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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 FY03/21, it reported a GPM of 37.1%, an SG&A ratio of 15.1%, and an OPM of 22.6%, on a consolidated basis. Over half of the parent company's total manufacturing costs in FY03/21 were labor (29% of the total) and outsourcing costs (25%). Other manufacturing costs included materials (13%), consumables (10%), utilities (4%), depreciation (9%), 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 22.2% of sales in FY03/21 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 FY03/21. The bulk of sales are to the Tokyo Electron Limited group (TSE1: 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 (16.6% in FY03/21; 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 77.1% of sales in FY03/21, Domestic Subsidiary (JCC) for 5.2%, Overseas Subsidiaries for 12.3%, and Other Surface Treatments for 5.4%. The segment profit margins (recurring profit basis) were 22.0% in Thermal Spraying, 16.6% in Domestic Subsidiary, 26.8% in Overseas Subsidiaries, and 6.4% in Other Surface Treatments (before segment profit adjustments).

Trends and outlook

Full-year FY03/21 results were sales of JPY39.1bn (+3.1% YoY), operating profit of JPY8.7bn (+32.3% YoY), recurring profit of JPY8.9bn (+30.9% YoY), and net income attributable to owners of the parent of JPY5.5bn (+24.0% YoY). Industrial machinery and steelmaking-related sales slumped, but mainstay semiconductor/FPD-related sales grew significantly, spearheading the earnings recovery. With the added benefit of cost reductions, profit rebounded to a new record. Due to the strong earnings performance, the company hiked its 2H dividend forecast from JPY17.5 per share to JPY22.5. Full-year DPS amounted to JPY35.0 (payout ratio of 38.9%). This was a significant increase from FY03/20 (JPY25.0 per share).

Full-year FY03/22 forecast: The company revised up its full-year FY03/22 forecast after reporting Q2 results, and now projects sales of JPY42.5bn (+8.2% YoY), operating profit of JPY10.1bn (+13.6% YoY), recurring profit of JPY10.2bn (+14.4% YoY), net income of JPY6.6bn (+20.8% YoY), and EPS of JPY108.5. The YoY comparison figures are calculated using FY03/21 figures retroactively adjusted to the accounting standard for revenue recognition that has been applied from FY03/22. Thermal spraying (handled by the parent company) is the company's core business. Sales generated by thermal spraying for semiconductors and flat-panel displays (FPDs) continued to rise, and the company expects to achieve record profit for the second consecutive fiscal year, thanks primarily to the standardization of order acquisition and operations and heightened productivity. The company also revised up its dividend forecast after announcing Q2 results, and for FY03/22 it now forecasts an annual dividend of JPY40.0 per share, up from JPY35.0 per share in FY03/21.

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.

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 (JPYmn)	FY03/13	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.	Est.
Orders	20,957	23,097	27,137	28,343	29,506	36,851	38,915	38,011	39,021	
YoY	-6.6%	10.2%	17.5%	4.4%	4.1%	24.9%	5.6%	-2.3%	2.7%	
Order backlog	2,275	2,774	3,843	3,440	3,983	6,725	6,081	6,195	6,143	
YoY	1.3%	21.9%	38.5%	-10.5%	15.8%	68.8%	-9.6%	1.9%	-0.8%	
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294	42,500
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%	8.2%
Gross profit	6,828	7,564	8,964	9,727	10,536	12,646	13,761	12,780	14,593	
YoY	-6.1%	10.8%	18.5%	8.5%	8.3%	20.0%	8.8%	-7.1%	14.2%	
Gross profit margin	32.6%	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.1%	
Operating profit	2,906	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,890	10,100
YoY	-8.0%	19.9%	31.2%	5.2%	17.5%	25.9%	8.9%	-15.4%	35.7%	13.6%
Operating profit margin	13.9%	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.6%	23.8%
Recurring profit	3,058	3,657	4,890	5,028	5,801	7,363	8,076	6,812	8,914	10,200
YoY	-6.8%	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%	14.4%
Recurring profit margin	14.6%	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.7%	24.0%
Net income	1,873	2,176	3,031	3,016	4,070	4,836	5,441	4,404	5,463	6,600
YoY	-5.5%	16.2%	39.3%	-0.5%	34.9%	18.8%	12.5%	-19.1%	24.0%	20.8%
Net margin	8.9%	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	13.9%	15.5%
Per-share data										
Shares issued (year-end)	63,200	63,200	63,200	63,200	63,200	63,200	63,200	63,200	63,200	
EPS	30.8	35.8	49.9	49.6	67.0	79.6	89.5	72.5	89.9	108.5
Dividend per share	10.0	12.5	15.0	18.8	21.3	26.3	30.0	25.0	35.0	40.0
Payout ratio	32.4%	34.9%	30.1%	37.8%	31.7%	33.0%	33.5%	34.5%	38.9%	36.9%
DOE	2.9%	3.3%	3.7%	4.2%	4.4%	4.9%	5.1%	3.9%	5.0%	
Book value per share	360.5	390.2	427.4	456.9	504.1	562.1	617.8	662.3	727.1	
Balance sheet (JPYmn)										
Cash and cash equivalents	8,808	10,181	8,404	8,197	8,387	9,234	12,660	16,889	16,227	
Total current assets	17,568	19,700	21,527	20,830	23,000	25,941	27,749	31,837	33,140	
Tangible fixed assets	11,406	12,735	14,055	16,151	20,305	24,589	27,395	26,786	28,594	
Investments and other assets	564	553	597	914	911	1,871	1,838	2,160	2,183	
Intangible assets	533	519	467	97	115	260	295	338	264	
Total assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183	
Accounts payable	2,509	2,442	3,189	3,036	3,207	1,434	1,271	1,157	1,194	
Short-term debt	1,027	1,137	943	511	905	879	1,218	2,153	1,802	
Total current liabilities	6,339	7,393	8,383	7,877	8,884	14,054	13,362	11,323	12,193	
Long-term debt	250	653	284	117	2,419	1,701	3,337	6,045	4,267	
Total fixed liabilities	1,079	1,421	1,112	1,045	3,195	2,470	4,250	7,163	5,097	
Total liabilities	7,417	8,814	9,495	8,922	12,079	16,524	17,613	18,487	17,291	
Total liabilities and net assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183	
Total interest-bearing debt	1,277	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069	
Cash flow statement (JPYmn)										
Cash flows from operating activities	3,266	3,465	4,546	4,534	5,238	7,611	8,044	6,621	10,588	
Cash flows from investing activities	-3,971	-177	-4,889	-895	-6,537	-4,681	-4,617	-4,217	-4,615	
Cash flows from financing activities	-1,169	-165	-1,475	-1,743	1,581	-2,217	40	1,871	-3,798	
Financial ratios										
ROA (RP-based)	10.2%	11.5%	13.9%	13.5%	14.1%	15.2%	14.7%	11.5%	14.2%	15.3%
ROE	8.8%	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%	14.2%
Equity ratio	72.9%	70.8%	71.5%	73.3%	69.1%	64.9%	65.6%	65.9%	68.9%	70.2%
Capex, other (JPYmn)										
Capital expenditures	1,644	2,513	2,678	3,730	5,936	6,361	5,965	2,313	4,822	6,000
Depreciation	1,545	1,388	1,440	1,560	1,703	1,948	2,658	2,991	2,771	2,900
R&D expenses	630	653	746	862	834	905	1,003	1,159	1,296	1,400
R&D ratio	3.0%	2.9%	2.9%	3.0%	2.9%	2.7%	2.5%	3.1%	3.3%	3.3%
Employee data (JPYmn)										
No. of employees (ex. temp. workers)	795	802	824	857	898	955	1,021	1,060	1,121	
Temporary workers	273	242	243	239	245	236	251	263	253	
Total no. of employees (incl. temp. workers)	1,052	1,041	1,056	1,080	1,123	1,163	1,239	1,304	1,344	
Sales per employee	19.9	21.7	24.7	26.6	25.8	29.3	31.9	29.1	29.2	
Operating profit per employee	2.8	3.3	4.3	4.5	5.0	6.1	6.2	5.0	6.6	

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.

