraying (Parent), JPY200mn at Domestic Subsidiary, and JPY1.8bn at Overseas Subsidiaries. Of these, the main Thermal Spraying (Parent) constituent, which is the largest capex item, is to increase the production capacity centered on the Tokyo, Akashi and Kitakyushu plants. Moreover, the JPY200mn for Domestic Subsidiary also represents an increase in production capacity. Overseas spending includes construction on a new plant in Taiwan.
In this way, most of the capital investment planned for FY03/23 is intended to increase production capacity to meet increased demand.

- On the other hand, the estimated depreciation cost of JPY3.0bn is expected to be the highest ever, narrowly exceeding the JPY2.99bn of FY03/20. This would represent an increase of JPY216mn YoY, causing a drop in profits, but this has already been factored into the company's forecast. Additionally, the forecast R&D expenses of 1.4bn represents a R&D expenses-to-sales ratio of 3.0%, the same level as FY03/22.

Initial company forecast and results

Results vs. Initial Est.	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Sales (Initial Est.)	21,000	23,000	27,500	28,000	30,000	39,000	36,000	36,500	41,000
Sales (Results)	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294	43,813
Results vs. Initial Est.	**7.6%**	**13.3%**	**4.5%**	**3.4%**	**13.7%**	**1.4%**	**5.3%**	**7.7%**	**6.9%**
Operating profit (Initial Est.)	2,730	3,500	4,866	4,440	5,900	7,900	5,200	5,800	9,000
Operating profit (Results)	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,890	10,255
Results vs. Initial Est.	**27.6%**	**30.5%**	**-1.2%**	**27.2%**	**20.5%**	**-2.0%**	**26.0%**	**53.3%**	**13.9%**
Recurring profit (Initial Est.)	2,800	3,600	5,000	4,600	6,000	8,200	5,500	6,000	9,000
Recurring profit (Results)	3,657	4,890	5,028	5,801	7,363	8,076	6,812	8,914	10,571
Results vs. Initial Est.	**30.6%**	**35.8%**	**0.6%**	**26.1%**	**22.7%**	**-1.5%**	**23.9%**	**48.6%**	**17.5%**
Net income (Initial Est.)	1,680	2,178	3,222	2,978	4,000	5,400	3,520	3,880	5,800
Net income (Results)	2,176	3,031	3,016	4,070	4,836	5,441	4,404	5,463	6,909
Results vs. Initial Est.	**29.5%**	**39.2%**	**-6.4%**	**36.7%**	**20.9%**	**0.8%**	**25.1%**	**40.8%**	**19.1%**

Source: Shared Research based on company data
Notes: Figures may differ from company materials due to differences in rounding methods

Medium-term management plan

Medium-*term* management plan

Medium-term management plan	FY03/21	FY03/22	FY03/23	FY03/26	5-year	
(JPYmn)	Act.	Act.	Est.	MTP	CAGR	
Sales	**39,294**	**43,813**	**47,500**	**53,000**	**6.2%**	
YoY	3.7%	11.5%	8.4%			
semiconductors	18,176	20,643	23,768	26,000	7.4%	
YoY	28.9%	13.6%	15.1%			
% of total	46.3%	47.1%	50.0%	49.1%		
iron/steel industrial machinery	21,118	23,170	23,732	27,000	5.0%	
YoY	-11.2%	9.7%	2.4%			
% of total	53.7%	52.9%	50.0%	50.9%		
Recurring profit	**8,914**	**10,571**	**11,000**	**12,000**	**6.1%**	
YoY	30.9%	18.6%	4.1%			
Recurring profit margin	22.7%	24.1%	23.2%	22.6%		
Equity ratio	68.9%	70.6%		maintain about 70%		
ROE	12.9%	14.8%	14.0%	15.0%		
DOE	5.0%	5.9%	5.3%	maintain about 5%		
Capital expenditures	4,822	4,385	5,500	Total25,000 - 35,000		5.0-7.0bn/Year
Depreciation	2,771	2,783	3,000			
R&D expenses	1,296	1,296	1,425	1,590		
R&D ratio	3.3%	3.0%	3.0%	maintain about 3%		

Source: Shared Research based on company data.
*Figures may differ from company materials due to differences in rounding methods. Please note that sales generated through thermal spraying for purposes not involving semiconductors (iron and steel, industrial machinery, etc.) in FY03/21 (JPY21.1bn) include JPY20.9bn in sales categorized according to the company's previous reporting segment structure and JPY221mn in sales stemming from the Royalty Income segment. Accordingly, this JPY21.1bn figure differs from the figure of approximately JPY20.9bn indicated by data from the company.

Shared Research wrote the following section based on the medium-term management plan announced by the company in November 2021. Slight revisions have been made based on FY03/22 results and the company's FY03/23 forecasts announced in May 2022. When announcing Q1 (April-June 2022) results in July 2022, the company upwardly revised its FY03/23 forecasts. However, we have not updated this section to reflect the revised FY03/23 forecast, as the revisions appear to be no more than fine-tuning. Please note that the company forecasts for FY03/22 in this section are before the July 2022 revisions.

Medium-term management plan progress report (last updated in May 2022)

- In May 2022, the company provided an update on the progress being made on its first medium-term management plan announced the previous year (November 2021). This is presented below. The medium-term management plan (comparison of numerical targets) began with actual results for FY03/21. CAGR indicates the average annual growth rate.

Sales

- Target for FY03/26: JPY53.0bn
- Company forecast for FY03/23: JPY47.5bn
- Five-year CAGR forecast set forth in the medium-term management plan: 6.2%
- CAGR forecast for the two year-period up until FY03/23: 9.9%

- The company has indicated that sales are growing at a pace that exceeds the target as indicated in the medium-term management plan, and that the JPY53.0bn target may be realized in FY03/25. However, the company needs to assess the situation for a little while, and has not revised the medium-term management plan (upward) at this time.

Semiconductor-related sales

- Target for FY03/26: JPY26.0bn
- Company forecast for FY03/23: JPY23.8bn
- Five-year CAGR forecast set forth in the medium-term management plan: 7.4%
- CAGR forecast for the two year-period up until FY03/23: 14.4%

- Semiconductor-related sales are growing at a rate of just under twice the target specified in the medium-term management plan. However, the company is cognizant of the fact that it is difficult to figure out when to adjust semiconductor-related sales.

Sales related to steel-making, industrial machinery and other non-semiconductor items

- Target for FY03/26: JPY27.0bn
- Company forecast for FY03/23: JPY23.7bn
- Five-year CAGR forecast set forth in the medium-term management plan: 5.0%
- CAGR forecast for the two year-period up until FY03/23: 6.0%

- The company also states that sales other than semiconductor-related are also progressing over the targets of the medium-term management plan.

Recurring profit

- Target for FY03/26: JPY12.0bn
- Company forecast for FY03/23: JPY11.0bn
- Five-year CAGR forecast set forth in the medium-term management plan: 6.1%
- CAGR forecast for the two years until FY03/23: 11.1%

- The pace of growth in recurring profit is also exceeding the target set out in the medium-term management plan. The company is nearing the point where it is likely to achieve the target (JPY12.0bn) in FY03/24, and is looking to make an upward revision by the time the financial results for FY03/23 are announced in March 2023. However, the company also mentioned that it would assess the future transition.

Finances/shareholder returns

- The company notes that it is making steady progress with respect to each of the goals (maintaining an equity ratio of around 70%, maintaining ROE and its 15% target, a recurring profit margin of 20%, stable dividends with a dividend payout ratio of 33% or more, DOE target of 5%, etc.) set forth in the medium-term management plan.

Capital expenditures, R&D expenses

- The company recognizes that it has transitioned to the following plan as indicated in the medium-term management plan.

- Capital expenditures: A total of JPY25bn to JPY35bn over the five years of the medium-term management plan
- R&D expenses: Maintained at about 3% of consolidated sales

Summary of medium-term management plan (last updated in May 2022)

- On November 9, 2021, the company announced its medium-term management plan. The plan covers the five-year period extending from FY03/22 through FY03/26 (comparisons have been made using FY03/21 results as a point of reference), but the company also views it as a process toward achieving its long-term vision, which is based upon ideal circumstances the company aims to establish by 2030. This medium-term management plan is the first that the company has announced to the public. TOCALO is using the occasion of its 70th anniversary to present its vision for the future to its stakeholders.

- The company has identified 10 issues based on analyses of its surrounding business environment and major changes affecting this environment. Having identified these issues, the company established its vision of becoming a company that "contributes to a prosperous future for people and nature" by 2030 through its surface treatments, which primarily consist of thermal spraying. As a part of this process, the company has set the following performance targets for FY03/26 (five years after the beginning of the plan) using FY03/21 results as a launch pad (basis of comparison). The company will aim to achieve the targets in this plan by expanding existing businesses and by branching into new business areas.

  - Sales: JPY53.0bn (versus JPY39.2bn in FY03/21)
  - JPY26.0bn of this total to be generated through thermal spraying for semiconductors (versus JPY18.2bn in FY03/21)
  - JPY27.0bn of this total to be generated through thermal spraying for non-semiconductor-related purposes, such as iron and steel and industrial machinery (versus JPY21.1bn in FY03/21)
  - Recurring profit: JPY12.0bn (versus JPY8.9bn in FY03/21)

  - Sales generated through thermal spraying for purposes not involving semiconductors (iron and steel, industrial machinery, etc.) in FY03/21 (JPY21.1bn) include JPY20.9bn in sales categorized according to the company's previous reporting segment structure and JPY221mn in sales stemming from the Royalty Income segment. Accordingly, this JPY21.1bn figure differs from the figure of approximately JPY20.9bn indicated by data from the company.

- In addition these earnings target, the company also aims to maintain or exceed current levels associated with financial strength, ROE and other measurements of earning power, and dividend payout ratio.

Awareness of current circumstances (business environment, etc.)

Awareness of issues (10 issues)

- In formulating this medium-term management plan, which is the first that has been announced to the public, the company first examined its surrounding earnings environment. Then, the company identified the following 10 issues with the goals of further expanding the business domain associated with its core thermal spraying technologies and enhancing its four strengths (development of advanced functional coatings, flexible production support, capacity for providing solutions in response to customer needs, and robust financial strength capable of supporting development investment).

- When identifying these 10 issues, the company established a table in which the horizontal X-axis consisted of four customer categories (semiconductors and FPDs, iron and steel, energy and environment, and industrial machinery and others) and one additional category that applies to all of these customer categories (management and operation). Meanwhile, the vertical Y-axis included three categories: market development, development, and manufacturing (production). Then, the issues were mapped out across this table using a cross-functional format that compares the five categories on the X-axis and the three categories on the Y-axis. The 10 issues identified by the company in this way are shown below.

- (1) Conversion of customers into partners
- (2) Targeting of markets aimed at diversifying sources of revenue
- (3) Enhancement of service system
- (4) Global expansion
- (5) Establishment of technological superiority
- (6) Enhancement of manufacturing processes
- (7) Further enhancement of quality control systems
- (8) Reduction of environmental impact
- (9) Creation of comfortable working environments
- (10) Enhancement of internal controls

TOCALO's medium-term management plan was formulated and is being executed based on the company's goal of addressing these 10 issues.

Renewed awareness concerning the company's management philosophy and vision and formulation of a corporate mission

While formulating its medium-term management plan, the company reaffirmed its management philosophy and vision and defined its corporate mission. Then, based on changes in the global earnings environment (which the company refers to as "megatrends"), the company decided upon the future direction of its growth strategy. In order to solidify this growth strategy, the company has decided to further develop its current business model.

Management philosophy and long-term vision

The company's management philosophy is to "contribute to society as a specialized manufacturer of surface treatment processes centered on thermal processing and establish ourselves as a corporate group with advanced technologies and a highly profitable structure." Shared Research has selected some of its key points and summarized them below.

When formulating its medium-term management plan, the company established a new long-term vision for 2030: "contribute to a prosperous future for people and nature." In terms of content, this vision is essentially the same as the company's current corporate philosophy. However, by making it clearer and more concise than the latter, the company has reaffirmed its commitment to both the ideals it has always held and the achievement of its future goals.

Mission

The company has established a mission to facilitate the realization of its renewed management philosophy and vision of contributing to a "prosperous future for people and nature." The mission of TOCALO's corporate group is "to enhance corporate value through continuous growth with an emphasis on ESG." In addition, the company has adopted to the following four initiatives to facilitate the execution of this essential mission.

1. Create high-quality and high value-added products (films) and provide them to our customers
2. Contribute to technologies that help in the preservation of the global environment
3. Make employees and their families proud to work energetically and safely at TOCALO
4. Be trusted by customers, shareholders, business partners, and local communities forever

By implementing these four initiatives, the company aims to achieve its absolute mission of enhancing "corporate value through continuous growth with an emphasis on ESG."

Advantageous future direction and three keys to growth as observed from the perspective of megatrends

In formulating its medium-term management plan, the company deeply analyzed changes affecting the global earnings environment ("megatrends"), including the launch of efforts targeting the achievement of carbon neutrality by 2050.

- Based on these analyses, the company has identified the following three megatrends as keys to future growth and identified the most advantageous direction it should take moving forward.

  - Rising seriousness of environmental issues
  - Technological shift toward information & communication technology (ICT) and digitalization
  - Resource and food shortages and population growth

In response to these three megatrends, the company plans to actively implement growth strategies, develop new products, and cultivate new markets. In addition, the company has identified specific themes for each of these three megatrends.

- With regard to the rising seriousness of environmental issues, the company identified the following three themes: adopting the use of non-fossil fuels, generating renewable energy, and establishing smart grids (dispersed power sources).
- The three themes the company selected for the technological shift toward ICT and digitalization were the arrival of the big data era, high-speed communication, and the spread of electric vehicles (EVs).
- In addition, the company chose the development of smart agriculture, the improvement of medical technology, and the diversification and expansion of recycling technology as its three themes for resource and food shortages and population growth.

Two initiatives of particular focus (growth strategies)

- Finally, the company says that it will focus on "People and the Environment (Nature)" as two core initiatives (growth strategies) on which its corporate group will place particular emphasis. In the area of "people," the company plans to develop applications for the semiconductor and FPD industries, and in the area of "environment (nature)," it plans to develop applications in the fields of energy and materials. However, these two growth strategies will be difficult to implement successfully within a short period of time. Accordingly, the company has stated that it is not attempting to achieve concrete results through these strategies by FY03/26; rather, it has presented them with the intention of indicating its future direction.

- The company also stated that it would work on "further developing its business model." In accordance with this intention, the company has grouped the 10 issues identified above into several thematic categories. "Conversion of customers into partners" and "targeting of markets aimed at diversifying sources of revenue" have been left to stand as separate and independent themes. "Enhancement of service system" and "global expansion" have been grouped under the theme "enhancement of market development." "Establishment of technological superiority" has been placed under its own theme, "strengthen technology development systems." Meanwhile, the company grouped "enhancement of manufacturing processes," "further enhancement of quality control systems," and "reduction of environmental impact" under the theme "advancement of manufacturing." Finally, "creation of comfortable working environments" and "enhancement of internal controls" were included under the theme "sustainable growth toward a 100-year company."

Numerical targets associated with the company's medium-term management plan

- Within its medium-term management plan, the company has set earnings targets for FY03/26, which is a key point in the the course the company will take to achieve its long-term vision for 2030. The launch pad (basis for comparison) will be results generated in FY03/21.

Earnings targets for FY03/26

- Sales: JPY53.0bn (versus JPY39.0bn in FY03/21; growth of 35.8% over five years)
- Recurring profit: JPY12.0bn (versus JPY8.9bn in FY03/21; growth of 34.6% over five years)
- Recurring profit margin: 22.6% (versus 22.8% in FY03/21; decrease of 0.2pp over five years)

Breakdown of JPY53.0bn sales target

- Semiconductor-related sales: JPY26.0bn (versus JPY18.2bn in FY03/21; growth of 43.0% over five years)
- Other sales (related to iron and steel, industrial machinery, etc.): JPY27.0bn (versus JPY21.1bn in FY03/21; growth of 27.9% over five years)

- The basis for comparison the company is using to calculate rates of change in business performance over the five-year duration of its medium-term management plan is results generated in FY03/21 (the launch pad year). However, in FY03/2021, a decrease in retirement benefit expenses stemming from one-time factors boosted recurring profit by the same amount (approximately JPY358mn). Therefore, the company believes that its recurring profit in FY03/21 was effectively about JPY8.6bn, and maintains that this figure should be used as a basis for comparison. Using this JPY8.6bn figure as a comparative launch pad, Shared Research estimates that recurring profit will grow at a rate of 40.4% over the course of the five-year plan. The company projects that its recurring profit margin in FY03/26 will decline by 0.2pp compared to FY03/2021, but as discussed later on in this report, this prediction was made because the company expects a temporary increase in its depreciation burden due to ongoing high levels of capital investment. This projected recurring profit margin is still commensurate with the benchmark of 20% set by the company as a profitability target.

- Although the company did not disclose specific figures, it established sales targets for new businesses in fields such as agriculture and medical care in FY03/26. Fundamentally, these new businesses do not constitute a part of the company's current (existing) businesses. The company has also indicated that it will divide its existing businesses into three categories: businesses to be expanded (semiconductor, FPD, and environment and energy-related operations), businesses to be downsized, and businesses to be maintained. The TOCALO did not specifically indicate which businesses it plans to downsize or maintain.

- TOCALO does not, however, view these earnings targets as goals that it is fully committed to achieving, but rather as benchmarks for sustainable growth. The company maintains this viewpoint because results generated through its semiconductor-related operations, which will drive its performance moving forward, are highly dependent on market trends. Currently, the company's semiconductor-related sales are growing in line with expansion in the market for wafer fab equipment used in front-end processes associated with semiconductor manufacturing equipment. However, past trends have proven that performance within the semiconductor market varies greatly between periods of expansion and contraction, and the company has accordingly decided to closely monitor market trends and revise its forecasts on a regular basis.

Capital expenditures and research and development expenses

Capital expenditures

- In order to generate this expansion in earnings, the company will continue to make high levels of capital investment: over the five years ending with FY03/26, the company plans to invest between JPY25.0bn and JPY35.0bn (between JPY5.0bn and JPY7.0bn per year) to maintain and improve its technological superiority. Listed below is a summary of the company's most recent capital expenditures.

    - FY03/16: JPY3.7bn
    - FY03/17: JPY5.9bn
    - FY03/18: JPY6.4bn
    - FY03/19: JPY6.0bn
    - FY03/20: JPY2.3bn
    - FY03/21: JPY4.8bn
    - FY03/22: JPY4.4bn
    - FY03/23 (projected): JPY5.5bn

In its medium-term management plan, the company projects that capital expenditures will remain at roughly the same peak level at which trended during the period spanning from FY03/17 through FY03/19 for the next five years (including FY3/2022).

These high levels of capital expenditure are mainly related to efforts aimed at increasing semiconductor production, new technological processes, and production efficiency. The company has indicated how total capital expenditure will divided among these categories, but Shared Research assumes that the largest share of this total will be allocated to efforts aimed at increasing semiconductor production for at least the first two to three years of the plan (which include FY03/22).

Research and development expenses

- Additionally, the company has indicated that it will maintain R&D expenses at a rate of about 3% of consolidated sales. Included below is a summary of the company's most recent research and development expenses.

    - FY03/20: JPY1.2bn (3.0% of sales)

- FY03/21: JPY1.3bn (3.3% of sales)
- FY03/22: JPY1.3bn (3.0% of sales)
- FY03/23 (projected): JPY1.4bn (3.0% of sales)

If we were to calculate projected research and development expenses in FY03/26 (the final year of the five-year medium-term management plan) using this ratio of 3%, they would amount to approximately JPY1.6bn.

Establishment of financial targets and shareholder return goals

In its medium-term management plan, the company has also set financial targets and shareholder return goals.

Maintenance of a strong financial position

- The company aims to maintain an equity ratio of about 70% and continue to conduct effectively debt-free management.
- Most recently, the company reported equity ratios of 65.9% in FY03/20 and 68.9% in FY03/21. It projects an equity ratio of 70.2% in FY03/22.

Maintenance of earning power (ROE, recurring profit margin, etc.)

- Target the achievement and maintenance of an ROE of 15%
- Most recently, the company reported ROEs of 11.3% in FY03/20 and 12.9% in FY03/21. It projects an ROE of 14.2% in FY03/22.

- Target the achievement and maintenance of a recurring profit margin of 20%
  Most recently, the company reported recurring profit margins of 17.9% in FY03/20 and 22.8% in FY03/21. It projects a recurring profit margin of 24.0% in FY03/22.

- Maintain and improve EPS

Dividend payout ratio

- Issue stable dividends equivalent to at least one-third of its net income
- Most recently, the company generated dividend payout ratios of 34.5% in FY03/20 and 38.9% in FY03/21. It projects a dividend payout ratio of 36.7% in FY03/22.

- Target the achievement and maintenance of DOE of 5%
  Most recently, the company reported DOE of 3.9% in FY03/20 and 5.0% in FY03/21. It projects DOE of 5.3% in FY03/22.

Initiatives aimed at reducing environmental impact

At the end of its medium-term management plan, the company outlined two initiatives aimed at reducing its environmental impact: an initiative consisting of measures targeting the elimination of greenhouse gas emissions and another initiative comprising measures designed to prevent water and air pollution.

Measures targeting the elimination of greenhouse gas emissions

- Exploration of thermal spraying methods that do not use fossil fuels
- Reduction of electricity consumption through the improvement of treatment processes
- Application of renewable energy

As a broader target that includes the implementation of these initiatives, the company is aiming to reduce greenhouse gas emissions in FY2030 by 46% compared to levels in FY2013. This rate of reduction is the same as the rate specified in targets issued by the government of Japan. However, the company has designated 2021 and 2022 as a period during which it will prepare for the implementation of these initiatives.

Measures designed to prevent water and air pollution

Situational awareness and improvement efforts to be applied to all processes associated with the company's business activities

As mentioned above, the medium-term management plan that the company announced on November 9, 2021 along with its long-term vision for 2030 is the first that the company has every publicly announced. Accordingly, comparing or contrasting it with a previous plan is impossible. However, Shared Research had previously included the following description of the company's medium-term strategy in this report. For the time being, the section below will remain in the report for purposes of reference and comparison with the company's newly announced medium-term management plan. This section will be removed from the report at roughly the same time at which the company announces its financial results for FY03/22.

Overview: Achieving sustainable growth

TOCALO does not release a medium-term business plan or numerical targets, but defines its strategy for sustainable growth as the development of new products and markets. The company focuses on five target markets: semiconductor and FPD; energy and environment; advanced materials (high-performance iron and steel materials, highly functional film, paper/nonwoven fabrics, etc.); transportation (high-speed railway, aircraft, etc.); and medical care.

TOCALO's action plan toward sustainable growth includes the following three points:

1. Diversification of earnings sources: Product development in target markets and expanded applications in existing markets
2. Deep cultivation of business within the semiconductor and FPD sectors: Increase production capacity in preparation for market expansion and develop next-generation film technologies
3. Global expansion: Strengthen maintenance businesses, localize operations (subsidiaries and affiliates) and license technologies (licensing business)

Building on success

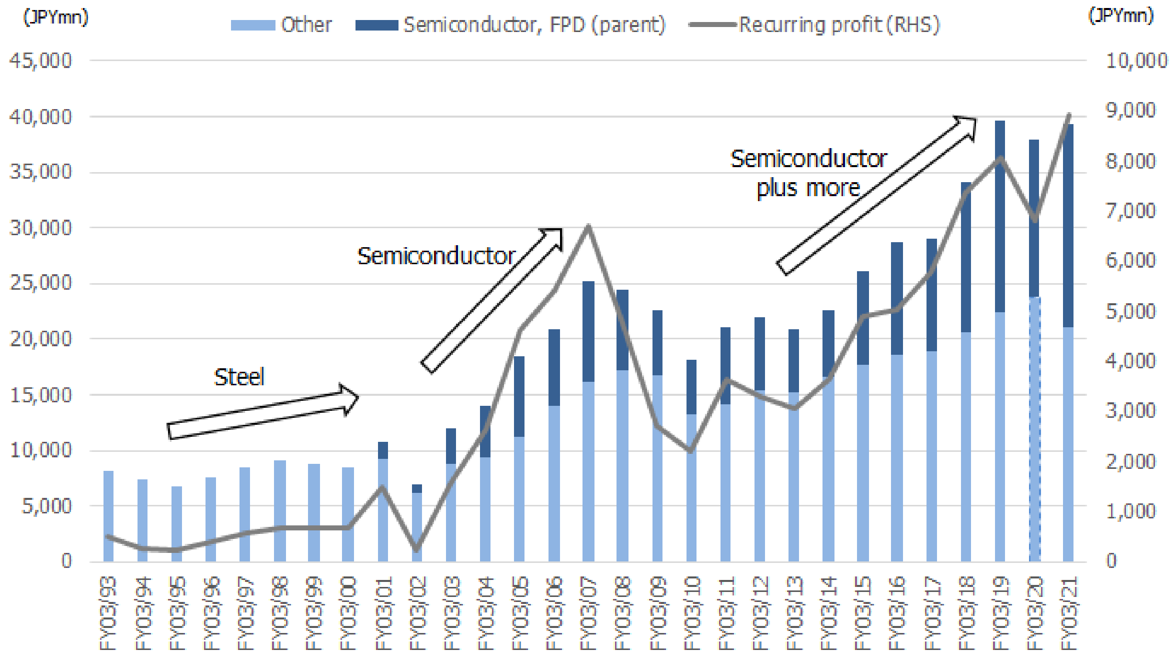
Made progress in the semiconductor and FPD fields—the largest pillar among TOCALO's target markets

TOCALO's first encounter with a semiconductor equipment maker dates back to the winter of 1994. Before dawn on January 17, 1995, the Great Hanshin earthquake caused the company's headquarters to collapse and also damaged the company's factories in Kobe and Akashi. Despite this tragedy, TOCALO achieved fast recovery through its efforts in the semiconductor and FPD fields. The company then pushed forward with its development of thermal spraying technologies for semiconductor equipment, and in 1997, was awarded an order to apply thermal spraying to etching chamber parts. The company calls 1997 the first year of its semiconductor era. In 2000, TOCALO began mass producing new ceramic coatings through thermal spraying and began applying its thermal spraying technology to the mass production of chamber parts in etching equipment for 300mm wafers. These moves spurred steady progress for the company. The feature size of state-of-the-art semiconductors (very large-scale integrated circuits) is becoming miniaturized and the structure of these semiconductors multi-layered; and the trend toward using dry etching processes (use of plasmas or etchant gases to remove portions of substrate layers based on specific patterns defined by photoresist masks) is becoming increasingly more common. Moving forward, TOCALO will further strengthen its production capacity and enhance its development of next-generation coating technology.