Recent updates

Upward revision to its forecasts for full-year FY03/22

2021-10-29

TOCALO Co., Ltd. announced revisions to earnings forecast and dividend forecast.

Trends and outlook

Quarterly trends and results

Cumulative	FY03/20				FY03/21				FY03/22		FY03/22	
Cumulative (JPYmn)	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	% of Est.	FY Est.
Sales	9,897	18,794	28,486	37,896	9,953	19,205	29,131	39,294	10,736	21,098	49.6%	42,500
YoY	-11.0%	-10.3%	-7.3%	-4.2%	0.6%	2.2%	2.3%	3.7%	7.9%	9.9%		8.2%
Gross profit	3,522	6,411	9,820	12,780	3,674	7,131	10,852	14,593	4,311	8,218		
YoY	-15.8%	-16.5%	-11.9%	-7.1%	4.3%	11.2%	10.5%	14.2%	17.3%	15.2%		
Gross profit margin	35.6%	34.1%	34.5%	33.7%	36.9%	37.1%	37.3%	37.1%	40.2%	39.0%		
SG&A expenses	1,520	3,062	4,631	6,229	1,447	2,928	4,475	5,924	1,551	3,106		
YoY	2.8%	1.8%	3.6%	3.5%	-4.8%	-4.4%	-3.4%	-4.9%	7.2%	6.1%		
SG&A ratio	15.4%	16.3%	16.3%	16.4%	14.5%	15.2%	15.4%	15.1%	14.4%	14.7%		
Operating profit	2,001	3,348	5,188	6,550	2,269	4,203	6,377	8,890	2,759	5,111	50.6%	10,100
YoY	-26.1%	-28.4%	-22.3%	-15.4%	13.4%	25.5%	22.9%	35.7%	21.6%	21.6%		13.6%
Operating profit margin	20.2%	17.8%	18.2%	17.3%	22.8%	21.9%	21.9%	22.6%	25.7%	24.2%		23.8%
Recurring profit	2,005	3,403	5,259	6,812	2,276	4,174	6,479	8,914	2,839	5,222	51.2%	10,200
YoY	-26.8%	-29.9%	-23.9%	-15.7%	13.5%	22.7%	23.2%	30.9%	24.7%	25.1%		14.4%
Recurring profit margin	20.3%	18.1%	18.5%	18.0%	22.9%	21.7%	22.2%	22.7%	26.4%	24.8%		24.0%
Net income	1,267	2,148	3,370	4,404	1,466	2,688	4,177	5,463	1,865	3,448	52.2%	6,600
YoY	-29.7%	-33.2%	-26.1%	-19.1%	15.7%	25.1%	23.9%	24.0%	27.2%	28.3%		20.8%
Net margin	12.8%	11.4%	11.8%	11.6%	14.7%	14.0%	14.3%	13.9%	17.4%	16.3%		15.5%

Cumulative	FY03/20				FY03/21				FY03/22	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Sales	9,897	8,897	9,692	9,410	9,953	9,252	9,926	10,163	10,736	10,362
YoY	-11.0%	-9.5%	-0.9%	6.5%	0.6%	4.0%	2.4%	8.0%	7.9%	12.0%
Gross profit	3,522	2,889	3,409	2,960	3,674	3,457	3,721	3,741	4,311	3,907
YoY	-15.8%	-17.4%	-1.5%	13.1%	4.3%	19.7%	9.2%	26.4%	17.3%	13.0%
Gross profit margin	35.6%	32.5%	35.2%	31.5%	36.9%	37.4%	37.5%	36.8%	40.2%	37.7%
SG&A expenses	1,520	1,542	1,569	1,598	1,447	1,481	1,547	1,449	1,551	1,555
YoY	2.8%	0.8%	7.4%	3.1%	-4.8%	-1.4%	-9.3%	7.2%	5.0%	
SG&A ratio	15.4%	17.3%	16.2%	17.0%	14.5%	16.0%	15.6%	14.3%	14.4%	15.0%
Operating profit	2,001	1,347	1,840	1,362	2,269	1,934	2,174	2,513	2,759	2,352
YoY	-26.1%	-31.6%	-8.0%	27.5%	13.4%	43.6%	18.2%	84.5%	21.6%	21.6%
Operating profit margin	20.2%	15.1%	19.0%	14.5%	22.8%	20.9%	21.9%	24.7%	25.7%	22.7%
Recurring profit	2,005	1,398	1,856	1,553	2,276	1,898	2,305	2,435	2,839	2,383
YoY	-26.8%	-33.9%	-9.7%	33.3%	13.5%	35.8%	24.2%	56.8%	24.7%	25.6%
Recurring profit margin	20.3%	15.7%	19.1%	16.5%	22.9%	20.5%	23.2%	24.0%	26.4%	23.0%
Net income	1,267	881	1,222	1,034	1,466	1,222	1,489	1,286	1,865	1,583
YoY	-29.7%	-37.8%	-8.9%	17.1%	15.7%	38.7%	21.8%	24.4%	27.2%	29.5%
Net margin	12.8%	9.9%	12.6%	11.0%	14.7%	13.2%	15.0%	12.7%	17.4%	15.3%

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. Q1-Q2 and Q1-Q4 FY03/21 results are retroactively adjusted.

By segment	FY03/20				FY03/21				FY03/22		FY03/22	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	% of Est.	FY Est.
Sales	9,897	8,897	9,692	9,410	9,953	9,252	9,926	10,163	10,736	10,362	49.6%	42,500
YoY	-11.0%	-9.5%	-0.9%	6.5%	0.6%	4.0%	2.4%	8.0%	7.9%	12.0%		8.2%
Thermal Spraying (Parent)	7,509	6,588	7,056	7,068	7,872	7,093	7,738	7,438	8,238	7,762	50.3%	31,830
YoY	-15.4%	-13.3%	-4.9%	8.6%	4.8%	7.7%	9.7%	5.2%	4.6%	9.4%		5.6%
Domestic Subsidiary	605	592	589	578	462	430	539	587	611	595	49.2%	2,450
YoY	-4.9%	-3.4%	-8.5%	-3.7%	-23.6%	-27.4%	-8.5%	1.6%	32.3%	38.4%		21.4%
Overseas Subsidiaries	1,171	1,166	1,402	1,186	1,030	1,175	1,231	1,364	1,265	1,350	46.7%	5,600
YoY	6.0%	5.0%	24.8%	5.8%	-12.0%	0.8%	-12.2%	15.0%	22.8%	14.9%		16.7%
Other Surface Treatments	610	551	646	577	546	483	531	552	597	598	48.6%	2,460
YoY	20.8%	10.0%	8.4%	-4.2%	-10.5%	-12.3%	-17.8%	-4.3%	9.3%	23.8%		16.5%
Royalty income	-	-	-	-	42	69	-	-	23	57	50.0%	160
YoY	-	-	-	-	-	-	-	-	-45.2%	-17.4%		-27.6%
Segment profit (recurring profit)	2,005	1,398	1,856	1,553	2,276	1,898	2,305	2,435	2,839	2,383	51.2%	10,200
YoY	-26.8%	-33.9%	-9.7%	33.3%	13.5%	35.8%	24.2%	56.8%	24.7%	25.6%		14.4%
Recurring profit margin	20.3%	15.7%	19.1%	16.5%	22.9%	20.5%	23.2%	24.0%	26.4%	23.0%		24.0%
Thermal Spraying (Parent)	1,533	1,023	1,355	1,362	1,859	1,550	1,843	1,508	2,148	1,830		
YoY	-33.8%	-35.5%	-17.8%	41.3%	21.3%	51.5%	36.0%	10.7%	15.5%	18.1%		
Recurring profit margin	20.4%	15.5%	19.2%	19.3%	23.6%	21.9%	23.8%	20.3%	26.1%	23.6%		
Domestic Subsidiary	136	93	146	116	70	52	140	144	152	93		
YoY	-24.9%	-25.0%	-3.3%	30.3%	-48.5%	-44.1%	-4.1%	24.1%	117.1%	78.8%		
Recurring profit margin	22.5%	15.7%	24.8%	20.1%	15.2%	12.1%	26.0%	24.5%	24.9%	15.6%		
Overseas Subsidiaries	357	280	327	92	350	255	341	351	353	336		
YoY	20.2%	-1.8%	25.8%	-58.6%	-2.0%	-8.9%	4.3%	281.5%	0.9%	31.8%		
Recurring profit margin	30.5%	24.0%	23.3%	7.8%	34.0%	21.7%	27.7%	25.7%	27.9%	24.9%		
Other Surface Treatments	85	40	78	63	54	-5	47	39	117	107		
YoY	157.6%	66.7%	62.5%	34.0%	-36.5%	-	-39.7%	-38.1%	116.7%	-		
Recurring profit margin	13.9%	7.3%	12.1%	10.9%	9.9%	-1.0%	8.9%	7.1%	19.6%	17.9%		
Adjustments	-107	-38	-50	-80	-58	45	-65	392	68	-		

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. Q1-Q2 and Q1-Q4 FY03/21 results are retroactively adjusted.

Orders	FY03/20				FY03/21				FY03/22	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Orders	9,506	8,958	9,559	9,988	9,430	9,102	10,428	10,061	10,869	10,607
YoY	-6.5%	-4.8%	-7.0%	10.4%	-0.8%	1.6%	9.1%	0.7%	15.3%	16.5%
Thermal Spraying (Parent)	7,105	6,704	7,162	7,761	7,482	7,037	8,067	7,573	8,265	7,913
YoY	-11.5%	-5.5%	-8.5%	16.9%	5.3%	5.0%	12.6%	-2.4%	10.5%	12.4%
Domestic Subsidiary	590	579	600	582	457	442	542	598	591	604
YoY	-6.2%	-4.8%	-9.0%	-3.6%	-22.5%	-23.7%	-9.7%	2.7%	29.3%	36.7%
Overseas Subsidiaries	1,230	1,108	1,181	1,039	978	1,168	1,259	1,343	1,364	1,438
YoY	26.4%	-7.7%	0.0%	-13.1%	-20.5%	5.4%	6.6%	29.3%	39.5%	23.1%
Other Surface Treatments	579	567	617	605	512	455	561	545	647	653
YoY	7.6%	11.8%	0.3%	-0.1%	-11.6%	-19.8%	-9.1%	-9.9%	26.4%	43.5%

Order backlog	FY03/20				FY03/21				FY03/22	
(JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Order backlog	5,690	5,751	5,618	6,195	5,715	5,634	6,024	6,143	6,300	6,602
YoY	-1.6%	7.1%	-4.3%	1.9%	0.4%	-2.0%	7.2%	-0.8%	10.2%	17.2%
Thermal Spraying (Parent)	3,903	4,018	4,126	4,818	4,428	4,372	4,701	4,836	4,864	5,015
YoY	-8.6%	6.7%	-1.2%	11.9%	13.5%	8.8%	13.9%	0.4%	9.8%	14.7%
Domestic Subsidiary	35	23	33	38	33	44	47	59	39	49
YoY	-5.4%	-25.8%	-29.5%	-25.5%	-5.7%	91.3%	42.4%	55.3%	18.2%	11.4%
Overseas Subsidiaries	1,520	1,462	1,241	1,093	1,042	1,034	1,062	1,041	1,140	1,228
YoY	22.7%	10.0%	-10.4%	-25.2%	-31.4%	-29.3%	-14.4%	-4.8%	9.4%	18.8%
Other Surface Treatments	230	246	217	245	211	183	212	205	255	310
YoY	-0.9%	2.9%	-16.0%	-6.1%	-8.3%	-25.6%	-2.3%	-16.3%	20.9%	69.4%

Source: Shared Research based on company data

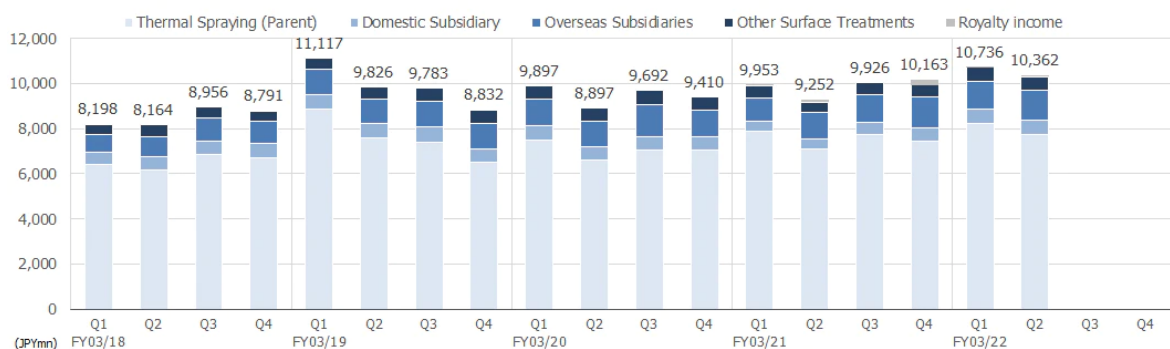
Note: Figures may differ from company materials due to differences in rounding methods.

Factors affecting RP change	FY03/20				FY03/21				FY03/22	
Cumulative (JPYmn)	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2	Q1-Q3	Q1-Q4	Q1	Q1-Q2
Recurring profit	2,005	3,403	5,259	6,812	2,276	4,174	6,479	8,914	2,839	5,222
YoY change	-735	-1,452	-1,652	-1,264	271	771	1,220	2,102	563	1,048
Sales	-679	-1,219	-1,249	-852	0	157	382	732	523	1,259
Variable cost ratio	141	221	280	224	250	585	799	1,068	5	-80
Personnel expenses	-35	-40	-51	-87	-135	-227	-354	-194	-71	-219
Depreciation	-100	-225	-311	-342	27	102	165	220	42	48
Forex impact	-24	-87	-129	-121	-2	-9	-13	42	74	155
Other	-36	-101	-190	-86	132	162	240	232	-12	-116

Factors affecting RP change	FY03/20				FY03/21				FY03/22	
Quarterly (JPYmn)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Recurring profit	2,005	1,398	1,856	1,553	2,276	1,898	2,305	2,435	2,839	2,383
YoY change	-735	-717	-200	388	271	500	449	882	563	485
Sales	-679	-540	-30	397	0	157	225	350	523	736
Variable cost ratio	141	80	59	-56	250	335	214	269	5	-85
Personnel expenses	-35	-5	-11	-36	-135	-92	-127	160	-71	-148
Depreciation	-100	-125	-86	-31	27	75	63	55	42	6
Forex impact	-24	-63	-42	8	-2	-7	-4	55	74	81
Other	-36	-65	-89	104	132	30	78	-8	-12	-104

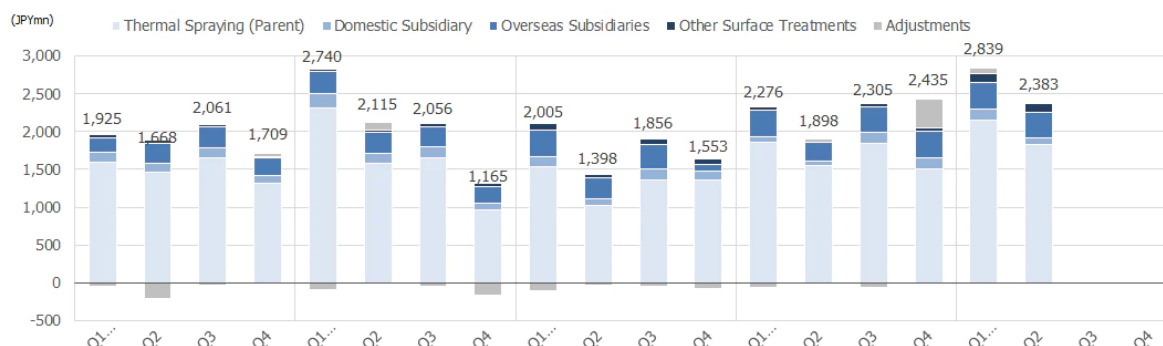
Source: Shared Research based on company data

Sales



Source: Shared Research based on company data

Recurring profit



Source: Shared Research based on company data

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 standardizing 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 standardizing 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 achieve of

this feat were improvement in the company's marginal profit ratio caused by its standardization 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).