Diversified revenue sources by offering a range of coatings from thick to thin

In September 2004, the company acquired all shares of Japan Coating Center Co., Ltd. (JCC) to enter the field of physical vapor disposition (PVD), which enables the formation of a thin coating. The PVD process adds functionality, such as abrasion and corrosion resistance, to the workpieces (cutting tools, metallic molds, etc.) by forming hard, dense, thin, and highly adhesive ceramic coatings on their surfaces. These coatings are generated by ionizing metals, including titanium and chromium, in a vacuum with reactive gases. Through the acquisition of JCC, the company began covering a wide range of coating technologies from thick coating created by thermal spraying and other surface treatments to thin coating made by the PVD process. This setup will give the company more breadth and depth in target market areas.

Sales and recurring profit



Source: Shared Research based on company data

Business

Business overview

Surface treatment centered on thermal spraying

TOCALO comprises a parent company, five consolidated subsidiaries, one non-consolidated subsidiary, and one affiliated company. It primarily conducts thermal spraying but also provides peripheral services, including the Toyota diffusion (TD) process, zinc-allow coating (ZAC), plasma transferred arc (PTA) process, and physical vapor deposition (PVD) process. These are all surface treatments that improve the performance of the workpiece through the application of coatings that have different properties from the substrate (the material to which spraying deposit is applied).

The company's strength is in R&D aimed at finding possibilities for new coatings. TOCALO is also proficient in solution-based marketing that resolves customers' worksite issues. Rather than just providing simple proposals, the company actively works with customers to develop new applications, as seen in its partnership with Tokyo Electron, and this approach has propelled it to gain top market share in the industry. The company emphasizes three-pronged management involving "manufacturing, marketing, and technological development."

Segments

By segment, Thermal Spraying (Parent) accounted for 75.4% of sales in FY03/22, while Domestic Subsidiary accounted for 5.5%, Other Surface Treatments 5.7%, Overseas Subsidiaries 13.0% and Royalty Income 0.4%. As for recurring profit in FY03/21, Thermal Spraying (Parent) accounted for 76.5% of the total, Domestic Subsidiary 4.5%, Other Surface Treatments 4.4%, and Overseas Subsidiaries 14.5%. Overseas sales, which comprised 21.1% of total sales in FY03/22, primarily came from Japanese companies that have expanded abroad. While some overseas competitors sell thermal spraying materials and equipment in addition to providing contracted treatment services, TOCALO specializes in services. The company has licensing agreements with a number of overseas companies including competitors and receives royalty income (JPY171mn in FY03/22).

Breakdown of sales by segment

By segment	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,294**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	11.5%
Thermal Spraying (Parent)	16,324	19,176	21,933	22,309	26,183	30,400	28,221	30,141	33,043
YoY	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%	9.6%
% of total	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	76.7%	75.4%
Domestic Subsidiary (PVD process)	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018	2,399
YoY	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%	18.9%
% of total	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.1%	5.5%
Overseas Subsidiaries	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800	5,695
YoY	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%	18.6%
% of total	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.2%	13.0%
Other Surface Treatments	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112	2,502
YoY	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%	18.5%
% of total	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%	5.7%
Royalty income	-	-	-	-	-	-	-	-	171
YoY	-	-	-	-	-	-	-	-	-
% of total	-	-	-	-	-	-	-	-	0.4%

Source: Shared Research based on company data

Breakdown of sales by region

By region	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,073**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.1%	12.1%
Domestic	18,835	21,609	23,678	24,407	28,206	32,155	30,543	30,350	34,568
YoY	0.6%	14.7%	9.6%	3.1%	15.6%	14.0%	-5.0%	-0.6%	13.9%
% of total	83.3%	82.9%	82.4%	84.3%	82.7%	81.3%	80.6%	77.7%	78.9%
Overseas	3,764	4,459	5,068	4,557	5,903	7,403	7,352	8,722	9,245
YoY	69.9%	18.5%	13.7%	-10.1%	29.5%	25.4%	-0.7%	18.6%	6.0%
% of total	16.7%	17.1%	17.6%	15.7%	17.3%	18.7%	19.4%	22.3%	21.1%

Source: Shared Research based on company data

Business model

Focus on functional thermal spraying

One of TOCALO's strengths is its ability to handle a wide variety of surface treatments, ranging from thick coating (e.g., thermal spraying, TD process, ZAC, and PTA process) to thin coating (e.g., PVD process). Of the different categories in thermal spraying (metalized contact thermal spraying, maintenance thermal spraying, and functional thermal spraying), the company excels in functional thermal spraying, which is high value-added and has strong growth potential. It has captured more than 40% of the thermal spraying market in Japan (scale of about JPY60.0bn in 2018; source: Yano Research Institute) and holds the top share.

Key phrases that describe TOCALO

- A coating shop: The company's sales come from coating treatment fees. Although it is a manufacturer, it does not make original products. Workpieces inside of the company's factories belong to its customers.

- Niche business in a niche market: TOCALO's coating treatments are mainly applied to goods and manufacturing equipment components. The customers are manufacturers spanning a wide range of sectors from industrial to lifestyle-related, resulting in a customer mix that helps TOCALO navigate through changing economic climates.

- Made-to-order production: The company's coating technology is both important and essential to customer production lines and products. Accordingly, the company develops coatings that are specially adjusted for each customer.

- R&D driven: By responding to advanced technological demand, the company targets further growth that will enable it to meet diverse customer needs.

Characteristics of thermal spraying

Thermal spraying is a surface coating treatment that uses thermal energy to create molten or semi-molten materials, which—through the addition of kinetic energy—are simultaneously atomized into fine droplets that are emitted at high speeds (spraying). These droplets then make contact with and accumulate on the workpieces, creating a coating. Since thermal spraying can accommodate broad ranges of temperatures and speeds generated from thermal and kinetic energy, it allows for the application of various spraying materials as long as they can be turned to a molten or semi-molten state. Furthermore, there are relatively few limitations on substrates (the material to which spraying deposit is applied), allowing for a high degree of freedom when choosing which spraying and substrate materials to use together. Compared to surface treatments such as plating or physical vapor deposition, coating layers created through thermal spraying do not excel in terms of structural control and density. However, the technology allows for broad selection of materials and is characterized by its high speed and capacity to be applied to large surfaces.

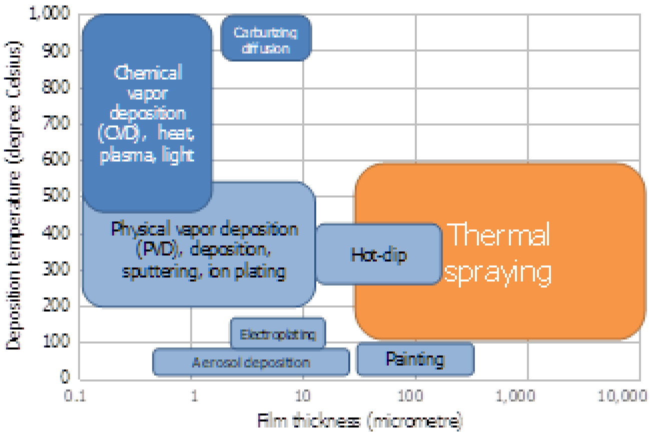
Coating technologies

Method	Coating material	Substrate material	Adhesion	Deposition rate (mm/h)	Principle	Film thickness
Thermal spraying	Metal, alloy, ceramics, plastics, glass	Metal, ceramics, plastics, wood, paper product	Excellent	Flame: 15kg/h Arc: 25kg/h	Thermal spraying; spraying; stacking	Thick
Plating	Metal, alloy	Materials resistant to corrosion by plating liquid	Relatively good	0.01–0.25	Wet plating; reduction of ion; precipitation	Thin, thick
Chemical vapor deposition (CVD)	Heat-resistant metal, sulfide, ceramics, selenium compound	Materials resistant to heat (500–2000 degree Celsius) and chemical corrosion by evaporation materials	Relatively good	0.01–2.00	Chemical reaction of gases; precipitation	Thin
Vacuum deposition	Pure metal, alloy, compound	Surface without gas emission	Good with substrate heating; Excellent when substrate is cleaned with sputtering	0.015–4.500	Vaporization; precipitation	Thin
Ion plating	Pure metal, alloy, carbide, nitride, oxide	Surface without gas emission	Excellent	0.005–1.500	Dry plating; reduction of ion; precipitation	Thin

Source: Shared Research based on data from the Japan Thermal Spray Society

Coating technologies can be divided into thick coating, which includes thermal spraying and plating, and thin coating, which includes chemical vapor deposition (CVD), vacuum deposition, and ion plating. Plating has long been used as a coating technique because it is inexpensive and produces relatively high adhesive properties. However, when compared with thermal spraying, plating takes more time, only allows for metals and alloys to be used as coating materials, and has an extremely large impact on the environment. Thermal spraying, on the other hand, is widely used as a coating technology in industrial circles despite its higher costs compared to plating, because the method coats quickly and is applicable to a wide range of coating materials, including metals, ceramics, plastics, and glass.

Coating thickness and film formation temperatures by type of surface treatment



Source: Shared Research based on company data

Comparison between electroplating and thermal spraying

Category	Method	
	Electroplating (hard chrome plating)	Thermal spraying (WC/12Co cermet)
Process	Wet	Dry
Coating characteristics	Difficult with complex shape	Difficult with complex shape
Deposition rate	Low	High
Coating material selection	Extremely limited	Very wide
Film adhesion	High	High
Film hardness	Hv800–900	Hv1100 or higher
Hydrogen embrittlement	Highly susceptible	None
Environmental impact	Very large	Small

Source: Shared Research based on data from the Japan Thermal Spray Society

Thermal spraying applications

Purpose	Sprayed material	Application
Corrosion resistance	Zinc, aluminum, aluminum-zinc alloy, plastics, stainless steel	Chemical plants, steel structures, marine structures
Abrasion resistance	Cemented carbide (WC/Co), self-fluxing alloy, Co-Cr-Al alloy, Al2O3-TiO2, stainless steel)	Hot-rolling hearth roll, press mold, hot-extrusion dies, pump shaft sleeves and seals, water wheel paddles, printer dampening rollers, various mechanical parts
Gap adjustment	Si-Al-polyester, Ni-C	Jet engine compressor sliding units, housing for turbo charger compressor
Heat resistance	Zirconia (ZrO2-Y2O3, ZrO2-CaO, ZrO2-MgO), M-Cr-Al-Y alloy, Ni-Cr alloy	Gas turbine blades, jet engine combustion chamber wall, rocket engine nozzles
Insulation property	Al2O3	Electric parts
Conductive property	Cu, Al, Ni-Cr alloy	Electric heaters
Decoration	Brass, various types of ceramics	Furniture, manhole covers
Biocompatibility	Pure titan, hydroxyapatite	Artificial bones, artificial hip prostheses, artificial tooth roots
Other	Zirconia	Oxygen sensors, electrolytes for solid oxide fuel cell

Source: Shared Research based on data from the Japan Thermal Spray Society

Thermal spraying equipment is categorized by the heat source it uses, which includes combustion gas, electricity, and laser. Based on the types of spraying material and gas pressure levels applied, equipment using combustion gas can be further broken down into wire, rod, or powder flame spraying equipment, high velocity flame spraying equipment (for high velocity oxy fuel [HVOF] and high velocity air fuel [HVAF] processes), and detonation spraying equipment (for D-gun treatment). Equipment using electricity as the heat source includes arc spraying equipment (for wire spraying that utilizes arc discharge) and plasma spraying equipment (for atmospheric plasma spraying, low-pressure plasma spraying, high-pressure plasma spraying, and underwater plasma spraying among others). Compared to atmospheric plasma spraying, low-pressure plasma spraying allows for faster spraying of molten particles, and can form a coating with higher density and bonding strength. It is widely used as an indispensable thermal spraying method in advanced fields such as high-performance coating for components of semiconductor and FPD manufacturing equipment.

Heat source	Spraying method		Material
Combustion gas	Flame spraying	Wire flame	Metal wire, ceramic-filled plastic tube
		Rod flame	Ceramic rod
		Powder flame	Metal, ceramics, plastic
	High velocity flame spraying	High velocity oxy fuel (HVOF)	Metal, cermet
		High velocity air fuel (HVAF)	Metal, cermet
	Detonation spraying	Detonation gun process	Metal, ceramics
Electric	Arc spraying		Metal wire, ceramic-filled metal tube
	Plasma spraying (direct current [D.C.])	Atmospheric	Oxide ceramics
		Low-pressure	Metal, cermet
		High-pressure	Ceramics, intermetallic compound
		Underwater	
		Water-stabilized	Oxide ceramics
	Radio frequency induction plasma spraying		Ceramics, metal
	Electromagnetic acceleration plasma spraying		Ceramic rod, metal rod
	Wire explosion spraying		Metal wire
	Electrothermally exploded power spray		Conductive ceramic powder, metal powder
Laser beam	Laser spraying		Metal wire, ceramics
Other	Laser plasma hybrid spraying		Ceramics, metal
	Cold spray		Metal, cermet, some ceramics

Source: Shared Research based on material from Japan Thermal Spray Society

Wire flame spraying method: Main characteristics are as follows (the same characteristics also apply to arc spraying):
1) The workpiece can be held at a low temperature during spraying, preventing undesirable thermal impact such as dimensional changes, deformation, cracking, or deterioration of strength.
2) Allows for a wide selection of coating thickness (normally 0.1–5.0 mm)
3) Produces a coating with excellent abrasion resistance because the particles that form the coating via this method achieve hardness beyond that of their raw material state. Hard materials, such as metallic oxide, nitride, and carbide are also interpositioned and dispersed within the coating for added strength.

Arc spraying method: Advantages over flame spraying that uses combustion gas are as below:
1) Thermal spraying capacity is more than twice as high and is more efficient when applied to articles with large surface areas
2) Has a higher degree of sectional adhesion, leading to stronger overall adhesiveness
3) Offers higher compressive strength, enabling use under heavy loads

Plasma spraying method: "Plasma" refers to ionized gases that form when gases are heated and their molecules separate into atoms and further break down into electrons and positive ions (electrolytic dissociation). Plasma spraying is a thermal spraying treatment that utilizes a high-temperature and high-speed gas jet, or "plasma jet," that gathers these gases and uses them to melt and spray out metals, alloys, and refractory materials including various types of ceramics, or cermet, which is a combination between ceramics and metals or alloys. Plasma spraying methods include atmospheric plasma spraying (APS), which is conducted in normal atmospheric air, and vacuum plasma spraying (VPS), which is conducted within a chamber with atmosphere and pressure controls.

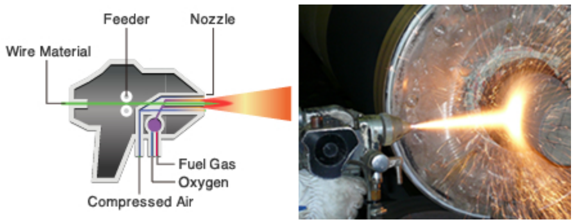
Wire flame spraying: A thermal spraying treatment in which metal or alloy wire is melted by an oxy acetylene (propane) flame, atomized to form a fine spray, and propelled to the substrate to form a coating. Both wire flame spraying and arc spraying are categorized as wire treatments. A wide range of wires can be used, including materials with low melting points such as aluminum, zinc, and babbit metals, as well as metals and alloys such as copper, bronze, monel, carbon steel, stainless steel, and molybdenum.

Rod flame spraying: A thermal spraying treatment in which ceramic rods molten by a combustion gas flame (primarily oxy acetylene) is atomized into particles and sprayed onto the substrate. Only particles that have been completely melted are propelled to the substrate using compressed air, forming a ceramic coating that is high density and highly adhesive.

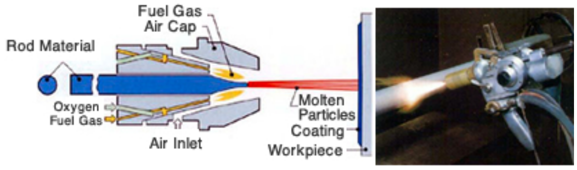
Powder flame spraying: A thermal spraying treatment in which self-fluxing alloys* in powder form are molten by an oxy acetylene (propane) flame. Particles of the molten material are then sprayed onto the substrate. The method also involves a fusing treatment performed after spraying (heating the applied coating to its melting point), which strengthens the bond between the coating and the substrate, forming a nearly nonporous coating that offers high degrees of adhesion and excellent corrosion resistance. In the fusing and solidifying process, the coating deposits a solid layer of boride and carbide, also adding high abrasion resistance to the coating. The treatment is also characterized by excellent resistance to corrosion from most chemical solutions, erosion resistance, cavitation erosion resistance, and hot hardness.
*Self-fluxing alloy: any alloy used in thermal spraying which does not require the addition of a flux in order to wet the substrate and coalesce when heated.

High velocity flame spraying: In high velocity oxy fuel (HVOF) spraying, a type of high velocity thermal spraying, the pressure inside the spray gun combustion chamber is raised to generate a high velocity flame that is comparable to a flame produced through explosive, detonative combustion. Spraying material in powder form, fed into the center of the jet stream generated by this flame, achieves a molten or semi-molten state; the resulting particles are then continuously sprayed onto the substrate at a high velocity. This method allows for the creation of an extremely dense and adhesive coating because it forces the sprayed particles to collide with the substrate at supersonic speeds. The true value of HVOF spraying lies in its capacity to form a carbide cermet coating that is particularly resistant to abrasion. This method produces coatings of more uniform quality than detonation spraying because it forms coatings continuously.
Source: Shared Research based on company data

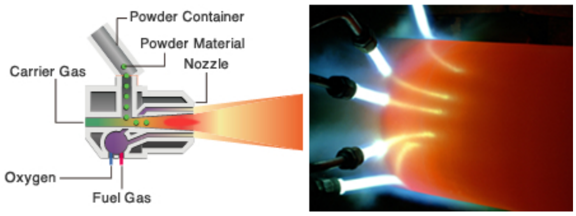
Wire flame spraying (combustion gas)



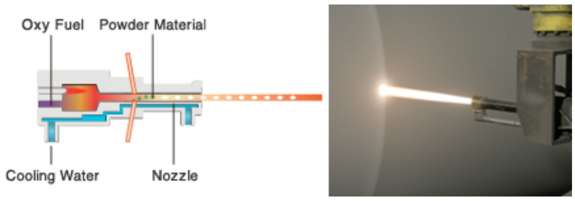
Rod flame spraying (combustion gas)



Powder flame spraying (combustion gas)



High velocity flame spraying (combustion gas)



Source: Company data

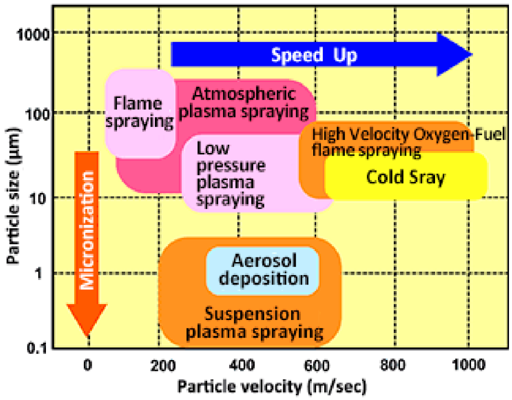
Arc spraying: This is a method that involves feeding two conductive wires (one positive and one negative) through to the gun head of a thermal spraying gun. The two wires meet at the tip of the gun (the nozzle), arc against each other, and create a molten material, which is then atomized into fine spray and propelled to the substrate using compressed air. Along with the wire flame spraying method, it is generally known as a wire treatment. All metals and alloys that can be processed into wires are compatible with electric arc spraying.

Plasma spraying: "Plasma" refers to ionized gases that form when gases are heated, and their molecules separate into atoms and then break down further into electrons and positive ions (electrolytic dissociation). A "plasma jet" is a high-speed gas jet formed by a convergence of plasma-state gases. "Plasma spraying" is a thermal spraying method that involves using a plasma jet with extremely high energy density and a temperature of over 10,000° Celsius to melt pulverized metals and alloys, ceramics that are refractory materials, or cermets (a combination between ceramics and metals or alloys). After being melted, these materials are sprayed onto the substrate. This method allows a high degree of freedom when selecting spraying materials and is characterized by the sprayed coating that is highly adhesive to the substrate.

Atmospheric plasma spraying (APS): a type of plasma spraying conducted under normal atmospheric pressure. APS coatings are a product of optimal material selection (i.e., studying the usage environment of the substrate and choosing the right material from a range of ceramics with varying characteristics), appropriate coating design, and stringent execution management, and are actively used in a variety of capacities. APS can also be simply referred to as "plasma spraying."