Full-year FY03/22 company forecast

	FY03/20			FY03/21			FY03/22			
(JPYmn)	1H Act.	2H Act.	FY Act.	1H Act.	2H Act.	FY Act.	1H Act.	2H Est.	FY Rev. Est.	FY Orig. Est.
Sales	18,794	19,102	37,896	19,205	20,089	39,294	21,098	21,402	42,500	41,000
YoY	-10.3%	2.6%	-4.2%	2.2%	5.2%	3.7%	9.9%	6.5%	8.2%	4.3%
Thermal Spraying (Parent)	14,097	14,124	28,221	14,965	15,176	30,141	16,000	15,830	31,830	31,045
Semiconductor and FPD equipment parts	6,764	7,338	14,102	9,019	9,157	18,176	9,938	10,062	20,000	19,462
Semiconductor equipment	6,076	6,421	12,497	7,827	8,203	16,030	9,119	9,137	18,256	17,260
FPD equipment	687	917	1,604	1,191	954	2,145	819	925	1,744	2,202
Industrial machinery	2,474	2,308	4,782	2,075	1,890	3,965	1,757	2,023	3,780	3,895
Steelmaking machinery	1,972	1,927	3,899	1,739	1,427	3,166	1,623	1,657	3,280	3,105
Other applications	2,886	2,551	5,437	2,131	2,701	4,832	2,680	2,090	4,770	4,583
Other Surface Treatments	1,161	1,223	2,384	1,029	1,083	2,112	1,195	1,265	2,460	2,247
Domestic Subsidiary	1,197	1,167	2,364	892	1,126	2,018	1,206	1,244	2,450	2,396
Overseas Subsidiaries	2,337	2,588	4,925	2,205	2,595	4,800	2,615	2,985	5,600	5,182
Cost of sales	12,383	12,733	25,116	12,074	12,627	24,701	12,880			
Gross profit	6,411	6,369	12,780	7,131	7,462	14,593	8,218			
YoY	-16.5%	4.8%	-7.1%	11.2%	17.2%	14.2%	15.2%			
Gross profit margin	34.1%	33.3%	33.7%	37.1%	37.1%	37.1%	39.0%			
SG&A expenses	3,063	3,167	6,230	2,928	2,775	5,703	3,107			
YoY	1.8%	5.1%	3.5%	-4.4%	-12.4%	-8.5%	6.1%			
SG&A ratio	16.3%	16.6%	16.4%	15.2%	13.8%	14.5%	14.7%			
Operating profit	3,348	3,202	6,550	4,203	4,687	8,890	5,111	4,989	10,100	9,000
YoY	-28.4%	4.4%	-15.4%	25.5%	46.4%	35.7%	21.6%	6.4%	13.6%	1.2%
Operating profit margin	17.8%	16.8%	17.3%	21.9%	23.3%	22.6%	24.2%	23.3%	23.8%	22.0%
Recurring profit	3,403	3,409	6,812	4,174	4,740	8,914	5,222	4,978	10,200	9,000
YoY	-29.9%	5.8%	-15.7%	22.7%	39.0%	30.9%	25.1%	5.0%	14.4%	1.0%
Recurring profit margin	18.1%	17.8%	18.0%	21.7%	23.6%	22.7%	24.8%	23.3%	24.0%	22.0%
Net income	2,148	2,256	4,404	2,688	2,775	5,463	3,448	3,152	6,600	5,800
YoY	-33.2%	1.4%	-19.1%	25.1%	23.0%	24.0%	28.3%	13.6%	20.8%	6.2%
Net margin	11.4%	11.8%	11.6%	14.0%	13.8%	13.9%	16.3%	14.7%	15.5%	14.1%

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 company forecast

- ▶ Based on 1H results, the company revised up its forecasts for full-year FY03/22, as outlined below.

- Sales: JPY42.5bn (+8.2% YoY; versus previous forecast of JPY41.0bn)
- Operating profit: JPY10.1bn (+13.6% YoY; JPY9.0bn)
- Recurring profit: JPY10.2bn (+14.4% YoY; JPY9.0bn)
- Net income attributable to owners of the parent: JPY6.6bn (+20.8% YoY; JPY5.8bn)

The company forecasts EPS of JPY108.5 and projects that it will post record highs in the category of sales and in all profit categories for the second consecutive fiscal year. Meanwhile, it expects to pay a year-end dividend of JPY20.0 per share

(versus its previous forecast of JPY17.5 per share), for an annual dividend of JPY40.0 per share (JPY35.0 per share).

- ▶ As reason for the upward revisions, the company said that it expected semiconductor-related sales in particular to continue outpacing its initial forecast in 2H. However, TOCALO said the revised forecast factors in risk in the form of a lack of visibility over COVID-19 effects. With the increase in dividend forecast accompanying the upward revision to its earnings forecast, the company is now expecting a consolidated dividend payout ratio of 36.9%.

Sales projections 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 FY03/22.
- ▶ The company's sales projections for each segment are as follows.
 - Thermal Spraying (parent) JPY31.8bn (+5.6% YoY; previous forecast of JPY31.0bn)
 - Domestic Subsidiary: JPY2.5bn (+21.4% YoY; previous forecast of JPY2.4bn)
 - Overseas Subsidiaries: JPY5.6bn (+16.6% YoY; previous forecast of JPY5.2bn)
 - Other Surface Treatments: JPY2.5bn (+16.5% YoY; previous forecast of JPY2.2bn)
 - Royalty Income: JPY160mn (-27.6% YoY; previous forecast of JPY130mn)
- ▶ The company upwardly revised the sales projections it released for all segments at the beginning of FY03/22. Excluding the Royalty Income segment (in which sales are much lower than in other segments), the company expects sales in all segments to increase YoY.
- ▶ Out of all segments for which upward revisions were made, the upward revision to projected sales in the Domestic Subsidiaries segment was the smallest. The smaller size of this revision was due to the company's conservative incorporation of impact stemming from adjustments to automobile production that reached full swing in late August. However, since the end of October, when the company announced its current projections, automakers have begun to cease their implementation of these adjustments. Shared Research believes that the company took a conservative approach toward accounting for this return to normal levels of production when formulating its projections. Accordingly, Shared Research also believes that any concern that the company will fall substantially short of its announced sales projections is decidedly minimal.
- ▶ The company also raised its projections for the Overseas Subsidiaries and Other Surface Treatments segments. It has indicated that its upward revisions to sales projections for the Overseas Subsidiaries segment were due to continuously remarkable growth in semiconductor-related performance in China and Taiwan, and has also stated that it is harboring no major concerns regarding the segment at this time.

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

- ▶ The company's sales forecast for its mainstay Thermal Spraying (parent) segment breaks down as follows.
 - Thermal spraying for:
 - Semiconductors and FPDs: JPY20.0bn (+10.0% YoY; previous forecast of JPY19.5bn)
 - Industrial machinery: JPY3.8bn (-4.7% YoY; previous forecast of JPY3.9bn)
 - Iron and steel: JPY3.3bn (+3.6% YoY; previous forecast of JPY3.1bn)
 - Other purposes: JPY4.8bn (-1.3% YoY; previous forecast of JPY4.6bn)
- ▶ TOCALO projects that it will generate JPY20.0bn in sales through thermal spraying for semiconductors (primarily) and FPDs, and considering its current processing (production) capabilities, production concerns are virtually non-existent. The company believes that this projection is reasonable because it can confidently forecast results generated through thermal spraying for semiconductors and FPDs three months in advance based on orders already booked. Shared Research understands that, given its processing capacity and impact stemming from its standardization of order bookings and production, the company is not likely to fall short of its sales projections, nor is it likely to substantially exceed them. According to the company, if its quarterly sales exceed JPY5.5bn, it will need increase its workforce and expand its facilities. Based on the company's current capital expenditures, sales generated through thermal spraying for semiconductors will not increase further until FY03/23 or later.

- ▶ On the other hand, the company lowered its initial forecast for sales generated through thermal spraying for industrial machinery due to delayed recovery in performance related to bearings. According to the company, order bookings are gradually returning to previous levels, but they are not as strong as it had anticipated at the beginning of FY03/22. The company's revised forecast projects that sales generated through thermal spraying for industrial machinery will decline by nearly 5% YoY. Meanwhile, the company has raised its forecast for sales generated through thermal spraying for iron and steel and predicts that these sales will grow YoY. However, it also expects that these sales will not reach the level they did in FY03/20. The company also increased its initial projection for sales generated through thermal spraying for other purposes but simultaneously forecasts that these sales will decline YoY.
- ▶ As can be seen through these projections, the company forecasts that sales generated through thermal spraying for semiconductors will be outstandingly strong, while performance from thermal spraying for other purposes will fall short of full recovery.

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

- ▶ Note: The company has not disclosed by-segment breakdowns of its recurring profit forecast (JPY10.2bn). However, the company sees continued profit growth at the Thermal Spraying (Parent) segment and no change to the trend of growing profit at the Overseas Subsidiaries segment. In particular, the company expects further improvement in profitability associated with thermal spraying (handled by the parent company) as it successfully standardizes operations during the current peak season. In addition, the company expects that its procurement of raw materials and supplies will stabilize as its standardization of order bookings and operations solidifies, thus reducing concerns over prolonged lead times before sales are recorded.
- ▶ The company forecasts that recurring profit will increase by approximately JPY1.3bn from JPY8.9bn in FY03/21 to JPY10.2bn. In lieu of a by-segment breakdown, the company has released projections concerning factors that it expects will affect overall change in recurring profit. It anticipates upward impacts of JPY2.2bn from growth in sales and JPY103mn from a decline in its variable cost ratio. At the same time, it expects downward impacts of JPY909mn from higher labor costs, JPY128mn from an increase in depreciation and amortization, and JPY25mn from other factors.
- ▶ Among these factors, downward impact from growth in labor costs is particularly large and primarily stems from a FY03/21 decrease in retirement benefit expenses (which boosted profit) caused by one-time factors. Labor costs in FY03/22 will only increase by JPY358mn YoY, which is equivalent to the monetary impact of the one-time factors that brought down retirement benefit expenses in FY03/21. Based on these circumstances, the company projects that its effective increase in labor costs during FY03/22 will be approximately JPY550mn.

Capital expenditures, depreciation, and R&D expenses

- ▶ TOCALO has made no changes to its initial capital expenditure forecast. The company forecasts FY03/22 capital expenditures at JPY6.0bn (+24.4% YoY), its highest level in three years. This breaks down to JPY5.0bn at Thermal Spraying (Parent), JPY100mn at Domestic Subsidiary, and JPY900mn at Overseas Subsidiaries. The biggest capex item, JPY5.0bn at the Thermal Spraying (Parent) segment, breaks down to JPY1.5bn for building a new plant at Mizushima (slated to conclude in November 2021), JPY1.0bn for a new building at the Tokyo Plant, and JPY2.5bn for other (semiconductor-related equipment and equipment to develop next-generation coatings). Overseas spending includes construction on a new plant in Taiwan.
- ▶ On the other hand, the company has revised its initial forecast for depreciation and amortization (JPY3.1bn) downward to JPY2.9bn (+4.7% YoY). This revised figure of JPY2.9bn is at roughly the same level as the record high depreciation and amortization the company reported in FY03/20 (JPY2.991bn). Additionally, the company has not changed its initial forecast for research and development expenses (JPY1.4bn). However, due to the upward revision the company made to its sales forecast, the company's projected research and development expenses to sales ratio has fallen by 0.1pp from its initial level of 3.4% to 3.3%.

Initial company forecast and results

Results vs. Initial Est.	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Sales (Initial Est.)	21,000	21,000	23,000	27,500	28,000	30,000	39,000	36,000	36,500
Sales (Results)	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294
Results vs. Initial Est.	-0.3%	7.6%	13.3%	4.5%	3.4%	13.7%	1.4%	5.3%	7.7%
Operating profit (Initial Est.)	2,736	2,730	3,500	4,866	4,440	5,900	7,900	5,200	5,800
Operating profit (Results)	2,906	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,890
Results vs. Initial Est.	6.2%	27.6%	30.5%	-1.2%	27.2%	20.5%	-2.0%	26.0%	53.3%
Recurring profit (Initial Est.)	2,800	2,800	3,600	5,000	4,600	6,000	8,200	5,500	6,000
Recurring profit (Results)	3,058	3,657	4,890	5,028	5,801	7,363	8,076	6,812	8,914
Results vs. Initial Est.	9.2%	30.6%	35.8%	0.6%	26.1%	22.7%	-1.5%	23.9%	48.6%
Net income (Initial Est.)	1,695	1,680	2,178	3,222	2,978	4,000	5,400	3,520	3,880
Net income (Results)	1,873	2,176	3,031	3,016	4,070	4,836	5,441	4,404	5,463
Results vs. Initial Est.	10.5%	29.5%	39.2%	-6.4%	36.7%	20.9%	0.8%	25.1%	40.8%

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	FY03/26	5-year
(JPYmn)	Act.	Est.	MTP	CAGR
Sales	39,294	42,500	53,000	6.2%
YoY	3.7%	8.2%		
semiconductors	18,176	20,000	26,000	7.4%
YoY	28.9%	10.0%		
% of total	46.3%	47.1%	49.1%	
iron/steel industrial machinery	21,118	22,500	27,000	5.0%
YoY	-11.2%	6.5%		
% of total	53.7%	52.9%	50.9%	
Recurring profit	8,914	10,200	12,000	6.1%
YoY	30.9%	14.4%		
Recurring profit margin	22.7%	24.0%	22.6%	
Equity ratio	68.9%	70.2%	maintain about 70%	
ROE	12.9%	14.2%	15.0%	
DOE	5.0%	5.2%	maintain about 5.0%	
Capital expenditures	4,822	6,000	Total 25.0bn - 35.0bn	5.0-7.0 bn/Year
Depreciation	2,771	2,900		
R&D expenses	1,296	1,400	1,590	
R&D ratio	3.3%	3.3%	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.