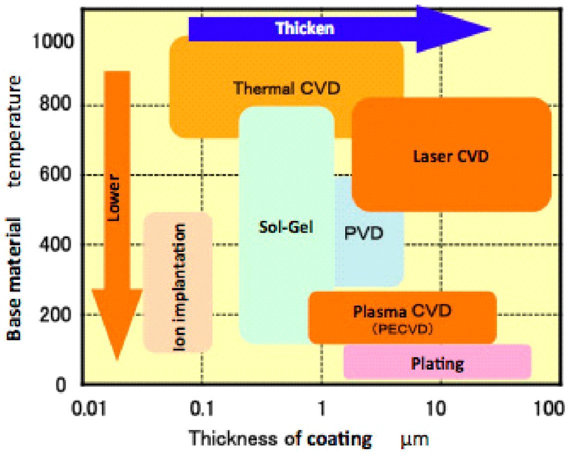
Low-pressure plasma spraying: A plasma spraying treatment that is conducted in an atmosphere- and pressure-controlled chamber. Prior to the spraying, the chamber is first evacuated, then filled with inert gas at a low pressure. The procedure is also referred to as vacuum plasma spraying (VPS). This thermal spraying method has three main characteristics: it does not damage material properties, and thus produces a coating with functionalities that are exactly as designed; active metals such as titanium can be used as coating material; and the molten particles that fly at a higher velocity than APS allow for a very dense coating with high bonding strength. This method is regarded as essential for the formation of high-performance coatings applied in advanced fields.
Source: Shared Research based on company data

Types of thermal spraying technology

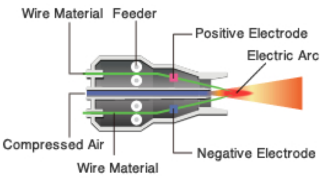


Source: Company data

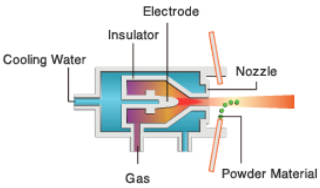
Types of coating technology

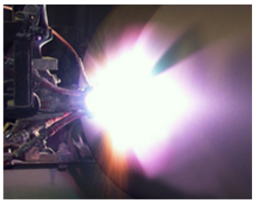


Arc spraying (electricity)

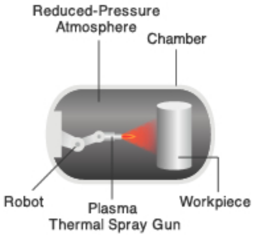


Atmospheric plasma spraying (electricity)



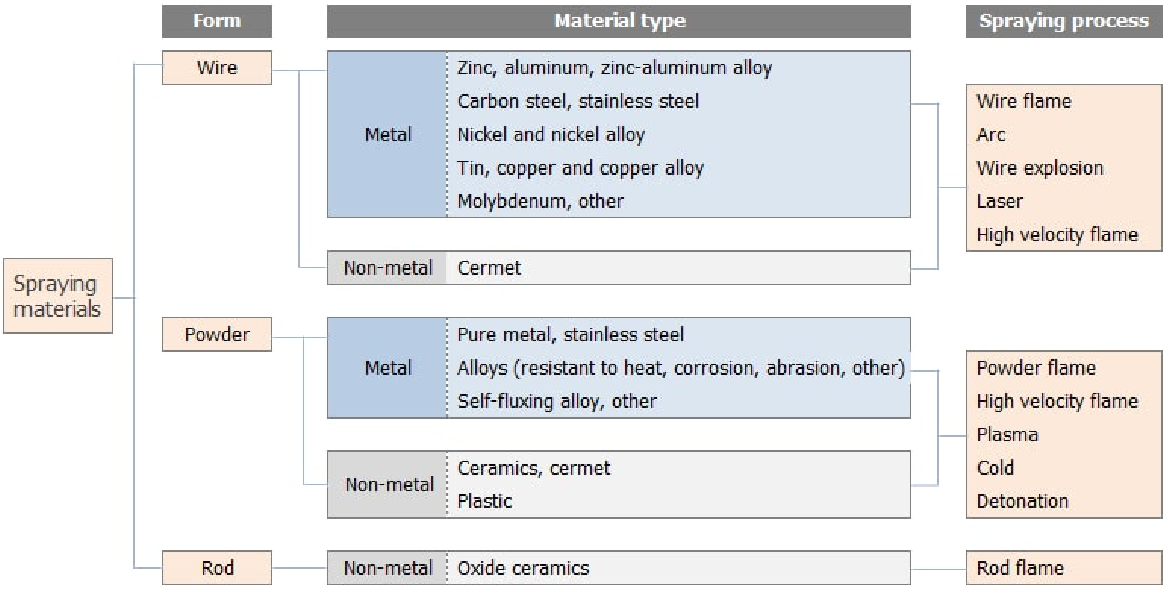


Low-pressure plasma spraying (electricity)



Source: Company data

Spraying materials—types and corresponding treatment methods



Source: Shared Research based on data from the Japan Thermal Spray Society

Surface treatments customized to individual orders

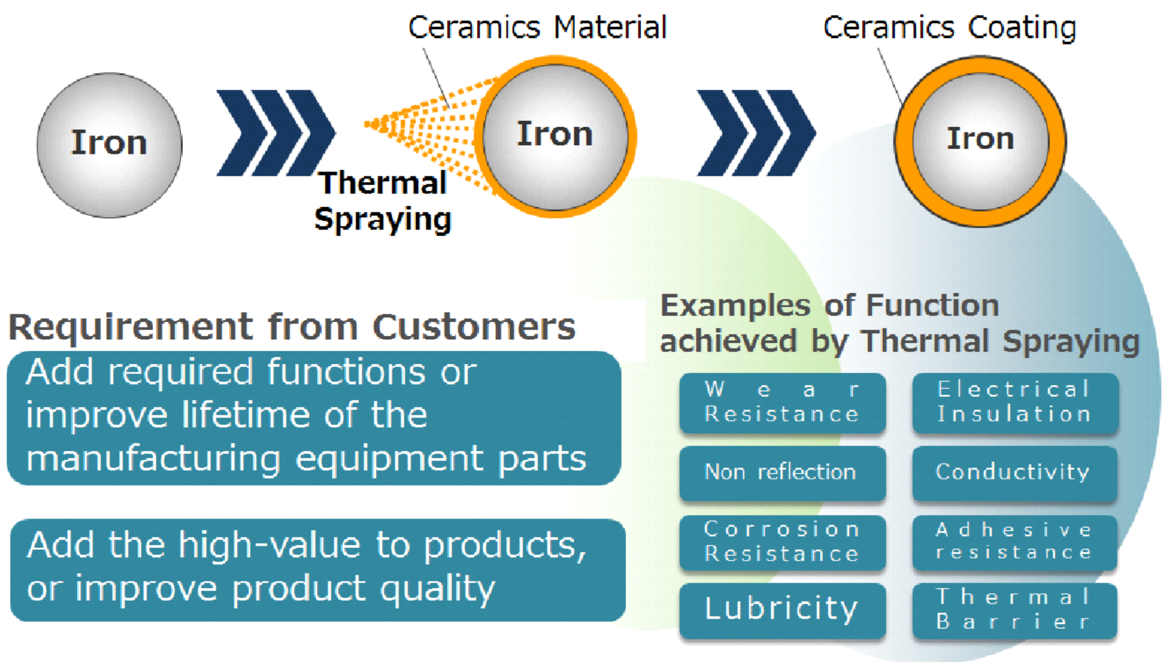
TOCALO conducts all of its surface treatments through a made-to-order production system. Accordingly, quantity is not a business priority. Once it receives an order from a customer, TOCALO has the workpieces (e.g., customers' goods and components of their manufacturing equipment) delivered to its factory, where they are kept while surface treatment is applied. The company procures the coating materials and generates sales by providing coating services. When the workpieces are too large to be removed from customer factories, as is the case with a yankee cylinder used in tissue paper production, TOCALO employees visit these factories to perform coating operations. As of end-FY03/22, the company had 1,176 full-time and directly hired temporary employees on a consolidated basis. When including temporary employees received on dispatch, staff totals are between 1,500 and 1,600 employees.

The company's operations include a mixture of semiautomated treatments, such as plasma spraying, and treatments that require human labor, such as flame spraying. Even the semiautomated treatments are considerably labor-intensive because the orders entail a wide variety of workpieces, each in small volume and requiring pretreatment, setting modification, and inspection processes done manually.

TOCALO specializes in surface treatments for industrial manufacturing equipment. Its surface treatment lines, mainly for thermal spraying, are designed to suit workpieces that have relatively large surface areas. Even in the case of handling small workpieces, the company responds to customer specifications that are becoming more diverse such as treatment on just specific parts of a component.

Among specific customer needs is the improvement of functionality and durability of the manufacturing equipment in their factories. For example, applying coatings to production line rolls in steel mills helps extend the lives of these rolls and raises the quality of the steel plates they produce. Customers also express the need to add value and enhance the qualities of their products through the application of functional coatings. Treatments of this nature include the coating for parts used in semiconductor equipment and gas turbine components. Cermet (ceramic metal) is a representative coating material. "Cermet" is a coined word that expresses both the hardness of ceramics and toughness of metal. The material's main components are titanium and tungsten, which give it excellent resistance to corrosion, make adhesion less likely, and allow for a clean finish of the surfaces. Thermal spraying treatment adds functional properties, such as abrasion resistance, seize resistance, corrosion resistance, lubricity, electric insulation, non-adhesiveness, water resistance, and heat resistance, in a relatively efficient manner.

Principle and effects of surface treatments



Source: Company data

Cost structure

In FY03/22, TOCALO reported a GPM of 38%, an SG&A ratio of 14%, and an OPM of 23%, on a consolidated basis. Labor cost and outsourcing cost accounted for 29% and 25% of total manufacturing costs at the parent respectively, while materials accounted for 14%, consumables 11%, utilities 4%, depreciation 8%, and other costs 10%. TOCALO's business is labor-intensive, with personnel expenses also accounting for 50% of SG&A expenses. We understand that full operational automation in the surface treatment business is difficult to attain because specifications are different for each customer and workpiece.

売上原価 (総製造費用, 単体) の推移

Cost of sales	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(parent, JPYmn)	Parent	Parent	Parent	Parent	Parent	Parent	Parent
Materials costs	2,404	2,178	2,542	3,110	2,794	2,844	3,249
% of total	15.0%	13.8%	13.3%	13.9%	13.0%	13.3%	13.7%
Labor costs	4,310	4,212	5,015	6,158	6,066	6,227	6,806
% of total	26.9%	26.6%	26.2%	27.6%	28.2%	29.1%	28.8%
Outsourcing costs	4,658	4,622	5,407	5,916	5,653	5,353	5,833
% of total	29.1%	29.2%	28.3%	26.5%	26.3%	25.0%	24.7%
Other costs	4,657	4,802	6,153	7,139	6,971	7,000	7,742
% of total	29.1%	30.4%	32.2%	32.0%	32.4%	32.7%	32.8%
Utility	780	734	890	1,006	995	899	1,051
% of total	4.9%	4.6%	4.7%	4.5%	4.6%	4.2%	4.4%
Consumables	1,404	1,518	1,931	2,149	1,936	2,130	2,539
% of total	8.8%	9.6%	10.1%	9.6%	9.0%	9.9%	10.7%
Depreciation	967	1,094	1,225	1,804	2,020	1,864	1,851
% of total	6.0%	6.9%	6.4%	8.1%	9.4%	8.7%	7.8%
Other	1,506	1,456	2,107	2,180	2,020	2,107	2,301
% of total	9.4%	9.2%	11.0%	9.8%	9.4%	9.8%	9.7%
Total cost of manufacturing	16,029	15,814	19,118	22,325	21,486	21,425	23,632

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

Changes in SG&A (consolidated)

SG&A expenses (cons., JPYmn)	FY03/16 Cons.	FY03/17 Cons.	FY03/18 Cons.	FY03/19 Cons.	FY03/20 Cons.	FY03/21 Cons.	FY03/22 Cons.
Directors' compensations	306	328	362	421	378	338	295
% of total	6.2%	6.7%	6.5%	7.0%	6.1%	5.7%	4.7%
Personnel expenses	2,311	2,290	2,504	2,660	2,791	2,788	3,036
% of total	47.0%	46.8%	45.2%	44.2%	44.8%	47.1%	48.0%
Personnel expenses	1,857	1,974	2,135	2,257	2,360	2,448	2,541
% of total	37.7%	40.4%	38.6%	37.5%	37.9%	41.3%	40.1%
Provision for bonuses	279	298	323	326	318	402	444
% of total	5.7%	6.1%	5.8%	5.4%	5.1%	6.8%	7.0%
Retirement benefit expenses	175	18	46	77	113	-62	51
% of total	3.6%	0.4%	0.8%	1.3%	1.8%	-1.0%	0.8%
Transportation and communication expenses	352	352	355	365	342	206	217
% of total	7.2%	7.2%	6.4%	6.1%	5.5%	3.5%	3.4%
Depreciation	52	60	138	224	273	273	209
% of total	1.1%	1.2%	2.5%	3.7%	4.4%	4.6%	3.3%
R&D expenses	740	719	771	844	974	1,068	1,080
% of total	15.0%	14.7%	13.9%	14.0%	15.6%	18.0%	17.1%
Other	863	853	1,037	1,505	1,471	1,251	1,492
% of total	17.5%	17.4%	18.7%	25.0%	23.6%	21.1%	23.6%
Total	4,921	4,890	5,536	6,019	6,229	5,924	6,329

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

Group structure

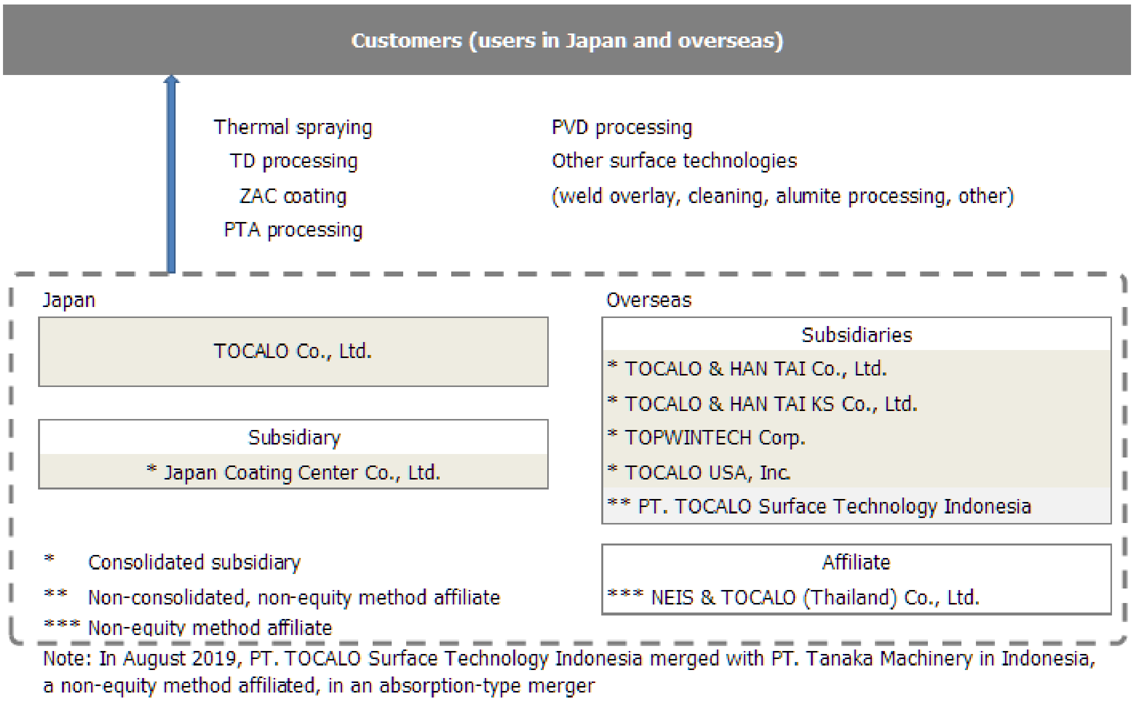
Overview

TOCALO includes a parent company, five consolidated subsidiaries, one unconsolidated subsidiary, and one affiliated company. It primarily conducts thermal spraying treatments but also performs services in peripheral fields, including the Toyota diffusion (TD) process, zinc alloy coating (ZAC), plasma transferred arc (PTA) process, and physical vapor deposition (PVD) process. All of these processes are types of surface treatments, which involve providing new functionality to workpieces by forming coatings on their surfaces that have different properties from their substrates (the material to which spraying deposit is applied).

In September 2004, the company entered the field of PVD process, a technique to form thin coatings, by acquiring all shares of Japan Coating Center Co., Ltd. (JCC).

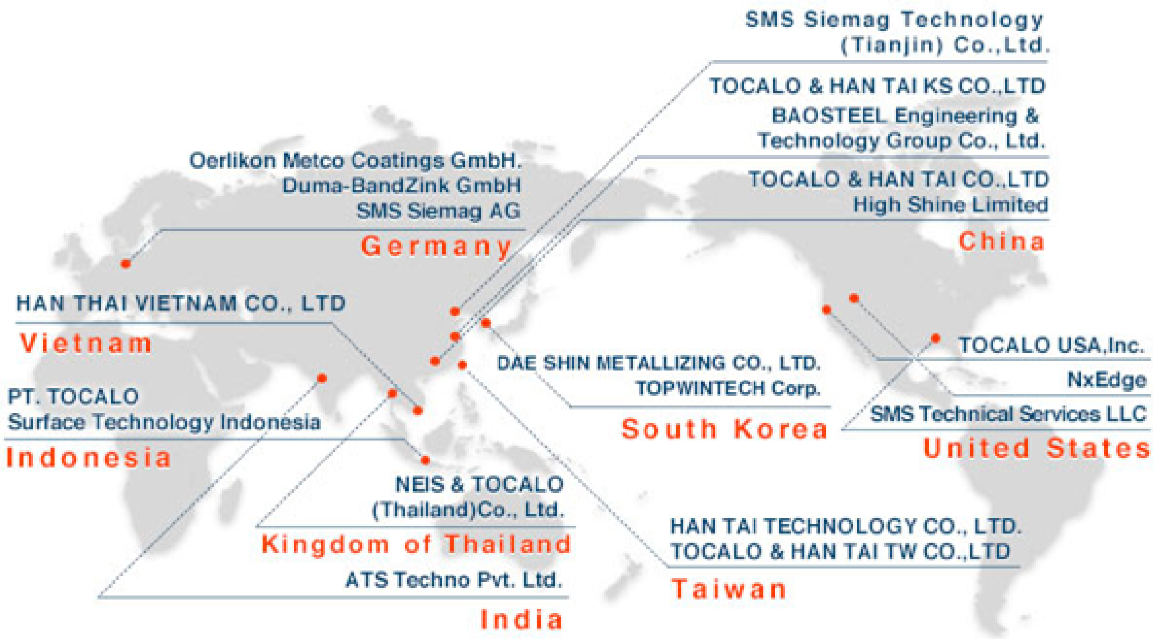
Overseas sales accounted for 21.1% of the company's overall sales in FY03/22 and primarily came from Japanese companies that have expanded abroad. The company has concluded many licensing agreements with overseas companies but does not work to acquire customers locally overseas. Some competitors overseas sell thermal spraying materials and equipment in addition to providing contracted treatment services, but TOCALO only provides services.

Group companies



Source: Shared Research based on company data

International network (technology licensing agreement partners)

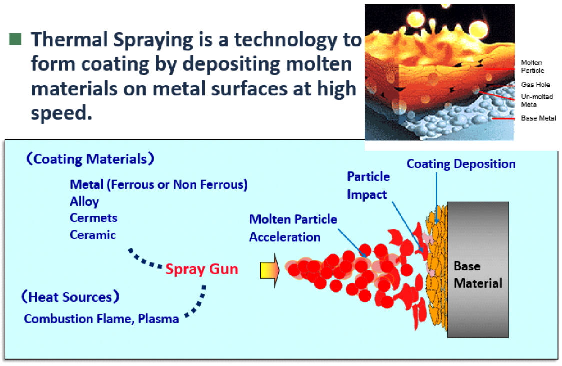


Source: Company data

Thermal Spraying (Parent)

Thermal spraying treatment is a surface treatment method used to form coatings on industrial product parts such as components of semiconductor and FPD manufacturing equipment; power generating gas turbines; batteries used for power storage; a variety of bearings; factory machine pieces including rolls used in steel and paper mills; and parts used in chemical plants. It involves melting coating materials (e.g., metals, ceramics, and cermet) using high temperature heat sources (plasma or gas-based flames) and then spraying the molten material onto the target surface. Thermal spraying adds a variety of functions to the workpiece, including improved durability through higher abrasion and heat resistance; electrical characteristics such as conductivity and electric insulation; and thermal properties, including heat insulation and heat dissipation. A wide variety of thermal spraying treatment methods exist, but TOCALO primarily utilizes atmospheric plasma spraying and low-pressure plasma spraying, which both use plasma as a heat source; and high velocity flame spraying, wire flame spraying, and powder flame spraying which use combustion flame as a heat source. The company chooses which method is appropriate for any given workpiece.

Principle of thermal spraying technology



Thermal spraying process

Source: Company data

Surface treatment centered around thermal spraying has become a standard technology in a wide variety of fields, ranging from manufacturing to medical care, and its demand has been on the rise year by year. TOCALO has built a diverse customer base across many sectors, creating a customer mix that helps it navigate through changing economic climates. In particular, it has managed to acquire customers that are top-class companies in major growth industries. Breaking down the company's sales in FY03/22, 47% came from treatments on semiconductor and FPD manufacturing equipment parts; 9% industrial machinery parts; 8% furnishings and equipment used in the steel industry; 12% from other thermal spraying treatments; 6% from other types of surface treatments; 6% domestic subsidiary; and 13% overseas subsidiaries. In the past, most demand came from the steel and paper and pulp industries, but sales to customers in the semiconductor and FPD manufacturing equipment industries currently account for nearly 50% of sales. The company's most prominent customer is Tokyo Electron Limited, which accounted for 35.7% of consolidated sales in FY03/22.

Even in past cases in which profit fell short of initial forecasts or dropped YoY, TOCALO has maintained a stable, profitable structure with relatively few fluctuations in earnings, despite its high degree of reliance on semiconductor- and FPD-related sales. Shared Research believes that this stable, profitable structure is underpinned by TOCALO's robust customer base in the semiconductor and FPD fields as well as other industries, and repeat orders for functional surface treatments that offer high added value.

Sales to the Tokyo Electron group

Sales to large lot customers	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Tokyo Electron group	2,804	4,794	5,004	7,867	10,719	13,291	11,615	13,543	15,631
Sales dependence	12.4%	18.4%	17.4%	27.2%	31.4%	33.6%	30.6%	34.7%	35.7%
Semiconductor equipment (parent)	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030	18,990
Tokyo Electron group as % of semis	55.7%	65.9%	58.0%	92.3%	95.1%	89.2%	92.9%	84.5%	82.3%

Source: Shared Research based on company data
Note: Figures for the Tokyo Electron Group include both parent company and overseas subsidiary sales.

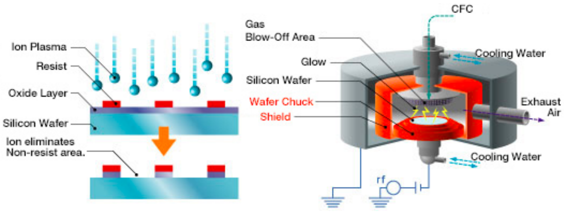
Surface treatment for semiconductor equipment parts

Thermal spraying is applied to parts of equipment used in silicon wafer processing (orange-colored components in the following diagrams). The procedure is utilized to achieve a range of objectives such as improving the components' resistance to plasma corrosion or giving electrical properties to the electrostatic chuck that holds the wafer during processing.
In the past, semiconductor equipment makers faced an urgent need to eliminate deposits inside their etching equipment chambers (making sure that particles scraped away during the etching process did not adhere to the chamber wall). In particular, chamber walls treated by aluminum alloy, alumite, or alumina were subject to corrosion in the plasma etching process, producing chemical compound particles, which became a significant cause of chip defects. TOCALO proposed a

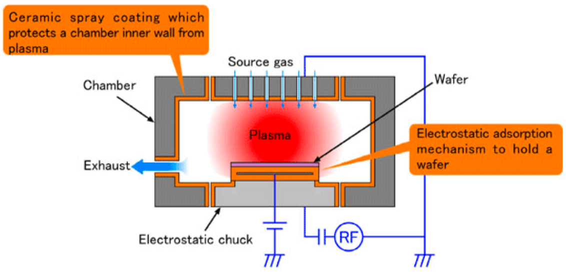
ceramic-based thermal spray coating for chamber walls that proved to be highly plasma resistant. The coating was quickly adopted as a standard for mass production in the semiconductor equipment industry accompanying its shift to 300mm wafers (the company also licenses technology to competitors).

The feature size of the most advanced semiconductors (very large-scale integrated circuits [VLSI circuits]) is becoming miniaturized, and the structure of these semiconductors multi-layered. Along with this trend, dry etching processes (use of plasmas or etchant gases to remove portions of substrate layers based on specific patterns defined by photoresist masks) are becoming increasingly more common. We understand more than half of the company's surface treatment on semiconductor equipment components is for dry etching equipment. TOCALO provides services to major semiconductor equipment makers in Japan and abroad, including Tokyo Electron, with which it has built a particularly close relationship and conducts joint development.

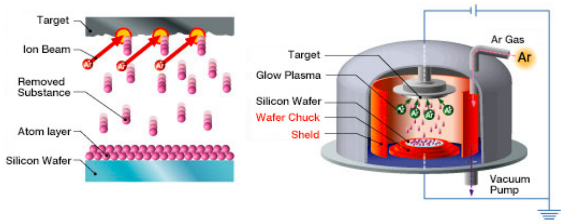
Dry etching equipment components



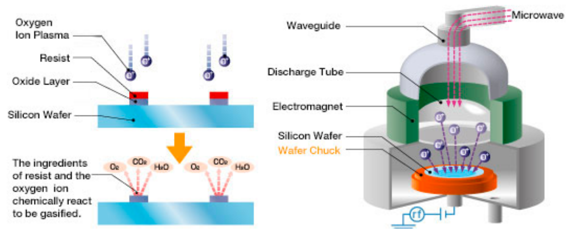
Dry etching equipment schematics



Sputtering equipment components



Ashing equipment components



Source: Company data

Surface treatment outside of the semiconductor and FPD fields (industrial equipment, steel, paper and pulp, energy, transportation, petrochemical, resins/films sectors)

The thermal spraying business for the steel and paper industries supported TOCALO's rapid progress during the 1980s and 1990s. The steelmaking industry was a standout driver of growth. Increased orders for thermal spraying on in-sink and processing rolls (tension bridles, deflector rolls, etc.) of continuous galvanizing lines (CGL) and hearth rolls of continuous annealing lines (CAL), continuous annealing and processing lines (CAPL), and CGL helped expand the company's earnings.

In the paper industry, TOCALO reached a technical cooperation agreement in 1989 with Vendor Machine Co., Ltd., which had a strong track record in Europe and the US, and began offering thermal spraying and polishing treatments for yankee dryer rolls. The yankee dryer roll is a core machine for paper manufacturers and determines the quality of paper products such as tissue paper and newspaper. The company's coating technology has been widely adopted as a standard thermal spraying treatment for rolls used by many paper manufacturers because of its excellent reputation for quality.

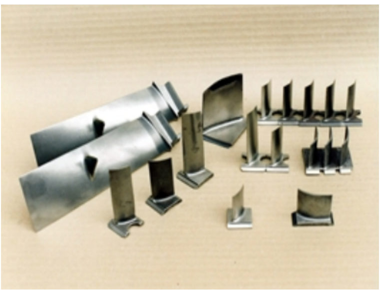
In industrial equipment, particularly noteworthy is the use of TOCALO's thermal spraying technology to insulate the bearings utilized in drive motors for bullet train cars (delivered by the company in 2001). Sometimes, minute electrical currents can leak from motors and generators attached to the surface of bearings, causing electrical discharge. This can cause (electrolytic) corrosion, which leads to early bearing deterioration. TOCALO was able to add insulation properties to the surface of these bearings and prevent the corrosion caused by electrical discharge. Leveraging the safety knowhow nurtured through the bullet train project, TOCALO developed low-cost, thermal-sprayed insulated bearings that are currently being widely utilized as industry standards in both Chinese railways and in the New York subway system. These bearings are also receiving attention for their application in wind power generators and are being progressively adopted in this capacity.

Thermal spraying is also essential for gas turbines that are powered by fossil fuels such as coal and oil. It is applied to vital components used in these gas turbines, including their blades, which must provide stable performance in harsh environments near combustor outlets that can reach temperatures of 1,500˚C.

Surface treatment technology is also important in the automotive and aviation equipment industries. However, TOCALO's opportunities to provide contracted thermal spraying services in these industries are limited by major hurdles, such as restrictions aimed at meeting safety standards and capacity for mass production work. The company conducts the Toyota diffusion (TD) process, a surface treatment method developed by Toyota Central R&D Labs, Inc., on press molds used for automobiles.

In the aircraft industry, TOCALO had performed thermal spraying (recoating) on engine parts for ANA (TSE Prime: 9202) but was forced to pull out after about one year as ANA began performing this treatment internally. The company also works on components of the Mitsubishi SpaceJet passenger planes being developed by Mitsubishi Heavy Industries, Ltd. (TSE Prime: 7011) and wing flap components made by Embraer S.A. in Brazil, but these endeavors have apparently not achieved notable progress when compared to initial plan.

Gas turbines
(industrial equipment, transportation equipment)

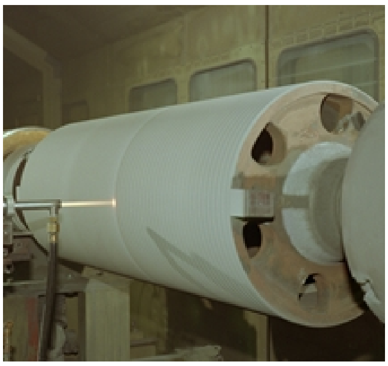


Bearings
(industrial equipment)

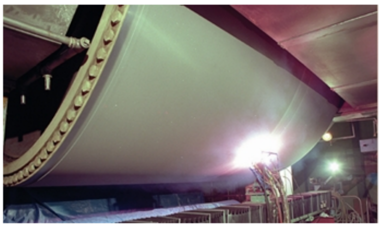
Boilers
(energy, petrochemical)

Hearth rolls (steel industry, in-furnace rolls)

Sink rolls (steel industry, in-sink rolls)



Yankee dryer rolls (paper manufacturing)



Source: Company data

Primary business locations (parent)

TOCALO's main factories for the semiconductor and FPD fields are the Akashi Harima, Kitakyushu, and Tokyo factories. The company has also located its Miyagi Technical Service Center nearby the Miyagi factory of Tokyo Electron, a major customer. Its Nagoya and Mizushima factories focus primarily on the steel industry while its Kobe factory performs miscellaneous surface treatments, such as the TD process and ZAC coating.

Primary business locations (parent)

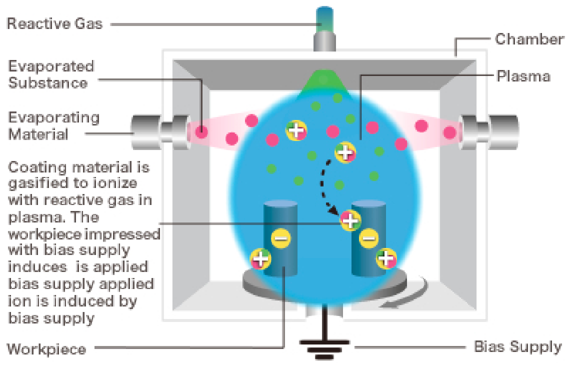
Source: Company data

Domestic Subsidiary

Domestic consolidated subsidiary Japan Coating Center Co., Ltd. (JCC) primarily performs physical vapor deposition (PVD) on cutting tools, edged tools, metallic molds, and other similar materials. The PVD process adds functionality, such as abrasion and corrosion resistance, to the workpieces by forming hard, dense, thin, and highly adhesive ceramic coatings on their surfaces. These coatings are generated by ionizing metals, including titanium and chromium, in a vacuum with reactive gases.

Among the various types of **PVD processes**, JCC utilizes the ion plating method, which stands out in deposition and adhesive properties. This process minimizes heat deformation of the workpiece because it allows for a wide selection of temperature ranges, enabling optimal treatment based on the type of substrate. It is also suitable for mass produced goods. The Mercury Coat offered by JCC is a new coating with high hardness, oxidation resistance, and abrasion resistance. An example of its application is the high-performance coating for hob cutters (components of hobbing machines to cut gears) that suit the changing specifications in gear cutting technology, which is shifting toward dry machining and high-speed/high-feed equipment.
Source: Shared Research based on company data

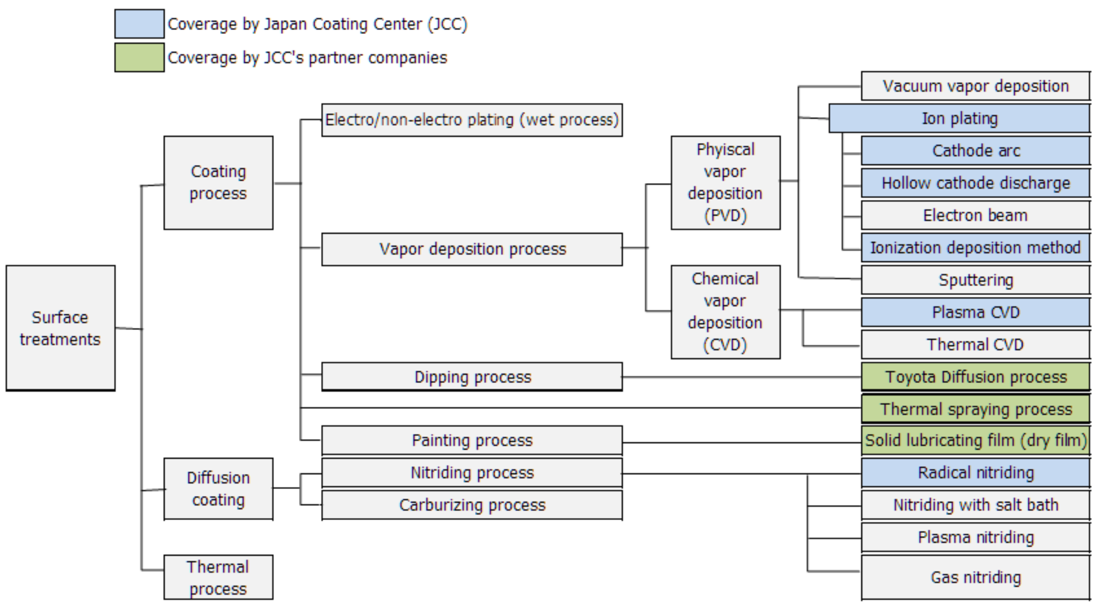
PVD process diagram



Application example: Cutting tools (hob cutters)

Source: Company data

Surface treatment technologies offered at Japan Coating Center Co., Ltd. (JCC)



Source: Shared Research based on company data

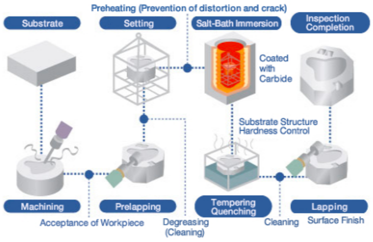
Other Surface Treatments

Toyota diffusion (TD) process (external sales of JPY803mn [2.8% of total sales] in FY03/16)

The TD process is a surface treatment method that forms extremely hard and thin carbide layer by immersing workpieces, such as molds for automobiles, components used in steelworking, and extruder parts, into molten salt baths, causing the diffusion and osmosis of substances such as vanadium and niobium. This carbide layer adds abrasion resistance and seize resistance to target surfaces.

TD- vanadium carbide (VC) coating is an extremely hard coating that can be produced using TD treatment, a type of high-temperature salt bath treatment. It has a cross-sectional hardness of between 3,200 and 3,800 Hv, which protects workpiece surfaces from abrasion and seizing. TD-VC coating also significantly improves the durability of components and is now highly regarded as an indispensable surface treatment technology in the die making industry. Furthermore, the salt bath treatment can be performed regardless of the shape of the subject, enabling uniform coating formation, even on unseen interior surfaces. The TD process has been used to add abrasion resistance and seize resistance properties to press molds used for automobiles, raising productivity and extending the lives of these metallic molds.
Source: Shared Research based on company data

TD process



TD-VC coating

Application example: molds used for automobiles

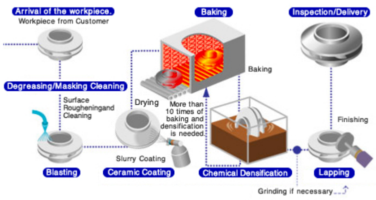
Source: Company data

Zinc alloy coating (ZAC) (external sales of JPY406mn [1.4% of total sales] in FY03/16)

ZAC treatment is a surface treatment method that forms extremely dense composite ceramic coatings whose main component is chromium oxide. The treatment is often applied to parts of equipment such as pumps, textile machinery, and wiredrawing machines, giving them corrosion and abrasion resistance properties.

ZAC coating uses chemical reaction to form composite ceramic coatings primarily composed of chromium oxide (Cr2O3). The coating is characterized by properties such as high density, hardness, and adhesiveness, as well as a low frictional coefficient. It is extraordinarily powerful when used to enhance machine parts that require abrasion and corrosion resistance. ZAC coating treatment has been applied to a variety of pump components, forming ceramic coatings with superior corrosion resistance that extend their useful lives and eliminate the need for maintenance.
Source: Shared Research based on company data

CDC-ZAC coating process



Furnace combustion treatment

Application example: pump components

Source: Company data

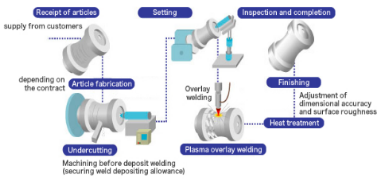
Plasma transferred arc (PTA) process (external sales of JPY364mn [1.3% of total sales] in FY03/16)

The PTA process, a type of overlay welding, is a surface treatment method that uses a high-energy plasma arc to melt a wide variety of pulverized materials and welds them onto the surfaces of equipment that requires high degrees of reliability, including pump and valve components and devices such as steelworking rolls. It provides the equipment with abrasion and corrosion resistance properties.

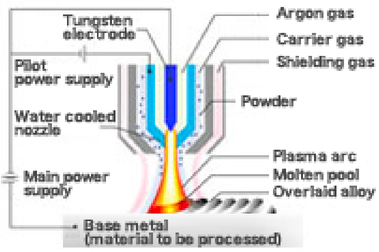
PTA process: A surface treatment technology that uses a high-energy transferred plasma arc to perform overlay welding. Since the overlay material can be applied in powder form, materials that cannot be processed into wires or rods, such as hard materials and ceramics, can be used in this treatment. Coatings that best suit the intended use of the workpiece are achieved by mixing a wide variety of powdered metal alloys and ceramics at controlled ratios. It is also possible to convert the coating created through this process into cermet after it has been overlaid onto the target surface. The bond between the coating and the substrate is metallurgic, causing superior peeling resistance. Since the PTA treatment uses overlay welding, it is quite capable of forming thicker coatings than other methods. In addition to these characteristics, the PTA coating maintains a high degree of hardness even when exposed to high temperatures, and sports superior abrasion, seize, and corrosion resistance. Its application is poised to expand to an increasingly large variety of equipment requiring first-class quality control, including petroleum-related equipment, ships, aircraft, transportation equipment, and nuclear power generation equipment.

Principle of PTA technology: The next figure (center) illustrates how overlay welding via the PTA process works. First, a pilot power supply is used to start an arc in an argon gas-filled space between a tungsten electrode and a water-cooled nozzle. Argon gas passing through this electric arc is ionized to form a hot plasma gas, which is then constricted through a thermal pinch effect produced by the water-cooled constrictor nozzle and discharged against the workpiece as a plasma arc with high energy density. Once this arc reaches the workpiece, the main power supply is activated to maintain contact between the arc and the substrate. The arc current flows through the substrate, forming a molten pool on its surface. Meanwhile, the powdered overlay material is pumped into a carrier gas, such as helium or argon gas, and fed into the plasma arc. It is thrown into the molten pool on the surface of the substrate in a melted state, forming an overlay. The figure (RHS) below compares the convergence properties of plasma arcs and gas tungsten arcs based on the differences between their temperature distributions. The plasma arc is narrowly constricted by the water-cooled nozzle, giving it high energy density. This is why the PTA process even allows for powders with high melting points to be used as overlay materials.
Source: Shared Research based on company data

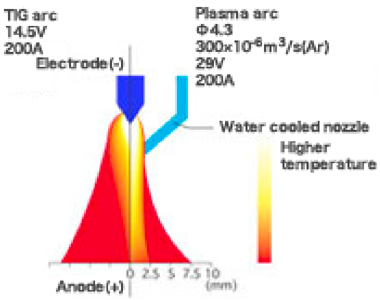
PTA overlay welding process



Principle of PTA technology



Temperature distribution of gas tungsten (TIG) arc and plasma arc



Source: Company data

Overseas Subsidiaries

Consolidated subsidiary TOCALO & HAN TAI Co., Ltd. (Guangzhou, Guangdong, China; established in April 2005) primarily performs thermal spraying and overlay welding within China.

TOCALO & HAN TAI KS Co., Ltd. (Kunshan, Jiangsu, China; established in May 2011) and TOCALO & HAN TAI TW Co., Ltd. (Tainan, Taiwan; established in June 2011), both consolidated subsidiaries, serve as bases for expanding the maintenance business for semiconductor and FPD manufacturing equipment in Chinese and Taiwanese markets. They perform surface treatments, including thermal spraying, cleaning, and anodizing treatment, on equipment components.

Consolidated subsidiary TOCALO USA, Inc. (California, USA; established in November 2015) was established to set up a service base for the maintenance of semiconductor equipment components in the US, which houses a number of prominent end users. However, operating rates remained low as the launch of operations was delayed because permits and approvals from state authorities took longer than expected to obtain. In FY03/21, the company booked an impairment loss on fixed assets of JPY349mn as an extraordinary loss as part of a sweeping overhaul, including dealing with prior-year losses all at once. The company decided to revamp its structure in anticipation of semiconductor growth from 2024 onward as major US semiconductor companies start operations at new factories.

Non-consolidated subsidiary PT. TOCALO Surface Technology Indonesia (established in June 2017) and affiliate NEIS & TOCALO (Thailand) Co., Ltd. (not subject to equity method; established in October 2012) perform surface treatments, such as thermal spraying and welding, primarily for Japanese steel manufacturers operating locally.

Group companies

Company	Established	Headquarters	Stake	Business
Consolidated subsidiaries				
Japan Coating Center Co., Ltd.	Apr. 1985	Kanagawa	100%	PVD processing
TOCALO & HAN TAI Co., Ltd.	Apr. 2005	Guangzhou, China	70%	Thermal spraying (steel, other)
TOCALO & HAN TAI KS Co., Ltd.	Nov. 2011	Jiangsu, China	90%	Thermal spraying (steel, semiconductor, FPD, other)
TOPWINTECH Co., Ltd.	Jun. 2011	Tainan, Taiwan	50%	Thermal spraying (steel, semiconductor, FPD, other)
TOCALO USA, Inc.	Jun. 2011	California, US	100%	Thermal spraying (semiconductor, other)
Other (non-cons., non-equity method)	One in Indonesia, another in Thailand			Thermal spraying (steel, other)

Source: Shared Research based on company data

Segment summary

By segment, Thermal Spraying (Parent) accounted for 75.4% of sales in FY03/22, while Domestic Subsidiary made up 5.5%, Overseas Subsidiaries 13.0%, and Other Surface Treatments 5.7%. The segment profit margins (recurring profit basis) were 24.5% in Thermal Spraying (Parent), 16.7% in Domestic Subsidiary, 27.0% in Overseas Subsidiaries, and 18.7% in Other Surface Treatments. The company's segment profit margins are showing relatively stable improvement, despite being prone to the silicon cycle. Profitability in the Domestic Subsidiary segment (comprising Japan Coating Center Co., Ltd. [JCC]) is lower than in the Thermal Spraying (Parent) segment but has been improving notably. JCC managed itself independently for about ten years after becoming a TOCALO subsidiary in September 2004, but Shared Research observes JCC has produced synergy with the parent company over the past several years. However, JCC has been susceptible to the impact of trade friction and other macroeconomic factors because many of its transactions are in the automotive parts industry.

By region	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,073**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.1%	12.1%
Domestic	18,835	21,609	23,678	24,407	28,206	32,155	30,543	30,350	34,568
YoY	0.6%	14.7%	9.6%	3.1%	15.6%	14.0%	-5.0%	-0.6%	13.9%
% of total	83.3%	82.9%	82.4%	84.3%	82.7%	81.3%	80.6%	77.7%	78.9%
Overseas	3,764	4,459	5,068	4,557	5,903	7,403	7,352	8,722	9,245
YoY	69.9%	18.5%	13.7%	-10.1%	29.5%	25.4%	-0.7%	18.6%	6.0%
% of total	16.7%	17.1%	17.6%	15.7%	17.3%	18.7%	19.4%	22.3%	21.1%

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

By segment	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,294**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	11.5%
Thermal Spraying (Parent)	16,324	19,176	21,933	22,309	26,183	30,400	28,221	30,141	33,043
YoY	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%	9.6%
% of total	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	76.7%	75.4%
Domestic Subsidiary (PVD process)	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018	2,399
YoY	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%	18.9%
% of total	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.1%	5.5%
Overseas Subsidiaries	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800	5,695
YoY	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%	18.6%
% of total	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.2%	13.0%
Other Surface Treatments	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112	2,502
YoY	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%	18.5%
% of total	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%	5.7%
Royalty income	-	-	-	-	-	-	-	-	171
YoY	-	-	-	-	-	-	-	-	-
% of total	-	-	-	-	-	-	-	-	0.4%
Segment profit (recurring profit)	**3,657**	**4,890**	**5,028**	**5,801**	**7,363**	**8,076**	**6,812**	**8,914**	**10,571**
YoY	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%	18.6%
Recurring profit margin	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.7%	24.1%
Thermal Spraying (Parent)	2,666	3,822	4,520	4,889	6,009	6,515	5,273	6,760	8,086
YoY	9.7%	43.4%	18.3%	8.2%	22.9%	8.4%	-19.1%	28.2%	19.6%
Recurring profit margin	16.3%	19.9%	20.6%	21.9%	23.0%	21.4%	18.7%	22.4%	24.5%
% of total	76.5%	80.1%	84.1%	82.8%	78.9%	78.7%	74.4%	78.6%	76.5%
Domestic Subsidiary (PVD process)	232	324	272	402	502	545	491	406	471
YoY	38.9%	39.7%	-16.0%	47.8%	24.9%	8.6%	-9.9%	-17.3%	16.0%
Recurring profit margin	12.7%	16.6%	13.8%	19.0%	21.7%	21.9%	20.8%	20.1%	19.6%
% of total	6.7%	6.8%	5.1%	6.8%	6.6%	6.6%	6.9%	4.7%	4.5%
Overseas Subsidiaries	297	542	589	491	974	1,064	1,056	1,297	1,537
YoY	-	82.5%	8.7%	-16.6%	98.4%	9.2%	-0.8%	22.8%	18.5%
Recurring profit margin	11.2%	17.0%	18.1%	17.5%	26.7%	23.9%	21.4%	27.0%	27.0%
% of total	8.5%	11.4%	11.0%	8.3%	12.8%	12.9%	14.9%	15.1%	14.5%
Other Surface Treatments	290	81	-4	122	126	152	266	135	468
YoY	-	-72.1%	-	-	3.3%	20.6%	75.0%	-49.2%	246.7%
Recurring profit margin	16.2%	4.6%	-0.3%	7.0%	6.4%	6.9%	11.2%	6.4%	18.7%
% of total	8.3%	1.7%	-	2.1%	1.7%	1.8%	3.8%	1.6%	4.4%
Adjustments	171	120	-349	-103	-249	-201	-275	314	7

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

Subsegment sales	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,294**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	11.5%
Thermal Spraying (Parent)	16,324	19,176	21,933	22,309	26,183	30,400	28,221	30,141	33,043
YoY	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%	9.6%
% of total	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	76.7%	75.4%
Semiconductor and FPD equipment parts	6,054	8,380	10,069	10,003	13,474	17,134	14,102	18,176	20,643
YoY	7.1%	38.4%	20.2%	-0.7%	34.7%	27.2%	-17.7%	28.9%	13.6%
% of total	26.8%	32.1%	35.0%	34.5%	39.5%	43.3%	37.2%	46.3%	47.1%
Semiconductor equipment	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030	18,990
YoY	-0.3%	44.5%	18.7%	-1.3%	32.3%	32.1%	-16.1%	28.3%	18.5%
% of total	22.3%	27.9%	30.0%	29.4%	33.0%	37.7%	33.0%	40.8%	43.3%
FPD equipment	1,023	1,110	1,441	1,484	2,201	2,238	1,604	2,145	1,653
YoY	69.1%	8.5%	29.8%	3.0%	48.3%	1.7%	-28.3%	33.7%	-22.9%
% of total	4.5%	4.3%	5.0%	5.1%	6.5%	5.7%	4.2%	5.5%	3.8%
Industrial machinery	3,369	3,752	4,072	4,050	4,218	4,154	4,782	3,965	3,707
YoY	3.3%	11.4%	8.5%	-0.5%	4.1%	-1.5%	15.1%	-17.1%	-6.5%
% of total	14.9%	14.4%	14.2%	14.0%	12.4%	10.5%	12.6%	10.1%	8.5%
Steelmaking machinery	2,989	3,041	3,438	3,497	3,697	3,662	3,899	3,166	3,450
YoY	8.0%	1.7%	13.1%	1.7%	5.7%	-0.9%	6.5%	-18.8%	9.0%
% of total	13.2%	11.7%	12.0%	12.1%	10.8%	9.3%	10.3%	8.1%	7.9%
Other applications	3,912	4,001	4,353	4,758	4,793	5,449	5,437	4,832	5,242
YoY	-7.4%	2.3%	8.8%	9.3%	0.7%	13.7%	-0.2%	-11.1%	8.5%
% of total	17.3%	15.3%	15.1%	16.4%	14.1%	13.8%	14.3%	12.3%	12.0%
Other Surface Treatments	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112	2,502
YoY	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%	18.5%
% of total	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%	5.7%
Domestic Subsidiary	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018	2,399
YoY	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%	18.9%
% of total	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.1%	5.5%
Overseas Subsidiaries	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800	5,695
YoY	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%	18.6%
% of total	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.2%	13.0%
Royalty income	-	-	-	-	-	-	-	-	171
YoY	-	-	-	-	-	-	-	-	-
% of total	-	-	-	-	-	-	-	-	0.4%
Physical vapor deposition (PVD) process	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018	2,399
YoY	7.5%	6.7%	1.5%	6.7%	9.5%	7.8%	-5.2%	-14.6%	18.9%
% of total	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.1%	5.5%
Toyota Diffusion (TD) process	936	881	803						
YoY	10.4%	-5.9%	-8.9%	-	-	-	-	-	
% of total	4.1%	3.4%	2.8%	-	-	-	-	-	
Zinc-alloy coating (ZAC) process	456	449	406						
YoY	19.7%	-1.5%	-9.6%	-	-	-	-	-	
% of total	2.0%	1.7%	1.4%	-	-	-	-	-	
Plasma transferred arc (PTA) process	397	428	364						
YoY	-9.4%	7.8%	-15.0%	-	-	-	-	-	
% of total	1.8%	1.6%	1.3%	-	-	-	-	-	
Other	2,659	3,186	3,263						
YoY	60.2%	19.8%	2.4%	-	-	-	-	-	
% of total	11.8%	12.2%	11.4%	-	-	-			

Source: Shared Research based on company data
Notes: Figures may differ from company materials due to differences in rounding methods.
PVD treatment is performed by domestic subsidiary JCC

Stability of earnings supported by repeat demand from domestic customers

In the past, even when profit has fallen below forecast or decreased YoY, the company has maintained stable profitability with relatively little deviation in terms of earnings, despite its high degree of reliance on semiconductor and FPD sales. Shared Research believes that these stable earnings are underpinned by a thick customer base in industries other than semiconductors and FPDs and repeat demand for functional surface treatments that provide high added value. Shared Research also holds the view that TOCALO has successfully gained customer loyalty by successively launching high-end products in response to customer needs.

Capital expenditures, depreciation, and R&D expenses

TOCALO made significant capital expenditures of around JPY6.0bn in each year over the FY03/17—FY03/19 accounting periods. The purpose of these investments was to respond to heightened production in the semiconductor and FPD fields as well as to increase the production capacity of its domestic subsidiary. FY03/22, capital expenditures were JPY4.4bn (down 9.1% from FY03/21). TOCALO initially planned to allocate JPY4.7bn to capital expenditures when the COVID-19 pandemic was beginning, and spending came in roughly in line with its initial plans. Its FY03/23 plan calls for capital expenditures to increase to JPY5.5bn, including JPY1.5bn for construction of a new plant at Mizushima and about JPY1.0bn to build a new wing at the Tokyo factory and put in place equipment to deal with anticipated robust semiconductor demand in Japan. Overseas, it earmarked JPY1.8bn for the construction of a new plant in Taiwan. The company generally targets an R&D expenses-to-sales ratio of about 3%, but is looking for 3.0% in FY03/23.