Summary of medium-term management plan

- 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 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 (projected): JPY6.0bn

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 be 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 (projected): JPY1.4bn (3.3% 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

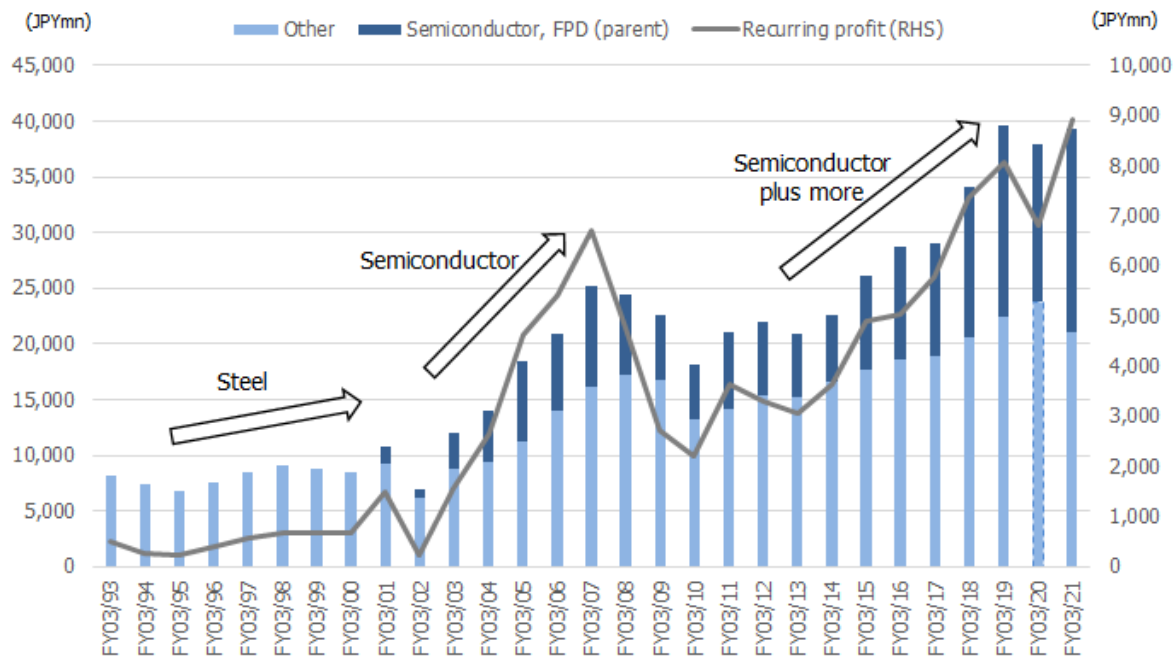
Made progress in the semiconductor and FPD fields—the largest pillar among TOCALO's target markets

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 deposition (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 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 76.7% of sales in FY03/21, while Domestic Subsidiary accounted for 5.1%, Other Surface Treatments 5.4%, and Overseas Subsidiaries 12.2%. As for recurring profit in FY03/21, Thermal Spraying (Parent) accounted for 78.6% of the total, Domestic Subsidiary 4.7%, Other Surface Treatments 1.6%, and Overseas Subsidiaries 15.1%. Overseas sales, which comprised 19.4% of total sales in FY03/21, 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 (JPY220mn in non-operating profit in FY03/21).

Breakdown of sales by segment

By segment (JPYmn)	FY03/13 Act.	FY03/14 Act.	FY03/15 Act.	FY03/16 Act.	FY03/17 Act.	FY03/18 Act.	FY03/19 Act.	FY03/20 Act.	FY03/21 Act.
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%
Thermal Spraying (Parent)	15,904	16,324	19,176	21,933	22,309	26,183	30,400	28,221	30,141
YoY	-	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%
% of total sales	76.0%	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	76.7%
Domestic Subsidiary (PVD process)	1,698	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018
YoY	-	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%
% of total sales	8.1%	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.1%
Overseas Subsidiaries	-	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800
YoY	-	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%
% of total sales	-	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.2%
Other Surface Treatments	-	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112
YoY	-	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%
% of total sales	-	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%

Source: Shared Research based on company data

Breakdown of sales by region

By region (JPYmn)	FY03/13 Act.	FY03/14 Act.	FY03/15 Act.	FY03/16 Act.	FY03/17 Act.	FY03/18 Act.	FY03/19 Act.	FY03/20 Act.	FY03/21 Act.
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%
Domestic	18,713	18,835	21,609	23,678	24,407	28,206	32,155	30,543	30,350
YoY	-	0.6%	14.7%	9.6%	3.1%	15.6%	14.0%	-5.0%	-0.6%
% of total sales	89.4%	83.3%	82.9%	82.4%	84.3%	82.7%	81.3%	80.6%	77.2%
Overseas	2,216	3,764	4,459	5,068	4,557	5,903	7,403	7,352	8,722
YoY	-	69.9%	18.5%	13.7%	-10.1%	29.5%	25.4%	-0.7%	18.6%
% of total sales	10.6%	16.7%	17.1%	17.6%	15.7%	17.3%	18.7%	19.4%	22.2%

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

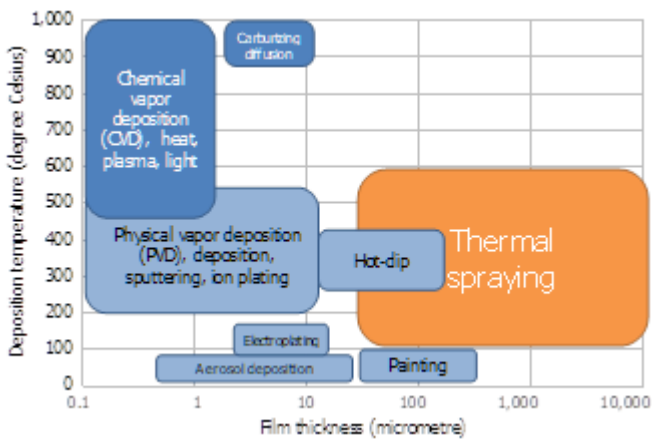
Method	Coating material	Substrate material	Adhesion	Deposition rate (mm/h)	Principle	Film thickness
Thermal spraying	Metal, alloy, ceramics, plastics, glass	Metal, ceramics, plastics, wood, paper product	Excellent	Flame: 15kg/h Arc: 25kg/h	Thermal spraying; spraying; stacking	Thick
Plating	Metal, alloy	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 [HVOF] 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.

Types of thermal spraying 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 (HVOF)	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 data from the 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 babbitt 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.

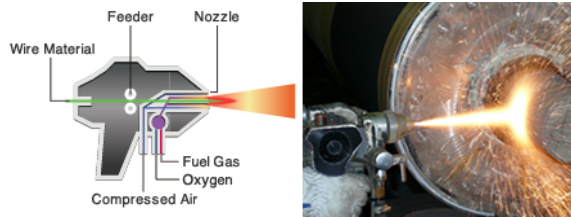
Powder flame spraying: A thermal spraying treatment in which self-fluxing alloys* in powder form are molten by an oxy acetylene (propane) flame. Particles of the molten material are then sprayed onto the substrate. The method also involves a fusing treatment performed after spraying (heating the applied 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.

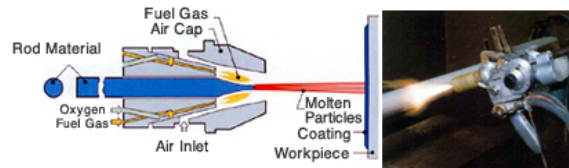
High velocity flame spraying: In high velocity oxy fuel (HVOF) spraying, a type of high velocity thermal spraying, the pressure inside the spray gun combustion chamber is raised to generate a high velocity flame that is comparable to a flame produced through explosive, detonative combustion. Spraying 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

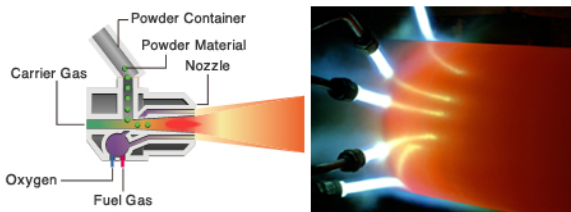
Wire flame spraying (combustion gas)



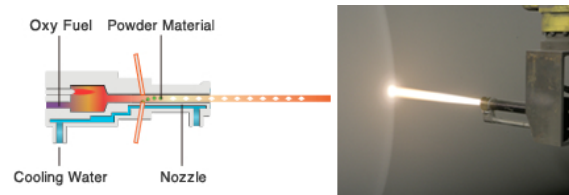
Rod flame spraying (combustion gas)



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.