	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Capital expenditures	2,513	2,678	3,730	5,936	6,361	5,965	2,313	4,822	4,385
Depreciation	1,388	1,440	1,560	1,703	1,948	2,658	2,991	2,771	2,783
R&D expenses	653	746	862	834	905	1,003	1,159	1,296	1,296
R&D ratio	2.9%	2.9%	3.0%	2.9%	2.7%	2.5%	3.1%	3.3%	3.0%

Source: Shared Research based on company data

R&D structure

TOCALO's R&D is supported by two pillars: preemptive research and product development in response to customer need. The company has also identified three priority areas for R&D: thermal spraying technology development (development of components for general industrial machinery and equipment, thermal spraying treatment development); semiconductor component technology (development of components used in semiconductor and FPD manufacturing equipment through thermal spraying and other technologies); and coating method development (laser application, PVD, CVD, DLC, TD, ZAC) and organic coating.

The group's R&D lab for thermal spraying technology is central to its R&D activities. While working to develop new treatments and coating films, improve understanding of technological trends, and strengthen industrial and academic collaboration, TOCALO aims to improve its R&D by raising its academic sensitivity by selecting and applying elemental technologies and gathering technical information. Meanwhile, the sales, manufacturing, and production technology departments at each of its factories and the R&D lab are collaborating to swiftly develop products that provide an immediate response to diversifying customer need and to resolve issues concerning production technology.

Furthermore, consolidated subsidiary Japan Coating Center Co., Ltd. is also lending its cooperation to R&D concerning physical vapor deposition (PVD), diamond-like carbon (DLC), and other thin coating treatments. In FY03/22, total R&D expenses for the entire group were JPY1.3bn. Details for each segment are indicated below (a segment-by-segment breakdown of the group's R&D expenses has not been included due to difficulty determining amounts that should be allocated to each segment).

(1) Thermal Spraying (Parent)

In pursuit of sustainable growth, the company is promoting the development of applications for surface treatment technology on high-performance components, focusing on fields such as semiconductors and FPD; new materials; environment and energy; transport aircraft; and medical care. In the semiconductor field, TOCALO is conducting ongoing development of electrostatic chucks and plasma-resistant coating technology for manufacturing equipment components. In particular, the company focuses on new coating materials and methods for the treatment of plasma etching equipment parts, as well as related evaluation technologies. Against a backdrop of active application of IoT and big data, this focus addresses the need for high-performance coating that can respond to production of integrated circuits with nano-level linewidth.

In the area of new materials, TOCALO helps blast furnace manufacturers by developing antifriction sprayed coatings for components that undergo severe stress from impact or other causes. The company is also developing a non-adhesive coating for conveyor rolls used by film manufacturers and the paper and pulp industry. In the environment and energy field, the company developed a high-performance, heat-shielding ceramic coating that protects high-temperature components in gas turbine generators and other equipment. This thermal spraying method is receiving worldwide attention, and the company is pursuing further development.

TOCALO is also actively working on developing a coating treatment that combines thermal spraying and laser technology. Thanks to these efforts, the company was able to trial manufacture a coating that offered dramatically improved adhesiveness and abrasion/corrosion resistance compared with the conventional thermal spray coating. The company began offering this coating to specific customers, and plans to conduct relevant product development while simultaneously evaluating its performance.

(2) Domestic Subsidiary

Through its domestic subsidiary, Japan Coating Center Co., Ltd., the company primarily develops PVD and DLC coatings. In FY03/20, it focused on developing a coating for semiconductor manufacturing equipment parts, which it has begun delivering to some customers. In addition, in the area of DLC coatings, it refined its existing Neo Slick series. In terms of production techniques, it installed automatic testing equipment, worked to automate in-process work, and began initiatives to improve quality and efficiency.

(3) Other businesses

Aside from thermal spraying, TOCALO conducts ongoing product development related to functional coatings produced through the TD process, ZAC, PTA process, and other methods. In terms of developing organic and inorganic coatings, the company is testing the application of functional thin coatings in the areas of medical care and food. Projects include the development of coatings that prevent adhesion with living organisms and blood; the application of coatings to both water-resistant and hydrophilic medical devices; and the development and evaluation of corrosion-resistant coatings. Additionally, in the area of laser cladding technology (a new coating method), aiming to establish it as repair technology for general industrial machinery, the company evaluated the electrochemical characteristics and residual stress of the coatings. It plans to continue the active development of coatings utilizing laser technology.

(4) Patents

The group actively submits patent applications to secure the rights to its technology and coating products. In FY03/22, it held 143 patents in Japan and 108 patents overseas. The company submitted 31 patent applications in FY03/22 and had 25 patents registered.

Profitability analysis

Profit margins	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Gross profit	7,564	8,964	9,727	10,536	12,646	13,761	12,780	14,593	16,585
Gross profit margin	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.1%	37.9%
Operating profit	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,890	10,255
Operating profit margin	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.6%	23.4%
EBITDA	4,923	6,064	6,423	7,361	9,058	10,399	9,541	11,661	13,038
EBITDA margin	21.8%	23.3%	22.3%	25.4%	26.6%	26.3%	25.2%	29.7%	29.8%
Net margin	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	13.9%	15.8%
Financial ratios									
ROA (RP-based)	11.5%	13.9%	13.5%	14.1%	15.2%	14.7%	11.5%	14.2%	15.8%
ROE	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%	14.8%
Total asset turnover	0.71	0.74	0.77	0.70	0.70	0.72	0.64	0.63	0.66
Inventory turnover	10.1	9.8	10.1	9.7	8.9	8.5	8.7	9.0	8.5
Days in inventory	36.1	37.3	36.2	37.5	41.1	43.1	42.0	40.4	42.7
Working capital	6,531	7,329	7,953	10,694	13,113	13,647	13,136	12,218	14,310
Current ratio	266.5%	256.8%	264.4%	258.9%	184.6%	207.7%	281.2%	271.8%	272.7%
Quick ratio	240.0%	228.8%	235.6%	232.0%	164.4%	184.1%	258.6%	248.6%	246.3%
OCF / Current liabilities	0.50	0.58	0.56	0.63	0.66	0.59	0.54	0.90	0.77
Net debt / Equity	-34.0%	-26.4%	-26.0%	-15.7%	-18.4%	-20.4%	-20.4%	-21.7%	-24.4%
OCF / Total liabilities	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.6	0.6
Cash conversion cycle (days)	90.8	89.2	89.1	n.a.	56.4	54.0	74.2	70.4	62.7
Change in working capital	828	798	624	2,741	2,419	534	-511	-918	2,092

Cash conversion cycle	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Accounts receivable turnover	3.2	3.3	3.2	3.0	3.2	3.4	3.2	3.5	3.9
Days in accounts receivable	114.8	112.0	112.6	120.5	115.8	107.8	112.8	103.5	94.8
Inventory turnover	10.1	9.8	10.1	9.7	8.9	8.5	8.7	9.0	8.5
Days in inventory	36.1	37.3	36.2	37.5	41.1	43.1	42.0	40.4	42.7
Accounts payable turnover	6.1	6.1	6.1	n.a.	3.6	3.8	4.5	5.0	4.9
Days in accounts payable	60.1	60.1	59.7	n.a.	100.4	96.9	80.6	73.5	74.8
Cash conversion cycle (days)	90.8	89.2	89.1	n.a.	56.4	54.0	74.2	70.4	62.7

Note: Accounts payable turnover is calculated using the previous method (not including electronically recorded monetary obligations) through FY03/16 and the current method (including electronically recorded monetary obligations) from FY03/18.

Assets	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Total current assets	19,700	21,527	20,830	23,000	25,941	27,749	31,837	33,140	36,365
(% of total assets)	58.8%	58.7%	54.8%	51.9%	49.3%	48.4%	52.1%	51.6%	52.3%
Accounts receivable	7,405	8,593	9,138	9,986	11,654	11,716	11,712	10,571	12,176
(% of total assets)	22.1%	23.4%	24.1%	22.5%	22.1%	20.5%	19.2%	16.5%	17.5%
Total fixed assets	13,807	15,120	17,163	21,332	26,722	29,529	29,285	31,043	33,152
(% of total assets)	41.2%	41.3%	45.2%	48.1%	50.7%	51.6%	47.9%	48.4%	47.7%
Investment securities	202	240	682	684	1,015	886	1,317	1,322	1,324
(% of total assets)	0.6%	0.7%	1.8%	1.5%	1.9%	1.5%	2.2%	2.1%	1.9%
Total assets	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183	69,517
Total asset turnover (times/year)	0.71	0.74	0.77	0.70	0.70	0.72	0.64	0.63	0.66
Liabilities	**FY03/14**	**FY03/15**	**FY03/16**	**FY03/17**	**FY03/18**	**FY03/19**	**FY03/20**	**FY03/21**	**FY03/22**
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Total current liabilities	7,393	8,383	7,877	8,884	14,054	13,362	11,323	12,193	13,334
Accounts payable	2,442	3,189	3,036	1,229	1,434	1,271	1,157	1,194	1,397
Short-term debt	1,137	943	511	905	879	1,218	2,153	1,802	1,460
Accounts payable turnover (times/year)	6.1	6.1	6.1	n.a.	3.6	3.8	4.5	5.0	4.9
Current ratio	266.5%	256.8%	264.4%	258.9%	184.6%	207.7%	281.2%	271.8%	272.7%
Total liabilities	8,814	9,495	8,922	12,079	16,524	17,613	18,487	17,291	17,058
Total interest-bearing debt	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069	4,285
Dependence on interest-bearing debt	5.3%	3.3%	1.7%	7.5%	4.9%	8.0%	13.4%	9.5%	6.2%
Net debt	-8,391	-7,177	-7,569	-5,063	-6,654	-8,105	-8,691	-10,158	-12,825
Dependence on net interest-bearing debt	-25.0%	-19.6%	-19.9%	-11.4%	-12.6%	-14.2%	-14.2%	-15.8%	-18.4%
Total liabilities and net assets	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183	69,517
Shareholders' equity	**FY03/14**	**FY03/15**	**FY03/16**	**FY03/17**	**FY03/18**	**FY03/19**	**FY03/20**	**FY03/21**	**FY03/22**
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Shareholders' equity (JPYmn)	23,361	25,453	27,365	30,296	33,726	37,343	40,076	44,020	48,377
Equity ratio	70.8%	71.5%	73.3%	69.1%	64.9%	65.6%	65.9%	68.9%	70.6%
Net interest-bearing debt (JPYmn)	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069	4,285
Net debt / Equity ratio	0.08	0.05	0.02	0.11	0.08	0.12	0.20	0.14	0.09

Source: Shared Research based on company data

Note: Figures may differ from company materials due to differences in rounding methods.

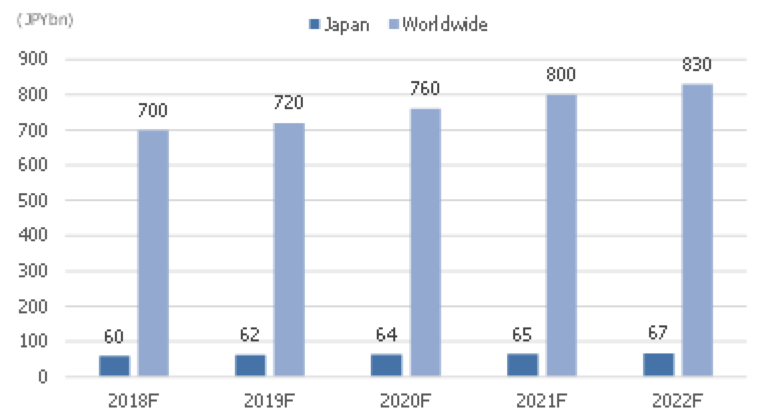
Market and value chain

Scale of thermal spraying market

The thermal spraying industry broadly divides into companies that conduct thermal spraying internally and companies that perform thermal spraying as a contracted service. The market for contracted treatment in Japan was worth an estimated JPY60.0bn in 2018, while the global market was valued at about JPY700.0bn (Source: Yano Research Institute). We understand the company holds the top market share in Japan, at more than 40%.

Some competitors overseas sell thermal spraying materials and equipment in addition to providing contracted treatment services, but TOCALO specializes in services. Overseas sales accounted for 21.1% of the company's overall sales in FY03/22, primarily coming from Japanese companies that have expanded abroad. The company has concluded a number of licensing agreements with companies overseas.

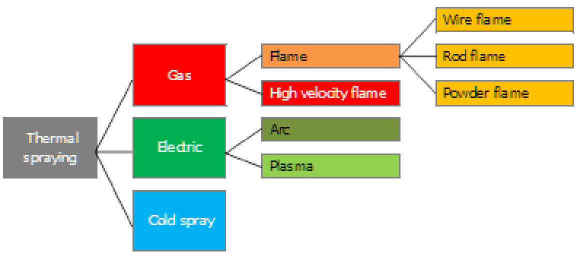
Thermal spraying market forecasts (Japan, worldwide)



Source: Shared Research based on data from the 2019 edition of *Thermal Spraying Market* from Yano Research Institute Ltd.

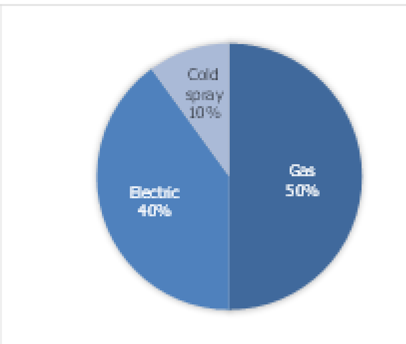
In 2018, gas-based thermal spraying methods accounted for 50% of the Japanese thermal spraying market, while electricity-based methods accounted for 40%, and cold-spray methods accounted for 10% (Source: Yano Research Institute).

Classification of thermal spraying methods



Source: Shared Research based on data obtained from the Japan Thermal Sprayers Association

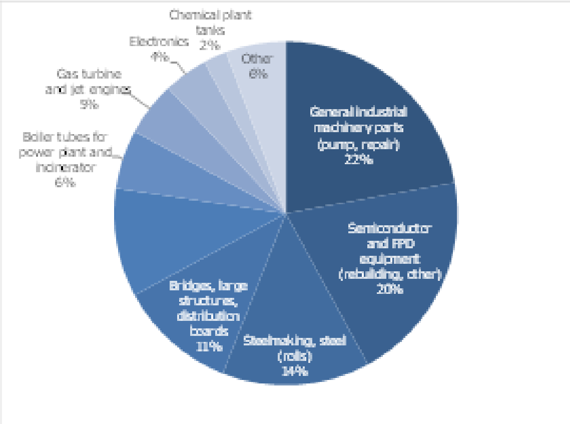
Breakdown of thermal spraying market (JPY60.0bn in FY2018) by method



Source: Shared Research based on data from the 2019 edition of Thermal Sprayers Association
Thermal Spraying Market from Yano Research Institut

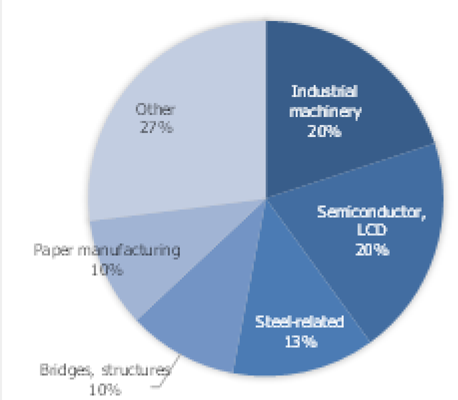
By areas of application, 20% of thermal spraying in Japan is associated with industrial equipment, 20% semiconductors and flat panel displays (FPDs), 13% steelmaking, 10% bridges and structures, 10% paper manufacturing, and 27% other uses (2018 actual; Yano Research).

Breakdown of FY2012 thermal spraying market (JPY43.5bn) by field of demand



Source: Shared Research based on data obtained from the 2013 edition of Status and Outlook of the *Thermal Spraying Market* from Digital Research, Inc.

Breakdown of FY2018 thermal spraying market (JPY60.0bn) by field of demand



Source: Shared Research based on data from the 2019 edition of *Thermal Spraying Market* from Yano Research Institute Ltd.

Sales of semiconductor equipment by Japan-based manufacturers (Source: Semiconductor Equipment Association of Japan [SEAJ]) are highly linked with TOCALO's sales in the semiconductor field. According to the SEAJ forecast announced in January 2022, sales of Japanese semiconductor equipment in FY2020 totaled JPY2.3tn (+7.9% YoY) and sales of Japanese FPD manufacturing equipment totaled JPY420.0bn (-11.7% YoY), for a total of JPY2.8tn (+7.9% YoY). At TOCALO (parent), sales in the semiconductor and FPD fields were JPY18.2bn (+28.9% YoY).

Japan-based manufacturing equipment sales (JPYmn)									Forecast		
(JPYmn)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Semiconductor	1,127,800	1,292,100	1,308,900	1,564,200	2,043,600	2,247,900	2,073,000	2,383,500	3,356,700	3,550,000	3,700,000
YoY	9.7%	14.6%	1.3%	19.5%	30.6%	10.0%	-7.8%	15.0%	40.8%	5.8%	4.2%
FPD	348,500	271,700	299,300	485,700	491,600	536,400	475,800	463,800	470,000	480,000	500,000
YoY	66.8%	-22.0%	10.2%	62.3%	1.2%	9.1%	-11.3%	-2.5%	1.3%	2.1%	4.2%
Total	1,476,300	1,563,800	1,608,200	2,049,900	2,535,200	2,784,300	2,548,800	2,847,300	3,826,700	4,030,000	4,200,000
YoY	19.3%	5.9%	2.8%	27.5%	23.7%	9.8%	-8.5%	11.7%	34.4%	5.3%	4.2%

TOCALO sales (JPYmn)	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22	FY03/23
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Est.
Semiconductor	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030	18,990	22,181
YoY	-0.3%	44.5%	18.7%	-1.3%	32.3%	32.1%	-16.1%	28.3%	18.5%	16.8%
FPD	1,023	1,110	1,441	1,484	2,201	2,238	1,604	2,145	1,653	1,587
YoY	69.1%	8.5%	29.8%	3.0%	48.3%	1.7%	-28.3%	33.7%	-22.9%	-4.0%
Total	6,054	8,380	10,069	10,003	13,474	17,134	14,102	18,176	20,643	23,768
YoY	7.1%	38.4%	20.2%	-0.7%	34.7%	27.2%	-17.7%	28.9%	13.6%	15.1%

Source: Shared Research based on data obtained from the company and the Semiconductor Equipment Association of Japan

Competitive landscape

Domestic competitors

TOCALO is the sole listed company in the Japanese thermal spraying market, and boasts a share over 40%. The rest of the market is crowded with small- and medium-sized companies that each hold shares of just a few percent. The market includes some affiliates of major listed companies such as Nippon Steel Hardfacing Corporation, but it also houses a large number of independent companies like TOCALO that provide contracted treatment services.

Praxair Surface Technologies K.K.

Praxair Surface Technologies K.K. was established in Japan in 1960. It is a Japanese subsidiary of Praxair Surface Technologies, Inc. in the United States, which is expanding on a global scale. Praxair's thermal spraying and surface treatment technologies cover a variety of fields, including aerospace, nuclear power, steelworking, petrochemical, plastics, electronics, and industries related to printing.

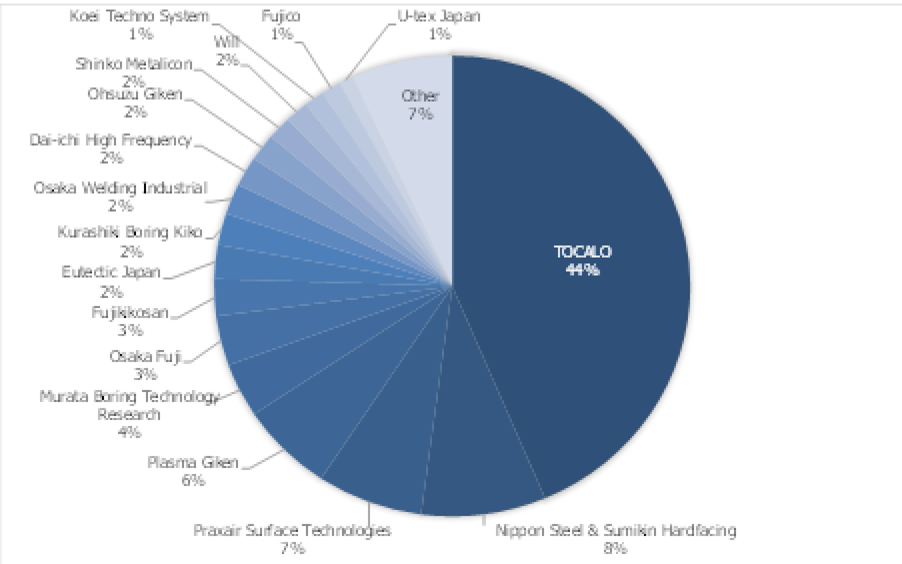
Nippon Steel Hardfacing Corporation (former name: Nippon Steel and Sumikin Hardfacing Co., Ltd.)

Nippon Steel Hardfacing Corporation came into existence in 1960 as the Nippon Hardfacing Co., Ltd., which was originally a part of the Yawata Iron & Steel Co., Ltd. (currently, the Nippon Steel Corporation [TSE Prime: 5401]) and specialized in surface hardening technology. Later, as the sole surface treatment provider in the Nippon Steel group, it worked to minimize lifecycle costs for rolls (excluding rolling mill rolls) and peripheral devices mainly used in the steel industry, with a core focus on the development of materials for welding and thermal spraying and relevant application techniques. In addition to its business activities in Japan, Nippon Steel Hardfacing began expanding globally in the 1990s, starting with North and South America. It is working to establish global supply systems primarily targeting the worldwide steel industry through a variety of efforts, including its 2012 establishment of a subsidiary in Thailand as a supply base for East Asia.

Plasma Giken Co., Ltd.

Established in 1980, Plasma Giken Co., Ltd. specializes in thermal spraying treatment. It principally provides contracted treatment services ranging from thermal spraying (plasma spraying, arc spraying, high velocity flame spraying, and detonation spraying) to cold spraying, from development to trial manufacturing, and from small- and medium-sized lots to mass production.

Shares of FY2012 cermet spraying market (JPY9.5bn)



Source: Shared Research based on data obtained from the 2013 edition of *Status and Outlook of the Thermal Spraying Market* from Digital Research, Inc.

Strengths and weaknesses

Strengths

A portfolio of diverse surface treatments that makes the company the leader in a niche market: One of TOCALO's strengths is its ability to handle a wide variety of surface treatments, ranging from thick coating (e.g., thermal spraying, TD process, ZAC coating, and PTA process) to thin coating (e.g., PVD process). Of the different categories in thermal spraying (metalized contact thermal spraying, maintenance thermal spraying, and functional thermal spraying), the company excels in functional thermal spraying, which is high value-added and has strong growth potential. It has captured more than 40% of the thermal spraying market in Japan (scale of about JPY60.0bn in 2018; source: Yano Research Institute) and holds the top share, whereas its competitors are all small- and medium-sized companies with market shares of 10% or less. These companies specialize in specific fields, and thus, are unable to handle a wide range of surface treatments that span from thick to thin coatings, as TOCALO can.

Ability to acquire top-class customers in major industries through joint development focused on meeting future needs: Surface treatment centered around thermal spraying has become a standard technology in a wide variety of fields, ranging from steel to semiconductors, and its demand has been on the rise year by year. One of TOCALO's strengths is that it has acquired top-class customers in major industries through joint development focused on needs of the future. In the past, most demand came from the steel and paper and pulp industries, but sales from the semiconductor and FPD equipment industries currently account for nearly 47% of the company's sales in FY03/22. One of the largest drivers of its semiconductor-related business is Tokyo Electron, which accounted for 35.7% of consolidated sales in FY03/22. TOCALO and Tokyo Electron have established a close relationship through which they conduct joint development to further improve surface treatments in the semiconductor and FPD fields, both areas of intense technological innovation. The company's engineers make frequent visits to customer sites to uncover hidden needs, and work with the customers to jointly discover solutions.

Stable earnings due to high domestic repeat demand for technologies with added value: In the past, even when profit has fallen below forecast or decreased YoY, the company has maintained stable profitability with relatively little deviation in terms of earnings, despite its high degree of reliance on semiconductor and FPD-related sales. Shared Research believes that these stable earnings are underpinned by a thick customer base in industries other than semiconductors and FPDs and repeat demand for functional surface treatments that provide high added value. Recoating demand is generated when components and parts that have undergone thermal spraying or other types of surface treatments become worn or deteriorate over time. The company does not merely provide maintenance through its recoating services; it also captures repeat demand for higher added value by proposing and providing products and services with heightened functionality.

Weaknesses

A lack of peripheral technologies and mass production bases necessary to process large orders: TOCALO has adopted a labor-intensive, made-to-order production system through which it customizes all surface treatments to fit the specifications of individual customers. Some of the company's competitors overseas develop, manufacture, and sell thermal spraying materials and equipment in addition to providing contracted treatment services, but TOCALO specializes in services. TOCALO's surface treatment lines, mainly thermal spraying, are designed to suit workpieces that have relatively large surface areas, and are not geared toward mass processing of small components. Accordingly, the company is currently unable to handle high volume components such as automobile parts, which are generally processed in quantities as large as one million units per year. We think the company lacks the peripheral technologies (including internal production of thermal spraying materials and equipment) and mass production bases necessary to handle high volume orders.

Lackluster cultivation of overseas markets: The global thermal spraying market was valued at about JPY700.0bn in 2018 (Source: Yano Research Institute). Although TOCALO has the top market share in Japan, it has not yet cultivated much of the overseas market, which is at least ten times the size of Japan's market. In FY03/22, overseas sales only accounted for 21.1% of the company's sales, and mainly came from Japanese companies that had expanded overseas. The company has concluded many licensing agreements with overseas companies but rarely cultivates local customers on its own. Shared Research believes the company's market development abroad is somewhat lackluster compared with that of the many Japanese industrial machinery makers that have ventured overseas. Anticipating growth in its recoating business abroad, the company has expanded its overseas bases, primarily in Asia. However, it often misses out on repeat demand as recoating is often handled by local companies, particularly for low-end technologies where there is a large number of new market entrants (high-end technologies also apply in the case of South Korea). Shared Research surmises that TOCALO's strategy of obtaining royalty revenue through technological licensing is one factor lowering the barrier of entry for local companies.

Low profitability of the Other Surface Treatments business: The recurring profit margin (before segment adjustments) in Other Surface Treatments, which was 18.7% in FY03/22, paled in comparison to the 24.5% profit margin in Thermal Spraying, 16.7% in Domestic Subsidiary (Japan Coating Center), and 27.0% in Overseas Subsidiaries. Although Other Surface Treatments offers a variety of treatments (TD process, ZAC, and PTA process), their sales are only a few hundred million yen each. Despite this segment's involvement with the industrial equipment industry, it has not received enough orders to be able to demonstrate any volume efficiency. Shared Research believes that all of these treatment technologies are gradually becoming legacy technologies, which causes them to remain niche markets, inhibiting market expansion.

Historical results and financial statements

Income statement

Income statement	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Sales	**22,599**	**26,068**	**28,746**	**28,964**	**34,109**	**39,558**	**37,896**	**39,294**	**43,813**
YoY	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	11.5%
Cost of sales	15,034	17,104	19,020	18,428	21,462	25,797	25,116	24,479	27,227
Gross profit	**7,564**	**8,964**	**9,727**	**10,536**	**12,646**	**13,761**	**12,780**	**14,593**	**16,585**
YoY	10.8%	18.5%	8.5%	8.3%	20.0%	8.8%	-7.1%	14.2%	13.7%
Gross profit margin	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.1%	37.9%
SG&A expenses	4,081	4,396	4,921	4,890	5,536	6,019	6,229	5,924	6,329
YoY	4.0%	7.7%	11.9%	-0.6%	13.2%	8.7%	3.5%	-4.9%	6.8%
SG&A ratio	18.1%	16.9%	17.1%	16.9%	16.2%	15.2%	16.4%	15.1%	14.4%
Operating profit	**3,483**	**4,568**	**4,806**	**5,646**	**7,110**	**7,741**	**6,550**	**8,890**	**10,255**
YoY	19.9%	31.2%	5.2%	17.5%	25.9%	8.9%	-15.4%	35.7%	15.4%
Operating profit margin	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.6%	23.4%
Non-operating income	231	376	294	211	283	386	367	294	337
Non-operating expenses	57	54	71	55	30	52	105	48	21
Recurring profit	**3,657**	**4,890**	**5,028**	**5,801**	**7,363**	**8,076**	**6,812**	**8,914**	**10,571**
YoY	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%	18.6%
Recurring profit margin	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.7%	24.1%
Extraordinary gains	28	3	3	5	2	85	0	13	1
Extraordinary losses	11	51	342	3	198	83	17	361	124
Income taxes	1,392	1,646	1,467	1,540	2,008	2,273	2,038	2,675	3,091
Implied tax rate	37.9%	34.0%	31.3%	26.5%	28.0%	28.1%	30.0%	31.2%	29.6%
Net income attributable to non-controlling interests	106	164	206	193	322	363	351	428	447
Net income	**2,176**	**3,031**	**3,016**	**4,070**	**4,836**	**5,441**	**4,404**	**5,463**	**6,909**
YoY	16.2%	39.3%	-0.5%	34.9%	18.8%	12.5%	-19.1%	24.0%	26.5%
Net margin	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	13.9%	15.8%

Source: Shared Research based on company data
Note: Figures may differ from company materials due to differences in rounding methods.

Non-operating income and expenditures

- Non-operating income and expenditures for FY03/22 were a plus JPY316mn, an increase of JPY70mn from the plus JPY246mn of the previous year (FY03/21). Major factors in this improvement were an increase in foreign exchange gains (from JPY1mn in FY03/21 to JPY208mn) and improved financial account balance (from a plus JPY8mn to a plus JPY18mn). The company's average non-operating income and expenditures for the ten-year period of FY03/12 to FY03/21 was plus JPY224mn, with FY03/22 thus representing an approximately JPY92mn improvement.

Extraordinary profit and loss

- Extraordinary profit and loss for FY03/22 was a minus JPY123mn, an improvement of JPY225mn over the minus JPY348mn of FY03/21. A major factor in this turn of events was the resolution of the JPY349mn of impairment losses recorded as a part of the extraordinary gains for FY03/21. The company's average extraordinary gains and losses for the ten-year period of FY03/12 to FY03/21 were minus JPY84mn. The minus JPY123mn for FY03/22 was slightly larger than average, but did not prove to have any particular impact on final profit and loss.

Balance sheet

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Balance sheet	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Assets									
Cash and deposits	10,181	8,404	8,197	8,387	9,234	12,660	16,889	16,227	17,110
Notes and accounts receivable	7,405	8,593	9,138	9,986	11,654	11,716	11,712	10,571	12,176
Operational investment securities	0	2,000	1,000	2,000	2,000	0	0	3,000	3,000
Inventories	1,568	1,925	1,851	1,937	2,893	3,202	2,581	2,841	3,531
Deferred tax assets	458	486	489	499	0	0	0	0	0
Allowance for doubtful accounts	-70	-67	-72	-50	-54	-48	-20	-10	-4
Other	158	186	227	241	214	219	675	511	552
Total current assets	**19,700**	**21,527**	**20,830**	**23,000**	**25,941**	**27,749**	**31,837**	**33,140**	**36,365**
Buildings and structures	4,460	5,433	6,325	6,247	9,871	12,974	12,416	12,273	14,866
Machinery, equipment and vehicles	1,871	2,275	2,321	2,484	3,941	4,476	4,207	3,644	3,815
Land	4,996	4,982	6,003	7,305	8,246	8,652	8,648	9,050	10,189
Lease assets	31	14	21	110	88	72	50	36	33
Construction in progress	1,140	1,038	1,200	3,828	2,014	670	742	2,849	866
Other fixed assets	238	313	281	332	426	548	720	739	969
Total tangible fixed assets	**12,735**	**14,055**	**16,151**	**20,305**	**24,589**	**27,395**	**26,786**	**28,594**	**30,740**

Total intangible assets	**519**	**467**	**97**	**115**	**260**	**295**	**338**	**264**	**231**
Investment securities	202	240	682	684	1,015	886	1,317	1,322	1,324
Deferred tax assets	105	92	100	112	712	819	668	606	592
Allowance for doubtful accounts	0	0	0	0	-28	-14	0	-5	0
Other	246	265	132	115	172	147	175	260	264
Investments and other assets	**553**	**597**	**914**	**911**	**1,871**	**1,838**	**2,160**	**2,183**	**2,180**
Total fixed assets	**13,807**	**15,120**	**17,163**	**21,332**	**26,722**	**29,529**	**29,285**	**31,043**	**33,152**
Total deferred assets	**563**	**578**	**589**	**611**	**712**	**819**	**668**	**606**	**592**
Total assets	**33,507**	**36,647**	**37,992**	**44,331**	**52,664**	**57,278**	**61,122**	**64,183**	**69,517**
Liabilities									
Notes and accounts payable	2,442	3,189	3,036	1,229	1,434	1,271	1,157	1,194	1,397
Electronically recorded monetary obligations	0	0	0	3,157	5,991	5,004	3,660	3,849	4,721
Short-term debt	1,137	943	511	905	879	1,218	2,153	1,802	1,460
Short-term borrowings	555	571	165	151	155	112	47	15	0
Current portion of bonds	563	364	339	730	702	1,082	2,083	1,765	1,447
Lease obligations	19	8	7	24	22	24	23	22	13
Income taxes payable	846	1,043	922	965	1,353	1,361	737	1,722	1,816
Accounts payable-other, and accrued expenses	2,067	1,966	2,131	2,745	2,555	2,755	1,854	1,970	2,170
Provision for bonuses	694	768	836	891	993	1,084	1,018	1,277	1,366
Other	207	474	441	-1,007	849	669	744	379	404
Total current liabilities	**7,393**	**8,383**	**7,877**	**8,884**	**14,054**	**13,362**	**11,323**	**12,193**	**13,334**
Long-term debt	653	284	117	2,419	1,701	3,337	6,045	4,267	2,825
Long-term borrowings	635	273	100	2,324	1,628	3,282	6,015	4,249	2,802
Lease obligations	18	11	17	95	73	55	30	18	23
Deferred tax assets	356	297	116	29	0	0	0	0	0
Provision for directors' retirement benefits	383	502	0	0	0	0	0	0	0
Reserve for retirement benefits	0	0	790	724	745	876	1,085	789	853
Other	29	29	22	23	24	37	33	41	45
Total fixed liabilities	**1,421**	**1,112**	**1,045**	**3,195**	**2,470**	**4,250**	**7,163**	**5,097**	**3,723**
Total liabilities	**8,814**	**9,495**	**8,922**	**12,079**	**16,524**	**17,613**	**18,487**	**17,291**	**17,058**
Net assets									
Capital stock	2,659	2,659	2,659	2,659	2,659	2,659	2,658	2,658	2,658
Capital surplus	2,294	2,294	2,294	2,294	2,294	2,294	2,293	2,293	2,317
Retained earnings	19,181	21,273	23,187	26,117	29,547	33,165	35,898	39,841	44,166
Treasury stock	-773	-773	-773	-774	-774	-774	-773	-773	-766
Shareholders' equity	23,361	25,453	27,365	30,296	33,726	37,343	40,076	44,020	48,377
Other	361	529	414	351	448	217	187	181	722
Non-controlling interests	972	1,170	1,291	1,606	1,965	2,105	2,371	2,690	3,360
Total net assets	**24,694**	**27,152**	**29,070**	**32,253**	**36,139**	**39,665**	**42,634**	**46,891**	**52,459**
Total liabilities and net assets	**33,507**	**36,647**	**37,992**	**44,331**	**52,664**	**57,278**	**61,122**	**64,183**	**69,517**
Working capital	6,531	7,329	7,953	10,694	13,113	13,647	13,136	12,218	14,310
Total interest-bearing debt	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069	4,285
Net debt	-8,391	-7,177	-7,569	-5,063	-6,654	-8,105	-8,691	-10,158	-12,825

Source: Shared Research based on company dataNote: Figures may differ from company materials due to differences in rounding methods.

Assets

- The company's total assets for FY03/22 were JPY69.5bn, an increase of JPY5.3bn from the JPY64.2bn of FY03/21. Broken down, liquid assets increased by JPY3.2bn and fixed assets increased by JPY2.1bn. Major reasons for the increase in liquid assets were an increase in accounts receivables (JPY1.6bn), an increase in inventories (JPY690mn), and an increase in cash and deposits (JPY883mn). The increase in fixed assets was mainly due to an increase in tangible fixed assets (JPY2.1bn).

- In addition, cash deposits for FY03/22 were JPY17.1bn, an increase of JPY883mn from JPY16.2bn at end-FY03/21. Cash deposits accounted for 24.6% of total assets, down 0.7pp from 25.3% in FY03/21. The company's average for the ten-year period of FY03/12 to FY03/21 was 24.4%, with the 24.6% for FY03/22 in line with this. The ratio of cash and deposits has declined from 27.6% in FY03/20, with an average for the five years from FY03/15 to FY03/19 of 20.6%.

Liabilities

- Liabilities for FY03/22 were JPY17.1bn, a decrease of JPY233mn from JPY17.3bn in FY03/21. A breakdown of this shows that current liabilities were up by JPY1.1bn while fixed liabilities fell by JPY1.4bn. A major reason for this decline was that while borrowings decreased by JPY1.8bn, accounts payable increased by JPY1.1bn while accrued expenses grew by JPY367mn as a result of an increase in sales.

- Interest-bearing debt (including lease obligations) stood at JPY4.3bn as of FY03/22, a decrease of JPY1.8bn from the JPY6.1bn of FY03/21. This was mainly due to a decline in borrowings. With cash-on-hand (cash and deposits, and securities of liquid assets) of JPY20.1bn, management is virtually debt-free with no NET interest-bearing debt.

Capital

- The company's equity ratio for FY03/22 was 70.6%, an increase of 1.7pp from 68.9% in FY03/21. Equity capital increased by JPY4.9bn to JPY49.1bn, while total assets increased by JPY5.3bn, and the equity ratio increased by 1.7pp. The company's average equity ratio for the ten-year period of FY03/12 to FY03/21 was 69.1%, with the 70.6% in FY03/22 exceeding this average by 1.5pp.

Cash flow statement

Cash flow statement	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	**Cons.**	**Cons.**	**Cons.**	**Cons.**	**Cons.**	**Cons.**	**Cons.**	**Cons.**	**Cons.**
Cash flows from operating activities(1)	3,465	4,546	4,534	5,238	7,611	8,044	6,621	10,588	9,873
Pre-tax profit	3,674	4,841	4,689	5,803	7,167	8,078	6,794	8,566	10,448
Depreciation	1,388	1,440	1,561	1,703	1,948	2,658	2,991	2,771	2,783
Amortization of goodwill	52	56	56	12	0	0	0	0	0
Change in accounts receivable	-478	-1,103	-586	-888	-1,607	-131	0	1,149	-1,418
Change in inventories	-161	-318	54	-107	-925	-357	604	-252	-607
Change in accounts payable	-67	733	-146	173	1,228	-24	-961	-70	812
Cash flows from investing activities(2)	-177	-4,889	-895	-6,537	-4,681	-4,617	-4,217	-4,615	-5,044
Purchase of tangible fixed assets	-2,076	-2,957	-3,588	-5,512	-4,312	-6,943	-3,641	-4,348	-4,562
Purchase of intangible assets	-34	-18	-4	-55	-137	-135	-152	-25	-66
Purchase, sale, and redemption of investment securities	0	-2,000	-1,360	30	-333	114	-435	0	0
Increase in investments affecting scope of consolidation	0	0	0	0	0	0	0	0	0
Free cash flow (1+2)	**3,288**	**-343**	**3,639**	**-1,299**	**2,930**	**3,427**	**2,404**	**5,973**	**4,829**
Cash flows from financing activities	-165	-1,475	-1,743	1,581	-2,217	40	1,871	-3,798	-4,547
Change in short-term borrowings	54	-48	-394	0	0	-33	-63	-30	-17
Change in long-term borrowings	527	-564	-189	2,620	-730	2,042	3,734	-2,083	-1,766
Acquisition of treasury stock	0	0	0	0	0	0	0	0	0
Dividends paid	-645	-797	-1,101	-1,142	-1,405	-1,822	-1,670	-1,520	-2,583
Depreciation and amortization (A)	1,440	1,496	1,617	1,715	1,948	2,658	2,991	2,771	2,783
Capital expenditures (B)	-2,076	-2,957	-3,588	-5,512	-4,312	-6,943	-3,641	-4,348	-4,562
Change in working capital (C)	828	798	624	2,741	2,419	534	-511	-918	2,092
Simple FCF (NI + A + B - C)	**712**	**772**	**421**	**-2,468**	**53**	**622**	**4,265**	**4,804**	**3,038**

Source: Shared Research based on company dataNote: Figures may differ from company materials due to differences in rounding methods.

Cash flow from operating activities

- Cash flow from operating activities in FY03/22 amounted to JPY9.9bn, a decrease of JPY715mn from actual inflows of JPY10.6bn in FY03/21. In addition to an increase in profits, major factors in this decrease include an increase in accounts receivable (increase in outflows of JPY2.6bn), accounts payable (increase in inflows of JPY882mn), corporate tax payments (increase in outflows of JPY1.4bn) and reserves for retirement benefits (increase in inflows of JPY353mn).

Cash flow from investment activities

- Cash flow from investment activities for FY03/22 amounted to an outflow of JPY5.0bn, a decrease of JPY429mn (increase in outflows) from the actual outflow of JPY4.6bn in FY03/21. The major factors in this decrease included an increase of JPY214mn in purchase of tangible fixed assets resulting from the increase of capital expenditures and an increase in time deposits (increased outflows) of JPY376mn.

Cash flow from financial activities

- Cash flow from financial activities for FY03/22 amounted to JPY4.5bn, a decrease of JPY749mn (increase in outflows) from the actual outflow of JPY3.8bn in FY03/21. Major factors in this decrease included larger dividend payments due to an increase in dividends (increase in outflow of JPY1.1bn).

Historical performance

Q1 FY03/23 results (out July 29, 2022)

Q1 performance overview (April - June, 3 months)

Results for Q1 FY03/23 (April - June 2022) were as follows.

- Sales: JPY11.9bn (+10.9% YoY)
- Operating profit: JPY2.7bn (-1.3% YoY)
    - Operating margin: 22.9% (down 2.8pp)
- Recurring profit: JPY2.9bn (+3.8% YoY)
    - Recurring profit margin: 24.8% (down 1.6pp)
- Net income attributable to owners of the parent: JPY1.9bn (+2.5% YoY)

- Orders: JPY12.6bn (+16.2% YoY)
- Order backlog: JPY8.6bn (+37.3% YoY, JPY7.9bn as of end-Q4 FY03/22)

Sales

- Sales rose 10.9% YoY, a double-digit increase, due to 1) thermal spraying sales growth in semiconductors and flat panel displays (FPD), the company's core business, and 2) overseas subsidiaries' sales growth. Reaching a record high for not only for the April-June quarter (Q1), but for any quarter, sales came in at JPY11.9bn. Sales were also up YoY for a 10th consecutive quarter.

Recurring profit, recurring profit margin, others

- The positive effects from increased sales were not enough to offset the negative impact from rising personnel costs and energy costs, including electricity costs. As a result, operating profit declined 1.3% YoY and the operating profit margin fell 2.8pp YoY to 22.9%. However, recurring profit, a key management indicator, continued to rise, increasing 3.8% YoY on an improvement in non-operating income and expenses, thanks largely to increased foreign exchange gains due to yen depreciation. As with sales, recurring profit reached the highest level recorded for any quarter to date. However, the company was unable to absorb the decline in profitability due to higher energy costs and other factors, and the recurring profit margin declined 1.6pp YoY to 24.8%. That being said, the decline was rather limited and the recurring profit margin of 24.8% was still the second highest ever recorded in Q1. While operating profit in Q1 declined YoY for the first time in ten quarters, recurring profit was up for the tenth consecutive quarter.

Orders, order backlog

- With mainstay semiconductor- and FDP-related orders in the Thermal Spraying segment continuing to rise, Q1 orders reached JPY12.6bn, the highest level recorded for any quarter to date. While the company still appears to have additional semiconductor- and FDP-related production capacity, delays in some customer substrate deliveries resulted in the orders backlog at the company reaching a record-high of JPY8.6bn as of end-June 2022.

Results by segment

The results by business segment are as follows. The segment profit of each business is linked to the company's consolidated recurring profit.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY9.0bn (+9.4% YoY)
- Segment profit: JPY2.3bn (+6.1% YoY)
- Segment profit margin: 25.3% (-0.8pp YoY)

Sales

- This is the company's largest segment, accounting for 75.7% of its consolidated net sales in Q1 FY03/23. Sales in the Thermal Spraying (parent) segment grew, driving the increase in overall consolidated earnings. The JPY9.0bn in sales generated through this segment breaks down as follows.

- Sales generated by thermal spraying for:
- Semiconductors and Flat Panel Displays (FPDs): JPY5.9bn (+17.8% YoY). Thermal spraying for semiconductors made up JPY5.5bn (+19.0% YoY) of this, with the remaining JPY430mn (+5.1% YoY) going towards thermal spraying for FPDs.
- Industrial Machinery: JPY994mn (+21.2% YoY)
- Iron and Steel: JPY755mn (-13.8% YoY)
- Other Purposes: JPY1.4bn (-11.2% YoY)

- Driving overall growth in thermal spraying sales and offsetting the decline in iron and steel-related thermal spraying sales, high-margin semiconductor- and FPD-related thermal spraying sales were up 17.8% YoY. Semiconductors account for more than 90% of thermal spraying sales (92.7% in Q1) for semiconductors and FPDs, with sales for FPDs continuing to decline.

- In order to keep up with robust thermal spraying demand for semiconductors and FPDs, the company has been steadily expanding capacity since FY03/22, and its ability to fill the large volume of orders received resulted in it booking over JPY6.0bn in sales in Q1. Working closely with its customers, the company has been able to avoid a sudden expansion in production capacity that would directly increase costs, while at the same time leveling operations. As such, it has been able to expand sales on the back of enhanced production capacity. Management

- noted that with an eye on Q2 (July–September) orders, it aims to further expand production capacity as it continues to pursue operational leveling.

- As it continues to expand production capacity, the company targets quarterly sales of JPY6.5bn without overburdening operations. According to the company in June 2022, it believes it can achieve quarterly sales of JPY6.5bn if it pushes itself to take on an increased workload. However, in line with its emphasis on operational leveling, the company is prioritizing steady operations as it works with its leading customers.

- In other areas, industrial machinery-related sales recovered, rising 21.2% YoY, thanks mainly to a gradual recovery in sales related to bearings, which account for roughly 30% of industrial machinery-related sales and slumped in FY03/22 due to adjustments in 1H of that year. Sales related to energy, which account for roughly half of industrial machinery-related sales, were flat YoY. As a result, while industrial machinery-related sales improved YoY, they were down from JPY1.2bn in Q1 FY03/21 (April-June 2020), leading the company to acknowledge that the recovery still lacked real strength.

- In contrast, iron and steel-related sales dropped 13.8% YoY, reflecting the weakness of production in Japan. The company does not expect a strong increase in iron and steel-related sales moving forward, but believes the impact of reduced sales on overall earnings to be relatively limited. Management noted that the decline in sales in the other purposes category was in reaction to the booking of a large project last year and was therefore not particularly concerning.

Segment profit, segment profit margins

- Backed mainly by an increase in semiconductor- and FPD-related sales, Thermal Spraying segment profit (segment profit is linked to consolidated recurring profit) improved 6.1% YoY. However, the segment profit margin dipped 0.8pp YoY to 25.3%. The decline in the segment profit margin was mainly due to higher labor costs and energy costs, including electricity costs. That said, the company at the beginning of the fiscal year expected these costs to rise, and noted that progress remained in line with its expectations. In fact, management indicated that the segment profit margin of 25.3% recorded in Q1 FY03/23, while down from 26.1% in Q1 FY03/22 (a record high for Q1), was achieved despite a sharp increase in costs and accordingly spoke to the company's ongoing improvements in profitability. At 25.3%, segment profit margin in Q1 FY03/23 exceeded showings of 23.6% in Q2 FY03/22 (July-September 2021), 23.9% in Q3 (October-December), and 24.3% in Q4 (January-March 2022).

- The company believes it was able to produce a recurring profit margin of over 25%, even amid rising costs, thanks to an increase in thermal spraying sales for semiconductors and FPDs and progress in leveling operation. In the past, the company's semiconductor-related business activities were often affected by inconsistency in factory operations during busy periods, which would result in lower production efficiency. However, the company has become increasingly adept at leveling order sizes from each of its customers during peak periods (generally JPY5.0bn per quarter, but about JPY6.0bn from October-December 2021), including its largest customer Tokyo Electron Limited (TSE Prime: 8035) and its group companies, which are disclosed in the company's annual securities report. By leveling these order sizes, the company has been able to increase its number of factory personnel and reduce overtime work, thereby ensuring stable operations with higher production efficiency, even when facing large order levels. The company believes this has contributed to growing earnings and improving profitability.

- Stability in operations has led to improved productivity, and the profit margin in the Thermal Spraying segment amounted to a record high of 24.5% in FY03/22, up 2.1pp from 22.4% in FY03/21 (the previous record high had been 23.0% in FY03/18). As noted earlier, while the segment profit margin in Q1 FY03/23 was down YoY, the company noted that operational leveling had contributed to an ongoing improvement in profitability. Management also expects enhanced production capacity to contribute to an increase in sales from Q2 (July-September), limiting the adverse impact on segment profit margin from higher electricity and other energy costs, and increased labor costs.

Semiconductor- and FPD-related orders and order backlog

- Mainstay semiconductor- and FPD-related orders and order backlog (as of end-Q1) in the Thermal Spraying segment are as follows.