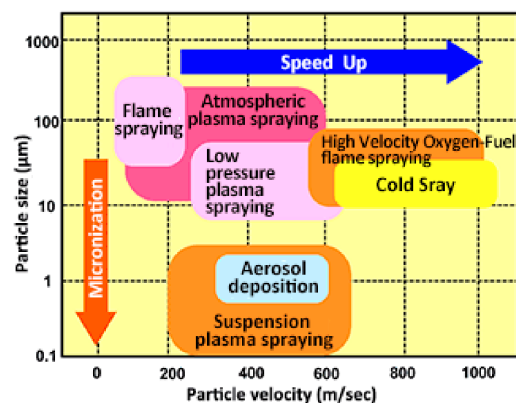
Plasma spraying: "Plasma" refers to ionized gases that form when gases are heated, and their molecules separate into atoms and then break down further into electrons and positive ions (electrolytic dissociation). A "plasma jet" is a high-speed gas jet formed by a convergence of plasma-state gases. "Plasma 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.

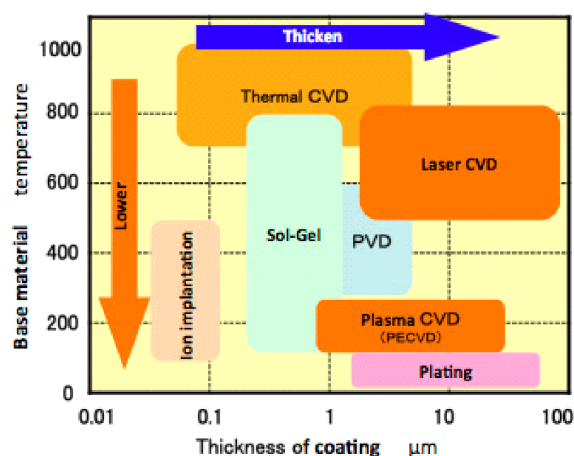
Source: Shared Research based on company data

Types of thermal spraying technology

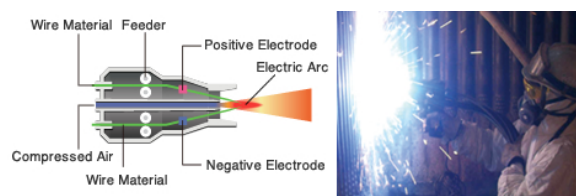


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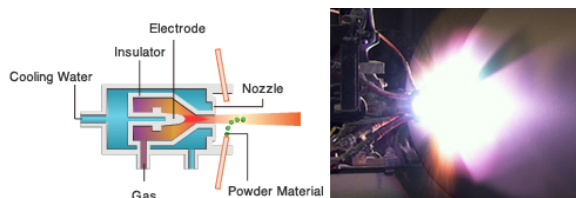
Types of coating technology



Arc spraying (electricity)

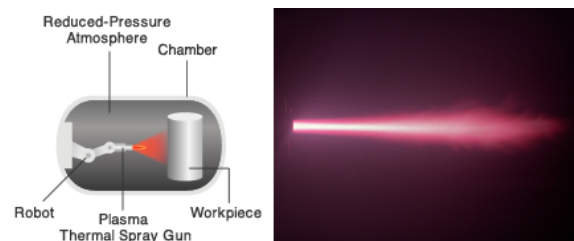


Atmospheric plasma spraying (electricity)

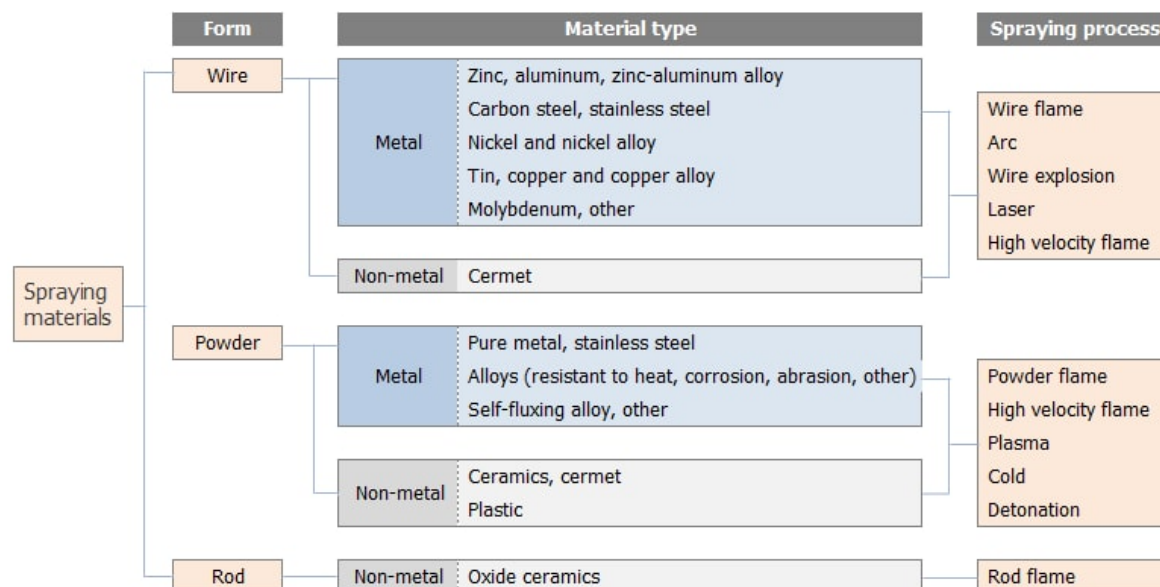


Source: Company data

Low-pressure plasma spraying (electricity)



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

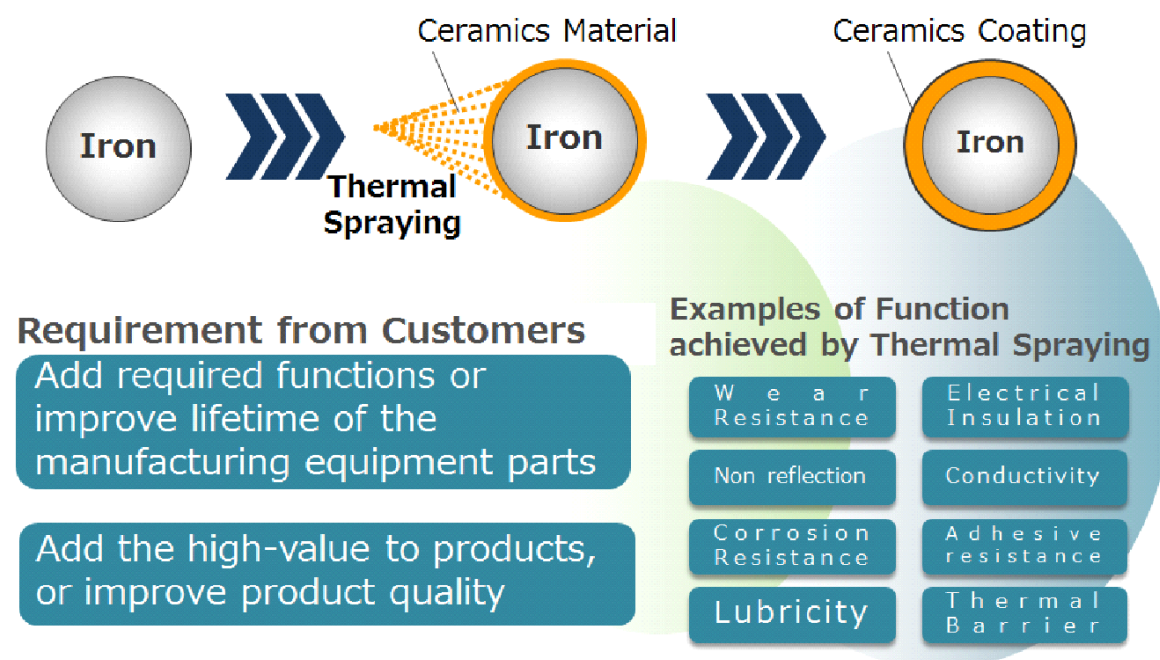
TOCALO conducts all of its surface treatments through a made-to-order production system. Accordingly, quantity is not a business priority. Once it receives an order from a customer, TOCALO has the workpieces (e.g., customers' goods and components of their manufacturing equipment) delivered to its factory, 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-FY03/21, the company had 1,121 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 FY03/21, TOCALO reported a GPM of 37%, an SG&A ratio of 15%, 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 13%, consumables 10%, utilities 4%, depreciation 9%, 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.