- Orders: JPY6.1bn (+25.4% YoY)
- Order backlog: JPY4.7bn (+49.9% YoY, JPY4.5bn at end-Q4 FY03/22)

- Semiconductor- and FPD-related orders account for about 64.3% of thermal spraying orders. Semiconductor- and FPD-related orders are considered a key leading indicator for earnings, with the company prioritizing them over industrial machinery, iron and steel, and other orders. Orders in Q1 FY03/23 expanded 25.4% YoY to JPY6.1bn, the highest level recorded for any quarter to date. Order backlog continued to rise, topping the level seen at the end of FY03/22 and reaching a record high of JPY4.7bn as of end-June 2022. With signs of an improvement in customer substrate deliveries and the company increasing capacity, management expects a gradual clearing of the semiconductor- and FPD-related order backlog moving forward.

Domestic Subsidiary

- Sales: JPY591mn (-3.3% YoY)
- Segment profit: JPY85mn (-44.1% YoY)
- Segment profit margin: 14.4% (-10.5pp YoY)

- Orders: JPY585mn (-1.0% YoY)
- Order backlog: JPY40mn (+2.6% YoY, JPY46mn as of end-Q4 FY03/22)

Sales

- The company's domestic subsidiary (Japan Coating Center Co., Ltd.) mainly conducts physical vapor deposition (PVD) processing (a surface modification process for cutting tools, knives, and molds) and primarily serves clients in the automotive industry. Sales in Q1 FY03/23 (April-June) were down 3.3% YoY as strength in construction machinery components was insufficient to offset the negative impact from reduced production among domestic automakers. However, with sales topping the JPY462mn amount booked in Q1 FY03/21 (April-June 2020), management did not view the YoY decline as particularly concerning.

Segment profit, segment profit margin

- While sales declined by just 3.3% YoY, the effects on earnings from production cuts at automakers were greater than the impact from reduced sales. In the field of automotive applications, the company launched new production facilities alongside the establishment of a new plant in FY03/22, and cost increases, including a higher depreciation burden in line with the downturn in sales, put stronger-than-usual downward pressure on earnings. The new plant is rather small compared to facilities in the Thermal Spraying segment, and while its impact on overall earnings is therefore relatively limited, its impact on the Domestic Subsidiary segment is rather large. Within this environment, segment profit fell 44.1% YoY, with the segment profit margin dropping 10.5pp YoY to 14.4%, which was lower than the 15.2% figure recorded in April-June 2020, when COVID-19 was rapidly spreading.

Overseas Subsidiaries

- Sales: JPY1.6bn (+24.7% YoY)
- Segment profit: JPY437mn (+23.8% YoY)
- Segment profit margin: 27.7% (-0.2pp YoY)

- Orders: JPY1.9bn (+36.7% YoY)
- Order backlog: JPY1.7bn (+53.0% YoY, JPY1.5bn at end-Q4 FY03/22)

Sales

- This segment includes two subsidiaries in China, one in Taiwan, and one in the US, but essentially consists of subsidiaries in China and Taiwan, as the US business is not fully operational. Sales expanded 24.7% YoY on forex gains in line with yen depreciation, improved iron and steel-related sales in China, and semiconductor- and FPD-related re-coating sales. Sales were JPY1.6bn, the highest level recorded for any quarter to date. The company noted the improvement in sales was due not only to forex factors, as some businesses expanded sales on a local currency basis by as much as 10% YoY.

Segment profit, segment profit margin

- Segment profit grew 23.8% YoY thanks to yen depreciation and enhanced sales on a local currency basis. Sales also benefitted from a recovery in iron and steel-related sales in China and semiconductor- and FPD-related re-coating sales. Segment profit of JPY437mn was the highest ever for Q1 and the second-highest ever for any quarter. However, despite record-high sales and segment profit, the segment profit margin deteriorated 0.2pp YoY to 27.7%, largely due

- to the fact that the depreciation burden on equipment secured in line with the company increasing production capacity at the overseas subsidiaries has not yet been eased. However, the company expects profitability at its overseas subsidiaries to improve as the depreciation burden is reduced.

Other Surface Treatments

- Sales: JPY697mn (+16.8% YoY)
- Segment profit: JPY122mn (+4.3% YoY)
- Segment profit margin: 17.5% (-2.1pp YoY)

- Orders: JPY644mn (-0.5% YoY)
- Order backlog: JPY333mn (+30.6% YoY, JPY386mn at end-Q4 FY03/22)

Sales, segment profit, segment profit margin

- Both segment sales and profit increased YoY amid generally strong order bookings. However, the rate of increase in segment profit was smaller than the rate of increase in sales, due in part to a substantial level of capex. As a result, the segment profit margin dipped 2.1pp YoY.

Factors affecting change in recurring profit

- Recurring profit, which is closely linked to segment profit, increased by JPY109mn YoY, from 2.8bn in Q1 FY03/22 to JPY2.9bn. Factors contributing to the increase included upward impacts of JPY717mn stemming from growth in sales and JPY194mn from forex factors. On the other hand, profit was depressed by JPY65mn due to a higher variable cost ratio, JPY336mn on an uptick in labor costs, JPY76mn on an increase in depreciation, and JPY325mn on other factors.

- Given the sales boost, the company managed to limit the increase in its variable cost ratio (which is a factor for decreases in profits). The main reason behind this was the maintenance in its marginal profit ratio that stemmed primarily from the aforementioned leveling of operations. While there were a number of factors contributing to higher costs in Q1, the company was able to maintain the marginal profit margin at the prior year level.

- The JPY336mn increase in labor costs was due to an expansion in headcount (about 50 workers, including temporary hires) and improved compensation (increased bonuses and base pay hikes) so that the company could better take on the increase in orders. The company believes this increase in costs are reasonable in line with the expansion in sales. The JPY325mn increase in other factors was due to higher R&D costs, increased costs associated with sales activities, including business trips, and the hike in energy costs. The increase in electricity and other energy costs was due in part to the company making a partial switch to renewable energy sources.

Full-year FY03/22 results (out May 10, 2022)

Overview of full-year results

Full-year results for FY03/22 were as follows.

- · Sales: JPY43.8bn (+11.5% YoY; JPY42.5bn in the previous company forecast)
- · Operating profit: JPY10.3bn (+15.4% YoY; JPY10.1bn in the previous forecast)
- · Recurring profit: JPY10.6bn (+18.6% YoY; JPY10.2bn in the previous forecast)
    - Recurring profit margin: 24.1% (+1.4pp YoY; 24.0% in the previous forecast)
- · Net income attributable to owners of the parent: JPY6.9bn (+26.5% YoY; JPY6.6bn in the previous forecast)

- EPS was JPY113.6. The company plans to pay a year-end dividend of JPY25.0 per share, and expects an annual dividend of JPY45.0 per share (JPY35.0 per share in FY03/21). Based on the company plan, the payout ratio is expected to be 39.6% (38.9% in FY03/21).

- The company's main segments—Thermal Spraying (Parent), Domestic Subsidiary, Overseas Subsidiaries, and Other Surface Treatments—all saw increased sales and profits. The core field of thermal spraying for semiconductors in

- particular demonstrated growth in both sales and profits, driving growth in performance, in the backdrop of increased capital investments in the semiconductor industry, including makers of semiconductor manufacturing equipment. As a result, in consolidated performance for FY03/22, the company posted record highs for two consecutive years in sales and all forms of profit.

- Furthermore, the recurring profit margin, one of the company's management indexes, was 24.1%, an increase of 1.4pp over FY03/21. The recurring profit margin did not exceed the record high (26.6% in FY03/07), but it did approach that level, with the fourth highest figure in the company's history.

Results by segment

The results by business segment are as follows. The segment profit of each business is linked to the company's consolidated recurring profit.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY33.0bn (+9.6% YoY)
- Segment profit: JPY8.1bn (+19.6% YoY)
- Segment profit margin: 24.5% (+2.0pp YoY)

- This is the company's largest segment, accounting for 75.4% of its consolidated net sales (in Q3 FY03/22). Sales in the Thermal Spraying (parent) segment grew, driving the increase in overall consolidated earnings. The JPY33.0bn in sales generated through this segment breaks down as follows.

    - Sales generated by thermal spraying for:
    - Semiconductors and Flat Panel Displays (FPDs): JPY20.6bn (+13.6% YoY). Thermal spraying for semiconductors made up JPY19.0bn (+18.5% YoY) of this, with the remaining JPY1.7bn (-22.9% YoY) going towards thermal spraying for FPDs.
    - Industrial Machinery: JPY3.7bn (-6.5% YoY)
    - Iron and Steel: JPY3.5bn (+9.0% YoY)
    - Other Purposes: JPY5.2bn (+8.5% YoY)

- Double-digit sales growth of thermal spraying for semiconductors and FPDs (associated with high profit margins) continued to grow, fully compensating for the decline in sales stemming from thermal spraying for industrial machinery and becoming a key driver for the overall growth in thermal spraying sales. More than 90% of sales from thermal spraying for semiconductors and FPDs were generated by thermal spraying for semiconductors, with sales associated with thermal spraying for FPDs trending downward (FPD sales ratio for FY03/22 was 8.0%). Sales from thermal spraying for iron and steel, which declined YoY in 1H, began to recover in 2H (October–March), and were up YoY. On the other hand, sales of industrial machinery narrowed due to sluggish sales related to bearings.

- Segment profit increased by 19.6% YoY due to higher sales generated through thermal spraying for semiconductors and FPDs and stabilized production. In the past, the company's semiconductor-related business activities were often affected by inconsistency in factory operations during busy periods, which would result in lower production efficiency. However, the company has become increasingly adept at leveling order sizes from each of its customers during peak periods (generally JPY5.0bn per quarter), including its largest customer Tokyo Electron Limited (TSE Prime: 8035) and its group companies, which are disclosed in the company's annual securities report. By leveling these order sizes, the company has been able to increase its number of factory personnel and reduce overtime work, thereby ensuring stable operations with higher production efficiency, even when facing large order levels. The company believes this will contribute to growing earnings and improving profitability.

- These factors have led to improved productivity, and the profit margin in this segment amounted to a record high of 24.5%, up 2.4pp from 22.4% in FY03/21 (the previous record high had been 23.0% in FY03/18). Meanwhile, demand for semiconductors continues to grow, and orders placed with the company for semiconductors and FPDs are also on the rise. In fact, orders received in 1H (April-September) were about JPY5.0bn on a quarterly basis, increasing to JPY6.1bn in Q3 (October-December) and JPY5.9bn in Q4 (January-March). On a quarterly basis, it increased by approximately JPY1.0bn from the above-mentioned stable operations of JPY5.0bn.

- The sudden increase in orders received can be attributed to growth in demand as well as an increase in the company's production capacity. The company expects orders to continue to grow on a quarterly basis, but with the company's production capacity growing slowly, it can only add a limited number of personnel. Therefore, the company has

- determined that it is possible to continue to increase sales and profits without disruption to the production site while maintaining or further improving upon the production efficiency realized in FY03/22.

Domestic Subsidiary

- Sales: JPY2.4bn (+18.9% YoY)
- Segment profit: JPY471mn (+16.0% YoY)
- Segment profit margin: 19.6% (-0.5pp YoY)

- The company's domestic subsidiary (Japan Coating Center Co., Ltd.) mainly conducts physical vapor deposition (PVD) processing (a surface modification process for cutting tools, knives, and molds) and primarily serves clients in the automotive industry. Throughout the year, the company booked a strong volume of orders from automobile parts and construction machinery manufacturers for PVD processing on cutting tools (exports related to China), and sales rose 18.9% YoY. Mainly due to the effect of this increase in sales, segment profit increased by 16.0%. However, profit margins fell by 0.5pp to 19.6% due to the impact of domestic automobile production cuts in 2H (October-March). In fact, segment profits in 2H decreased YoY, suggesting that the impact of the reduction in automobile production was significant. As a result, the increase in profits in 1H (April-September) led to increase in profits for the full year.

Overseas Subsidiaries

- Sales: JPY5.7bn (+18.6% YoY)
- Segment profit: JPY1.5bn (+18.5% YoY)
- Segment profit margin: 27.0% (unchanged YoY)

- This segment includes subsidiaries in China, Taiwan, and the U.S., but essentially consists of subsidiaries in the former two countries, China and Taiwan. Although orders for the petroleum sector in China were sluggish, sales increased by 18.6% YoY as a result of growth in the semiconductor/FPD-related re-coating and steel sectors. Segment profit was also up 18.5% YoY, but the profit margin remained flat.

Other Surface Treatments

- Sales: JPY2.5bn (+18.5% YoY)
- Segment profit: JPY468mn (up about 350% YoY)
- Segment profit margin: 18.7% (+12.3pp YoY)

- Both segment sales and profit increased due to generally strong order bookings. Segment profit reached the same level as that of domestic subsidiaries. The company believes it is on a path to recovery after bottoming out in FY03/16 when it reported a segment loss of JPY4mn.

Factors affecting change in recurring profit

- Recurring profit, which is closely linked to segment profit, increased by JPY1.7bn from 8.9bn to JPY10.6bn. Factors contributing to the increase included upward impact of JPY2.9bn stemming from growth in sales, a contribution of JPY11mn stemming from a decrease in depreciation and amortization, and a boost of JPY339mn from foreign exchange impact. Meanwhile, results also incurred downward impact of JPY203mn stemming from a higher variable cost ratio, JPY1.0bn from an increase in labor costs, and JPY360mn from other factors.

- Given the sales boost, the company managed to limit the increase in its variable cost ratio (which is a factor for decreases in profits). The main reasons behind this were the improvement in its marginal profit ratio that stemmed primarily from the aforementioned operational leveling and reduction of costs associated with the outsourcing of surface modification processes. The company also managed to limit the increase in labor and overhead costs, which also helped boost profit margin (recurring profit margin was 24.1%, up 1.4pp YoY from 22.7% in FY03/21).

- The impact of the JPY1.0bn increase in personnel expenses was limited to a practical increase of JPY694mn. This was due to the fact that in FY03/21, retirement benefit costs fell (and thus lower personnel expenses) as the actuarial difference that occurred in retirement benefit accounting became positive due to an increase in expected investment income. Since the actuarial difference in FY03/22 was slightly negative, personnel expenses increased by that amount (about JPY323mn).

Q4 results (January–March 2022; three months)

Results for the most recent Q4 (January–March 2022; three months) were as follows.

- Sales: JPY11.6bn (+15.7% YoY)
- Operating profit: JPY2.7bn (+14.2% YoY)
- Recurring profit: JPY2.8bn (+16.3% YoY)
- Recurring profit margin: 24.5% (+0.2% YoY)
- Quarterly net income attributable to owners of the parent: JPY1.9bn (+48.7% YoY)

- Looking from a quarterly basis (3-month increments), both sales and operating profit increased YoY for nine consecutive quarters.
  Against the backdrop of increased semiconductor- and FPD-related orders, thermal spraying was up in sales and profits, driving consolidated business results. While domestic subsidiaries affected by reductions in automobile production struggled, semiconductor-related sales growth helped the company overcome such negative factors. Although the recurring profit margin did not reach 26.4% in Q1 (April-June period), it reached a level that exceeded both 23.0% in Q2 (July-September) and 22.6% in Q3 (October-December). Although sales increased by 15.7% YoY, recurring profit increased by 16.3% YoY, mainly due to the increase in personnel expenses such as the retirement benefit expenses mentioned above.

Results by segment

Q4 results by segment are as follows. Please note that each business's segment profits are linked to the company's consolidated recurring profit.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY8.7bn (+17.2% YoY)
- Segment profit: JPY2.1bn (+40.7% YoY)
- Segment profit margin: 24.3% (+4.1pp YoY)

- Sales and profits were higher against the backdrop of increased orders for semiconductors-related. The sales of JPY8.7bn represented a record high for Q4 (January-March), while, for all quarters, it was the second highest, following only Q1 FY03/19 (April-June, 2018) at JPY8.9bn. In addition, due to the effects of increased sales and rising production efficiency, segment profit also reached a record high in Q4 and was the third highest ever on an all-quarter basis. The profit margin also reached a record high for Q4, but did not reach a record high on a quarterly basis due to increases in personnel expenses and other factors.

- Breakdown of sales of JPY8.7bn is as follows.

  - Sales generated by thermal spraying for:
  - Semiconductors and Flat Panel Displays (FPDs): JPY5.7bn (+22.2% YoY)
  - Industrial Machinery: JPY949.0mn (+14.2% YoY)
  - Iron and Steel: JPY903mn (+16.4% YoY)
  - Other Purposes: JPY1.2bn (+1.0% YoY)

  - Sales generated by thermal spraying for semiconductors and flat-panel displays (FPDs), the company's mainstay business, exceeded the Q3 (October-December) JPY5.0bn mark, the first quarterly sales of over JPY5.0bn. Approximately 92% of sales from thermal spraying for semiconductors and FPDs were generated by semiconductor-related thermal spraying, while sales associated with FPD-related thermal spraying continued trending downward. The company is gradually increasing its semiconductor- and FPD-related production capacity, and is in the process of capturing growing demand. The company said it expects quarterly sales in excess of JPY6.0bn. Sales were up in other areas in Q4 (January-March), with sales for industrial machinery, which had continued to decrease YoY, beginning to increase again. However, the company indicated that it still needs to keep a close eye on whether industrial machinery will bottom out only to begin to grow again.

Domestic Subsidiary

- Sales: JPY587mn (unchanged YoY)
- Segment profit: JPY119mn (-17.4% YoY)

- Segment profit margin: 20.3% (-4.3pp YoY)

Due to an increase in exports to China, sales remained flat YoY but segment profit decreased 17.4% YoY owing to cutbacks in automobile production. Profit margin also fell 4.3pp to 20.3%, but exceeded the 15.6% posted in Q2 (July–September 2021) and the 17.7% of Q3 (October-December).

Overseas Subsidiaries

- Sales: JPY1.5bn (+10.6% YoY)
- Segment profit: JPY403mn (+14.8% YoY)
- Segment profit margin: 26.7% (+1.0pp YoY)

Both sales and profits continued to grow thanks to continued growth in semiconductor-related sales in China and Taiwan. However, due to seasonal factors, these did not reach the record highs of Q3 (October-December) on a quarterly basis. Profit margin also rose by 1.0pp YoY to 26.7%, but did not reach record highs due to expenses associated with business expansion (34.0% in April—June 2021).

Other Surface Treatments

- Sales: JPY701mn (+27.0% YoY)
- Segment profit: JPY137mn (+350% YoY)
- Segment profit margin: 19.5% (+12.5pp YoY)

Both sales and profit continued to increased on the back of strong overall orders. Profit margin also improved by 12.5pp YoY to 19.5%, approaching the 19.6% level of Q1 (April-June period). Segment profit margin has stabilized on a quarterly basis through Q3, with profit margin sitting at 19.6% in Q1, 17.9% in Q2 and 17.7% in Q3. Previously, the profit margin varied from quarter to quarter.

Q3 FY03/22 results (out January 31, 2022)

Cumulative Q3 results (April—December 2021; nine months)

Results for cumulative Q3 FY03/22 (April—December 2021, nine months) were as follows.

- Sales: JPY32.2bn (+10.1% YoY)
- Operating profit: JPY7.6bn (+15.8% YoY)
- Recurring profit: JPY7.7bn (+19.4% YoY)
- Recurring profit margin: 24.0% (+1.9pp YoY)
- Net income attributable to owners of the parent: JPY5.0bn (+19.6% YoY)

By segment, sales generated by the core thermal spraying business (which is handled by the parent company and accounts for 75.5% of total sales) grew 7.1% YoY centered around semiconductor-related products, driving overall business results. Sales also rose in other segments, including domestic and overseas subsidiaries. Upbeat sales, along with cost reductions resulting from productivity improvements, offset an increase in personnel and other fixed costs, lifting recurring profit up 19.4% YoY and boosting recurring profit margin to 24.0% (versus 22.1% in cumulative Q3 FY03/21).

Cumulative Q3 results by segment

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY24.3bn (+7.1% YoY)
- Segment profit: JPY6.0bn (+13.6% YoY)
- Segment profit margin: 24.5% (+1.4pp YoY)

This is the company's largest segment, accounting for 75.5% of its consolidated net sales (in cumulative Q3 FY03/22). Sales in the Thermal Spraying (parent) segment grew and continued to drive overall consolidated earnings. The JPY24.3bn in sales generated through this segment breaks down as follows.

- Sales generated by thermal spraying for:
- Semiconductors and Flat Panel Displays (FPDs): JPY15.0bn (+10.6% YoY)

- Industrial Machinery: JPY2.8bn (-12.0% YoY)
- Steel: JPY2.6bn (+6.6% YoY)
- Other Purposes: JPY4.0bn (+10.9% YoY)

- Growth in consolidated earnings was driven by the continued double-digit increase in sales generated by thermal spraying for semiconductors and FPDs (associated with high profit margins), which fully compensated for the decline in sales stemming from thermal spraying for industrial machinery. More than 90% of sales from thermal spraying for semiconductors and FPDs were generated by thermal spraying for semiconductors, and sales associated with thermal spraying for FPDs are trending downward. Sales from thermal spraying for steel, which declined YoY in 1H, began to recover in Q3 (October—December 2021), and cumulative Q3 sales were up YoY. On the other hand, while the rate of decline in sales from thermal spraying for industrial machinery narrowed (-15.3% YoY as of 1H), a double-digit drop in sales related to bearings dragged sales performance.

- Under these circumstances, segment profit increased by 7.1% due to higher sales generated through thermal spraying for semiconductors and FPDs and stabilized production. In the past, the company's semiconductor-related business activities were often affected by inconsistency in factory operations during busy periods, which would result in lower production efficiency. However, the company is becoming increasingly adept at leveling order sizes from each of its customers during peak periods (around JPY5.0bn per quarter), including its largest customer Tokyo Electron Limited (TSE1: 8035) and its group companies, which are disclosed in the company's annual securities report. By leveling these order sizes, the company has been able to increase its number of factory personnel and reduce overtime work, thereby ensuring stable operations with higher production efficiency, even when facing large order levels. The company believes this will contribute to growing earnings and improving profitability.

- These factors have led to improved productivity, and the profit margin in this segment during cumulative Q3 (April—December 2021) amounted to 24.5%, up 1.4pp from 23.1% in Q3 FY03/21. However, this was a 0.4pp drop from the 24.9% seen in 1H. On a quarterly basis, the segment's profit margin was 26.1% in Q1 (April—June 2021), 23.6% in Q2 (July—September 2021), and 23.9% in Q3 (October-December 2021). Although profit margin was up YoY in Q2 and Q3, Q1 saw a record high margin, which resulted in lower profit margin on a cumulative basis as each quarter went by. It is worth noting that the company's Q2 profit margin has been lower than Q1 in nearly every fiscal year due to seasonal factors that affect the number of operating days within these two quarters (summer holidays, etc.).

Domestic Subsidiary

- Sales: JPY1.8bn (+26.6% YoY)
- Segment profit: JPY352mn (+34.4% YoY)
- Segment profit margin: 19.4% (+1.1pp YoY)

- The company's domestic subsidiary (Japan Coating Center Co., Ltd.) mainly conducts physical vapor deposition (PVD) processing (a surface modification process for cutting tools, knives, and molds) and primarily serves clients in the automotive industry. In cumulative Q3, the company booked a strong volume of orders from automobile parts and construction machinery manufacturers for PVD processing on cutting tools, and sales rose 26.6% YoY. Mainly as a result of this increase in sales, segment profit grew 34.4% YoY, and the segment's profit margin recovered to 19.4%, up 1.1pp YoY. However, this segment was affected by production cutbacks in the automotive industry, which was offset by sales to construction machinery manufacturers. In addition, while sales to customers in the automotive industry were sluggish, the company believes the impact was limited on a YoY basis, as sales in cumulative Q3 FY03/21 (April—December 2020) were equally sluggish.

Overseas Subsidiaries

- Sales: JPY4.2bn (+21.9% YoY)
- Segment profit: JPY1.1bn (+19.9% YoY)
- Segment profit margin: 27.1% (-0.4pp YoY)

- This segment includes subsidiaries in China, Taiwan, and the U.S., but essentially consists of subsidiaries in the former two countries, China and Taiwan. In Q3, order bookings made within China's oil sector were lackluster from start to finish, but recoating operations related to semiconductors and FPDs generated strong results, and sales consequently increased by 21.9% YoY. The company also reported a 19.8% increase in segment profit, but the segment's profit margin declined by 0.4pp YoY, mainly due to weak performance in Q1 (April—June 2021). However, segment profit margin is recovering thanks to improvements in Q3 (October-December 2021). In comparison, segment profit margin was down 1.1pp YoY in 1H.

Other Surface Treatments

- Sales: JPY1.8bn (+15.4% YoY)
- Segment profit: JPY331mn (up about 340% YoY)
- Segment profit margin: 18.4% (+12.2pp YoY)

- Both segment sales and profit increased due to generally strong order bookings. Segment profit reached the same level as that of domestic subsidiaries. The company believes it is on a path to recovery after bottoming out in FY03/16 when it reported a segment loss of JPY4mn.

Factors affecting change in recurring profit

- Recurring profit, which is closely linked to segment profit, increased by JPY1.3bn from 6.5bn in Q3 FY03/21 (April–December 2021) to JPY7.7bn. Factors contributing to the increase included upward impact of JPY1.9bn stemming from growth in sales, a contribution of JPY40mn stemming from a decrease in depreciation and amortization, and a boost of JPY259mn from foreign exchange impact. Meanwhile, results also incurred downward impact of JPY245mn stemming from a higher variable cost ratio, JPY468mn from an increase in labor costs, and JPY208mn from other factors.

- Given the sales boost, the company managed to limit the increase in its variable cost ratio. The main reasons behind this were the improvement in its marginal profit ratio that stemmed primarily from the aforementioned operational leveling and reduction of costs associated with the outsourcing of surface modification processes. The company also managed to limit the increase in labor and overhead costs, which also helped boost profit margin (recurring profit margin was 24.0%, up 1.9pp YoY from 22.1% in Q3 FY03/21).

Q3 results (October–December 2021; three months)

- Results for the three-month period of Q3 FY03/22 (October–December 2021) were as follows.

- Sales: JPY11.1bn (+10.5% YoY)
- Operating profit: JPY2.4bn (+5.3% YoY)
- Recurring profit: JPY2.5bn (+9.2% YoY)
- Recurring profit margin: 22.6% (-0.3pp YoY)
- Net income attributable to owners of the parent: JPY1.5bn (+4.0% YoY)

- Q3 sales continued to grow by double digits from Q2 (July–September; +10.5% YoY), but recurring profit was limited to single digit growth, up 9.2% YoY, with recurring profit margin down 0.3pp YoY. This was partly attributable to the weak performance of domestic subsidiaries due to the impact of automobile production cuts. Quarterly sales and recurring profit both rose for the eighth consecutive quarter (YoY).

Q3 results by segment

Q3 results by segment are as follows.

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY8.3bn (+7.5% YoY)
- Segment profit: JPY2.0bn (+7.8% YoY)
- Segment profit margin: 23.9% (+0.1pp YoY)

- Q3 also saw higher sales and profits, with quarterly segment profit at the second highest level ever behind the JPY2.1bn recorded in Q1 (April–June 2021). However, segment profit margin only rose by 0.1pp YoY owing to one-time expenses such as labor costs and tax expenses (taxes and dues, etc.) in booked in Q3. The company stated that these one-time expenses were not a cause for concern.

The breakdown of JPY8.3bn in sales is as follows.

- Sales generated by thermal spraying for:
- Semiconductors and Flat Panel Displays (FPDs): JPY5.0bn (+11.5% YoY)
- Industrial Machinery: JPY1.0bn (-5.5% YoY)
- Steel: JPY924mn (+41.9% YoY)

- Other Purposes: JPY1.4bn (-10.0% YoY)

- Sales generated by thermal spraying for semiconductors and flat-panel displays (FPDs), the company's mainstay business, reached the JPY5.0bn mark on a quarterly basis. Approximately 93% of sales from thermal spraying for semiconductors and FPDs were generated by thermal spraying for semiconductors, and sales associated with thermal spraying for FPDs continued trending downward. Sales in Q1 (April—June 2021) and Q2 (July—September 2021) were also around JPY5.0bn, but Q3 was the first time quarterly sales surpassed JPY5.0bn. From Q4 (January—March 2021) onward, the company expects sales to continue around JPY5.0bn, but does not expect it to go beyond the JPY5.0bn mark regularly owing to difficulty in procuring materials and the impact of the COVID-19 pandemic. In addition, sales from thermal spraying for steel recovered, but sales from thermal spraying for industrial machinery continued to decline owing to sluggish sales of bearings.

Domestic Subsidiary

- Sales: JPY606mn (+12.4% YoY)
- Segment profit: JPY107mn (-23.6% YoY)
- Segment profit margin: 17.7% (-8.3pp YoY)

- Sales rose 12.4% YoY driven by growth in sales to construction machinery manufacturers, but segment profit fell 23.6% YoY owing to cutbacks in automobile production. Segment profit margin also fell 8.3pp to 17.7%, but improved from 15.6% in Q2 (July–September 2021).

Overseas Subsidiaries

- Sales: JPY1.6bn (+27.7% YoY)
- Segment profit: JPY445mn (+30.5% YoY)
- Segment profit margin: 28.3% (+0.6pp YoY)

- Both quarterly sales and segment profit reached record highs thanks to continued growth in semiconductor-related sales in China and Taiwan. Profit margin also rose by 0.6pp YoY to 28.3%, but did not reach record highs due to expenses associated with business expansion (34.0% in April—June 2021).

Other Surface Treatments

- Sales: JPY606mn (+14.1% YoY)
- Segment profit: JPY107mn (+230% YoY)
- Segment profit margin: 17.7% (+8.8pp YoY)

- Both sales and segment profit increased on the back of strong overall orders. Profit margin also improved by 8.8pp YoY to 17.7%. Segment profit margin has stabilized through Q3, with profit margin sitting at 19.6% in Q1 and 17.9% in Q2. Previously, the profit margin varied from quarter to quarter.

1H FY03/22 results (out October 29, 2021)

Summary of results in 1H

- Results for 1H FY03/22 (April—September 2021) were as follows.

- Sales: JPY21.1bn (+9.9% YoY; versus previous forecast of JPY20.0bn)
- Operating profit: JPY5.1bn (+21.6% YoY; JPY4.3bn)
- Recurring profit: JPY5.2bn (+25.1% YoY; JPY4.3bn)
- Net income attributable to owners of the parent: JPY3.4bn (+28.3% YoY; JPY2.8bn)

The company plans to pay an interim dividend of JPY20.0 per share (versus its previous forecast of JPY17.5 per share).

- By segment, sales generated by the core thermal spraying business (which is handled by the parent company and accounts for 75.8% of total sales) grew 6.9% YoY, as a downturn in industrial machinery-related sales was offset by strong sales of semiconductor-related products against a backdrop of robust demand. Upbeat sales offset an increase in personnel and other fixed costs, and recurring profit exceeded the company's existing forecast by over 21%. On a quarterly (three-month) basis, both sales and operating profit increased YoY for the seventh consecutive quarter.

1H results by segment

Thermal Spraying (handled by TOCALO, the parent company)

- Sales: JPY16.0bn (+6.9% YoY)
- Segment profit: JPY4.0bn (+16.7% YoY)
- Segment profit margin: 24.9% (+2.1pp YoY)

This is the company's largest segment, accounting for 75.8% of its consolidated net sales (in 1H FY3/22). Sales in the Thermal Spraying (parent) segment grew and continued to drive overall consolidated earnings. The JPY16.0bn in sales generated through this segment breaks down as follows.

- Sales generated by thermal spraying for:
- Semiconductors and Flat Panel Displays (FPDs): JPY9.9bn (+10.2% YoY)
- Industrial Machinery: JPY1.8bn (-15.3% YoY)
- Steel: JPY1.6bn (-6.6% YoY)
- Other Purposes: JPY2.7bn (+25.8% YoY)

The double-digit increase in sales generated by thermal spraying for semiconductors and FPDs (associated with high profit margins) fully compensated for the decline in sales stemming from thermal spraying for industrial machinery and steel. More than 90% of sales from thermal spraying for semiconductors and FPDs were generated by thermal spraying for semiconductors, and sales associated with thermal spraying for FPDs are trending downward. Sales from thermal spraying for industrial machinery and steel, which declined YoY in 1H, were firm in Q2 (July—September 2021), and the rate of decline associated with these sales was consequently smaller in Q2 than in Q1 (April—June 2021). The substantial decline in sales generated through thermal spraying for industrial machinery was largely due to ongoing stagnation related to bearings.

Under these circumstances, segment profit increased by 16.7% due to higher sales generated through thermal spraying for semiconductors and FPDs and stabilized production. In the past, the company's semiconductor-related business activities were often affected by inconsistency in factory operations during busy periods, which would result in lower production efficiency. However, the company is becoming increasingly adept at leveling order sizes from each of its customers during peak periods (JPY4.5-5.0bn per quarter), including its largest customer Tokyo Electron Limited (TSE1: 8035) and its group companies, which are disclosed in the company's annual securities report. By leveling these order sizes, the company has been able to increase its number of factory personnel and reduce overtime work, thereby ensuring stable operations with higher production efficiency, even when facing large order levels.

These factors have led to improved productivity, and the profit margin in this segment during 1H (April—September 2021) amounted to 24.9%, up 2.1pp from 22.8% in 1H FY03/21. The segment's profit margin was 26.1% in Q1 (April—June 2021) and 23.6% in Q2 (July—September 2021); the company's Q2 profit margin has been lower than Q1 in nearly every fiscal year due to seasonal factors that affect the number of operating days within these two quarters (summer holidays, etc.).

Domestic Subsidiary

- Sales: JPY1.2bn (+35.1% YoY)
- Segment profit: JPY245mn (up about 100.0% YoY)
- Segment profit margin: 20.3% (+6.6pp YoY)

The company's domestic subsidiary (Japan Coating Center Co., Ltd.) mainly conducts physical vapor deposition (PVD) processing (a surface modification process for cutting tools, knives, and molds) and primarily serves clients in the automotive industry. In 1H, the company booked a strong volume of orders from automobile parts and construction machinery manufacturers for PVD processing on cutting tools, and sales rose about 35% YoY. Mainly as a result of this increase in sales, segment profit grew by more than 100% YoY, and the segment's profit margin rose by 6.6pp YoY.

Overseas Subsidiaries

- Sales: JPY2.6bn (+18.6% YoY)

- Segment profit: JPY689mn (+13.9% YoY)
- Segment profit margin: 26.3% (-1.1pp YoY)

- This segment includes subsidiaries in China, Taiwan, and the U.S., but essentially consists of subsidiaries in the former two countries, China and Taiwan. In 1H, order bookings made within China's oil sector were lackluster from start to finish, and steel-related performance also continued to struggle. However, recoating operations related to semiconductors and FPDs generated strong results, and sales consequently increased by nearly 20% YoY. The company also observed a double-digit increase in segment profit, but the segment's profit margin declined by 1.1pp YoY, mainly due to weak performance in Q1 (April—June 2021).

Other Surface Treatments

- Sales: JPY1.2bn (+16.1% YoY)
- Segment profit: JPY224mn (up about 360% YoY)
- Segment profit margin: 18.7% (+13.9pp YoY)

- Both segment sales and profit increased due to generally strong order bookings. Segment profit reached the same level as that of domestic subsidiaries. Results in 1H grew thanks in part to a particularly significant YoY increase in Q2 (July—September 2021).

Factors affecting change in recurring profit

- Recurring profit, which is closely linked to segment profit, increased by JPY1.0bn from 4.2bn in 1H FY03/21 (April—September 2021) to JPY5.2bn. Factors contributing to the increase included upward impact of JPY1.3bn stemming from growth in sales, a contribution of JPY48mn stemming from a decrease in depreciation and amortization, and a boost of JPY155mn from foreign exchange impact. Meanwhile, results also incurred downward impact of JPY80mn stemming from a higher variable cost ratio, JPY219mn from an increase in labor costs, and JPY116mn from other factors.

- Given this context, the reader should be aware that the company limited the rise in its variable cost ratio (which has a downward impact on profit) to a rate lower than the rate at which its sales grew. The main factors enabling the achievement of this feat were improvement in the company's marginal profit ratio caused by its leveling of operations (mentioned above) and its curbing of costs associated with the outsourcing of processing operations. The company's successful limitation of increases in labor costs and sundry expenses also contributed to the growth of its profit margin (recurring profit margin increased by 3.1pp from 21.7% in 1H FY03/21 to 24.8%).

Latest results: Q2 (July—September 2021)

The company's most recent results (in Q2 [July—September 2021]) were as follows.

- Sales: JPY10.4bn (+12.0% YoY)
- Operating profit: JPY2.4bn (+21.6% YoY)
- Recurring profit: JPY2.4bn (+25.6% YoY)
- Recurring profit margin: 23.0% (+2.5pp YoY)
- Net income: JPY1.6bn (+29.5% YoY)

- Performance figures were lower than in Q1 (April—June 2021), but this was the result of a variety of factors affecting the number of operating days that occurred within the two quarters (summer holidays, etc.). However, sales, recurring profit, and net income increased YoY by a greater rate than those same values did in Q1, while operating profit rose by the same YoY rate as Q1 operating profit. The double-digit increase in quarterly sales in Q2 made a particularly significant contribution to growth in profit. Both quarterly sales and quarterly operating profit rose for the seventh consecutive quarter (YoY).

Other information

History

Date	Description
June 1973	Established as Kizai Service Co., Ltd. in Yokohama, Kanagawa, with a capital of JPY10mn; started marketing industrial chemicals and chemical machinery equipment, offering related technical services
July 2000	Stopped operation, and became a dormant company
January 2001	Became wholly owned by JAFCO Buyout Number One Investment Limited Partnership operated by JAFCO Co., Ltd.; renamed to JAFCO SIG Co., Ltd; changed the registered location of head office to Chiyoda, Tokyo; started tender offer of shares in TOCALO Co., Ltd. as a part of management buyout by the management of the substantial surviving company (TOCALO Co., Ltd., a OTC company)
March 2001	Completed tender offer of TOCALO Co., Ltd., making it a 97.9% subsidiary of JAFCO SIG.; changed registered location of the head office to Kobe, Hyogo
August 2001	Merged with TOCALO Co., Ltd. in an absorption-type merger, and renamed the new company as TOCALO Co., Ltd.
December 2003	Listed shares on the Second Section of the Tokyo Stock Exchange
September 2004	Acquired all shares in Japan Coating Center Co., Ltd. (now a consolidated subsidiary) and made it a subsidiary
March 2005	Listed shares on the First Section of the Tokyo Stock Exchange

Former TOCALO Co., Ltd.

Date	Description
July 1951	Toyo Calorizing Industry Co., Ltd. established in Kobe, Hyogo, with a capital of JPY1mn; established Kobe Plant and started marketing calorize processing
March 1958	Started research on metal thermal spraying
November 1959	Established Tokyo Plant in Funabashi, Chiba
October 1960	Started full-scale operation of metal thermal spraying
September 1981	Changed name to TOCALO Co., Ltd.
February 1996	New head office building completed
October 1996	Registered shares as an Over-The-Counter stock at Japan Securities Dealers Association
August 2001	Absorbed by JAFCO SIG Co., Ltd. in an absorption-type merger and delisted the OTC shares

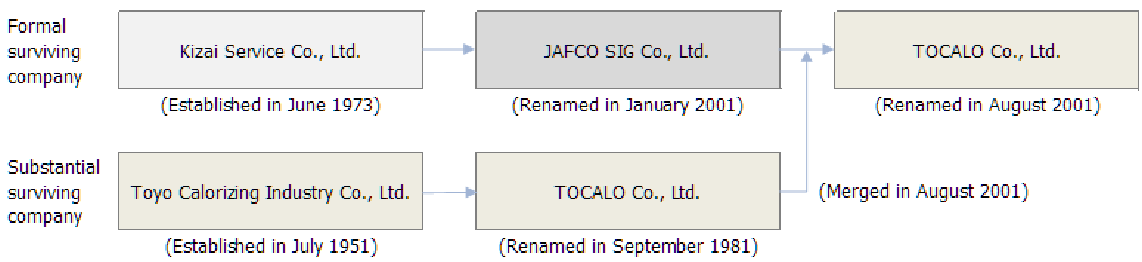
Source: Shared Research based on company data

MBO history

TOCALO Co., Ltd. (the formal surviving company) was founded in June 1973 as Kizai Service Co., Ltd., a company that sold chemical machinery and provided associated technical services. Kizai Service suspended its business activities in July 2000. In January 2001, JAFCO Buyout No. 1 Investment Limited Partnership (operated by JAFCO Co., Ltd. [now, JAFCO Group Co., Ltd.; TSE Prime: 8595]) acquired 100% of the outstanding shares in Kizai Service and changed its name to JAFCO SIG Co., Ltd. Between late January and early March of 2001, JAFCO SIG made a tender offer to the former TOCALO Co., Ltd. (the substantial surviving company), and acquired 97.9% of its outstanding shares. In August 2001, JAFCO SIG absorbed this new subsidiary and renamed itself TOCALO Co., Ltd.

The tender offer and the absorption-type merger were part of an MBO the management team of the former TOCALO Co., Ltd. conducted in a bid to maintain its independence from a potential takeover by an overseas heavy machinery manufacturer (Sulzer Metco). The shares of former TOCALO Co., Ltd. were mainly acquired from the then parent, Nittetsu Shoji Co., Ltd. (currently, Nippon Streel Trading Corporation [TSE Prime: 9810]).

MBO overview



Source: Shared Research based on company data

Corporate governance and top management

Top management

Noriyuki Mifune, President and Representative Director (born May 1955)

Apr. 1978	Joined the company
Apr. 2001	Plant manager, Kitakyushu Plant
June 2007	Director, and plant manager, Akashi Plant
June 2009	Director, and deputy general manager of manufacturing
June 2012	Managing director, general manager of manufacturing
Jun. 2013	President and representative director
June 2021	President and representative director (current position)

Hiroshi Hisano, Director and Senior Executive Officer (born December 1954)

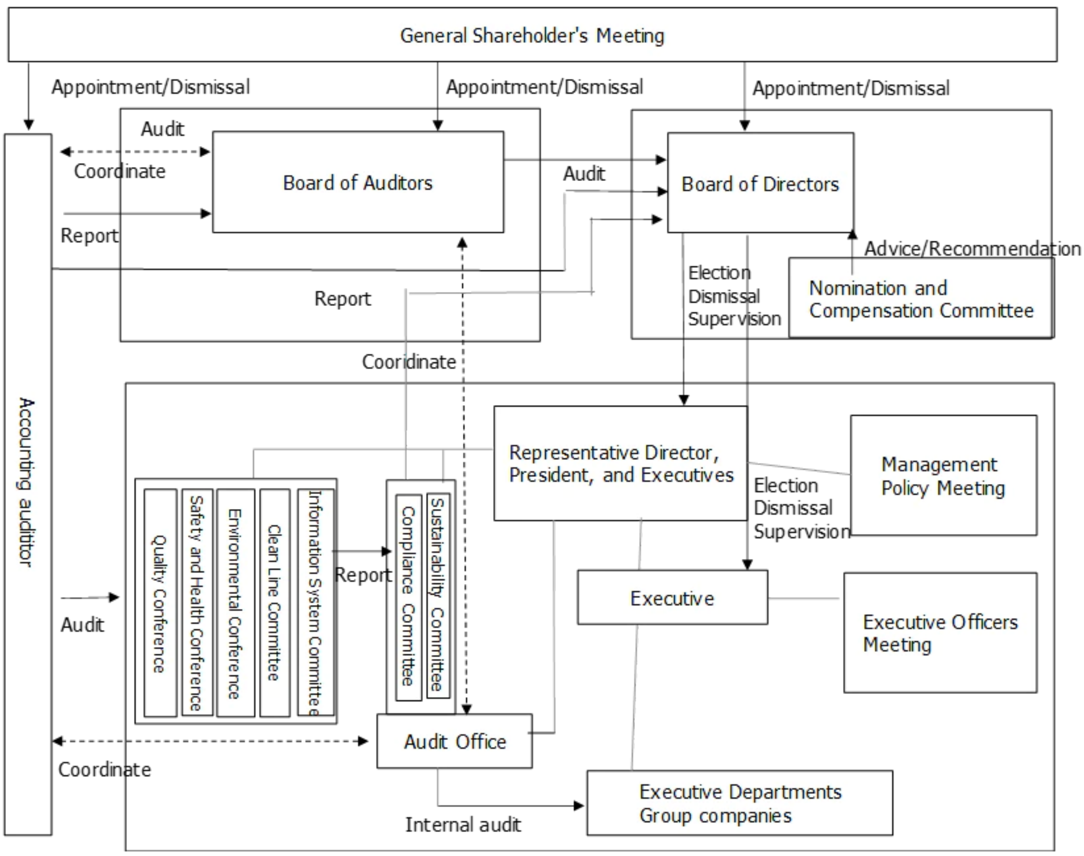
December 1979	Joined the company
June 2009	Director, and plant manager, Akashi Plant
June 2013	Director, general manager of manufacturing
October 2014	Managing director, general manager of manufacturing
June 2019	Senior managing director, general manager of manufacturing
June 2021	Director, senior executive officer (current position)

Nobuyuki Kuroki, Director and Senior Executive Officer (born November 1954)

April 1978	Joined the company
April 2005	Plant manager, Tokyo Plant
May 2011	President, Tocalo & Han Tai KS Co., Ltd.
June 2016	Managing director, general manager of sales and marketing
June 2019	Senior managing director, general manager of marketing (current position)
April 2021	Chairman of TOCALO & Han Tai TW Co., Ltd.
June 2021	Director, senior executive officer (current position)

Source: Shared Research based on company data

Corporate governance



Source: Shared Research based on company data

Dividend policy

TOCALO considers returning profit to shareholders an important management policy. The company intends to actively improve shareholder returns while placing an emphasis on ensuring continuously stable dividends grounded in distribution that is backed by business results. It aims for stable dividends equivalent to about one third of net income. In FY03/23, the company expects to pay dividends of JPY45 per share (versus JPY45 per share in FY03/22), including an interim dividend of JPY22.5 per share (versus JPY20.0 per share in FY03/22), for a consolidated payout ratio of 36.8%.

	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPY)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Dividend per share	12.5	15.0	18.8	21.3	26.3	30.0	25.0	35.0	45.0
Payout ratio	34.9%	30.1%	37.8%	31.7%	33.0%	33.5%	34.5%	38.9%	39.6%
DOE	3.3%	3.7%	4.2%	4.4%	4.9%	5.1%	3.9%	5.0%	5.9%
ROE	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%	14.8%

Source: Shared Research based on company data

Major shareholders

Top shareholders	Shares held(000 shares)	Shareholding ratio
The Master Trust Bank of Japan, Ltd.	10,188	16.74%
Custody Bank of Japan, Ltd.	7,910	13.00%
BBH FOR FIDELITY LOW-PRICED STOCK FUND (PRINCIPAL ALL SECTOR SUBPORTFOLIO) (Standing proxy: MUFG Bank, Ltd.)	2,958	4.86%
TOCALO Employees Shareholding Association	2,893	4.75%
NORTHERN TRUST CO.(AVFC) RE FIDELITY FUNDS (Standing proxy: The Hongkong and Shanghai Banking Corporation, Ltd. Tokyo Branch)	1,995	3.28%
GOVERNMENT OF NORWAY (Standing proxy: Citibank Japan, Ltd., N.A Tokyo Branch)	1,532	2.52%
NORTHERN TRUST CO.(AVFC) RE HCROO (Standing proxy: The Hongkong and Shanghai Banking Corporation, Ltd. Tokyo Branch)	1,232	2.03%
Kumiko Saijo	1,036	1.70%
STATE STREET BANK WEST CLIENT - TREATY 505234	891	1.47%
KIA FUND F149	858	1.41%
SUM	31,497	51.76%

Source: Shared Research based on company data
*As of end-September 2022

Employees

Number of employees, other	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
No. of employees (ex. temp. workers)	**802**	**824**	**857**	**898**	**955**	**1,021**	**1,060**	**1,121**	**1,176**
Thermal Spraying (Parent)	405	418	430	449	504	538	553	569	611
Domestic Subsidiary (PVD process)	88	88	100	112	113	120	125	142	156
Other	247	256	263	265	275	292	309	328	327
Adjustments	62	62	64	72	63	71	73	82	82
Avg. number of temporary employees	**242**	**243**	**239**	**245**	**236**	**251**	**263**	**253**	**265**
Thermal Spraying (Parent)	116	115	117	111	108	114	128	139	147
Domestic Subsidiary (PVD process)	65	67	65	71	70	67	62	43	34
Other	53	54	50	56	52	60	61	60	71
Adjustments	8	7	7	7	6	10	12	11	13
Segment sales per employee	**21.6**	**24.4**	**26.2**	**25.3**	**28.6**	**31.1**	**28.6**	**28.4**	**30.4**
Thermal Spraying (Parent)	31.7	36.5	40.6	40.3	43.3	47.3	42.3	43.4	44.4
Domestic Subsidiary (PVD process)	12.7	13.4	13.2	13.0	14.5	15.2	14.7	13.2	14.8
Other	14.9	16.1	15.6	14.3	17.4	19.2	20.0	17.9	21.0
Segment profit per employee	**3.5**	**4.6**	**4.6**	**5.1**	**6.2**	**6.3**	**5.1**	**6.5**	**7.3**
Thermal Spraying (Parent)	5.1	7.2	8.3	8.7	9.8	10.0	7.7	9.5	10.7
Domestic Subsidiary (PVD process)	1.5	2.1	1.6	2.2	2.7	2.9	2.6	2.2	2.5
Other	2.0	2.0	1.9	1.9	3.4	3.5	3.6	3.7	5.0
No. of employees (parent	505	517	534	560	605	648	667	695	752
Avg. number of temporary employees	134	132	137	131	123	132	148	158	165
Average age	38.1	38.5	38.7	38.7	38.3	38.1	38.3	38.4	38.2
Average years of service	13.1	13.2	13.4	13.4	12.7	12.5	12.3	13.1	13.2
Average annual salary (JPY'000)	6,705	6,890	7,068	6,992	7,104	7,264	7,389	7,164	7,499

Source: Shared Research based on company data
Note: Sales and operating profit per employee figures are reference values calculated based on the combined total of full-time employees and the average number of temporary workers (not including temporary workers received on dispatch)

Profile

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Phone

078-303-3433

Listed On

Tokyo Stock Exchange, Prime Market

Established

1951-07-01

Exchange Listing

2003-12-19

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https://www.tocalo.co.jp/contact/ir.html

Fiscal Year-End

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