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

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

Source: Shared Research based on company data

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

Group structure

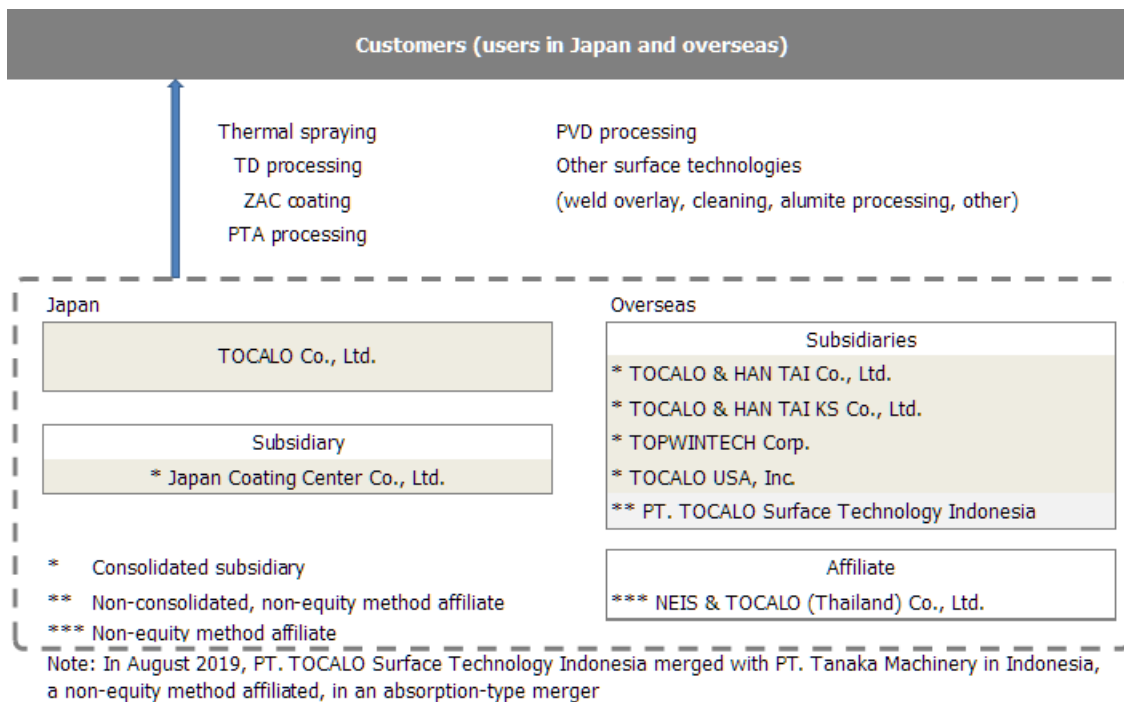
Overview

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 22.2% of the company's overall sales in FY03/21 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

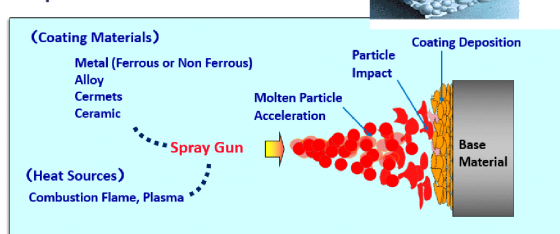
Thermal Spraying (Parent)

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

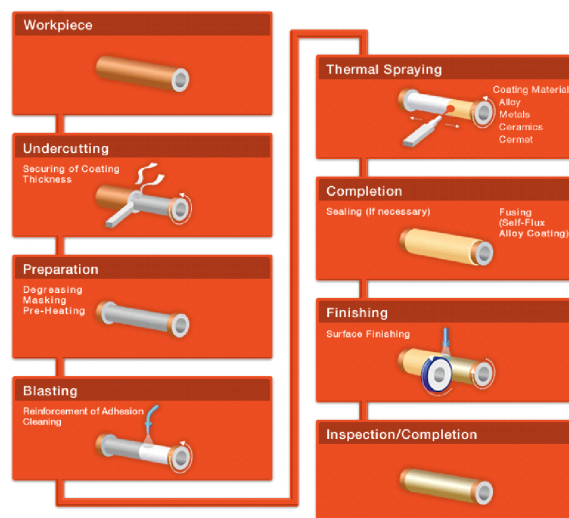
spraying and low-pressure plasma spraying, which both use plasma as a heat source; and high velocity flame spraying, wire flame spraying, and powder flame spraying which use combustion flame as a heat source. The company chooses which method is appropriate for any given workpiece.

Principle of thermal spraying technology

■ Thermal Spraying is a technology to form coating by depositing molten materials on metal surfaces at high speed.



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 FY03/21, 47% came from treatments on semiconductor and FPD manufacturing equipment parts; 10% industrial machinery parts; 8% furnishings and equipment used in the steel industry; 12% from other thermal spraying treatments; 5% from other types of surface treatments; 5% domestic subsidiary; and 12% 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 34.7% of consolidated sales in FY03/21.

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 (JPYmn)	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Tokyo Electron group	5,103	2,804	4,794	5,004	7,867	10,719	13,291	11,615	13,543
Sales dependence	24.4%	12.4%	18.4%	17.4%	27.2%	31.4%	33.6%	30.6%	34.5%
Semiconductor equipment (parent)	5,046	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030
Tokyo Electron group as % of semis	101.1%	55.7%	65.9%	58.0%	92.3%	95.1%	89.2%	92.9%	84.5%

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

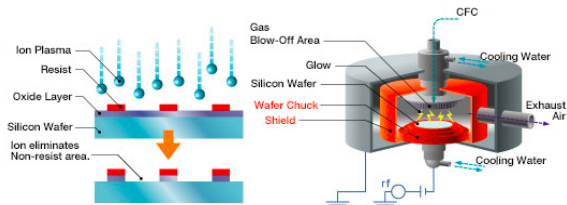
Thermal spraying is applied to parts of equipment used in silicon wafer processing (orange-colored components in the following diagrams). The procedure is utilized to achieve a range of objectives such as improving the components' resistance to plasma corrosion or giving electrical properties to the 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

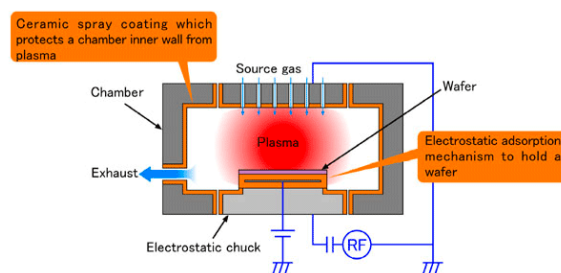
ceramic-based thermal spray coating for chamber walls that proved to be highly plasma resistant. The coating was quickly adopted as a standard for mass production in the semiconductor equipment industry accompanying its shift to 300mm wafers (the company also licenses technology to competitors).

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.

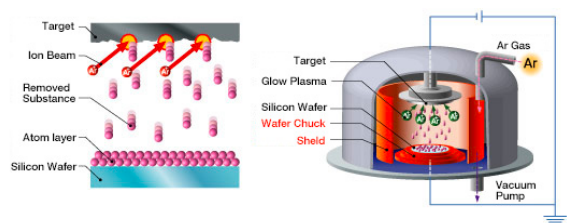
Dry etching equipment components



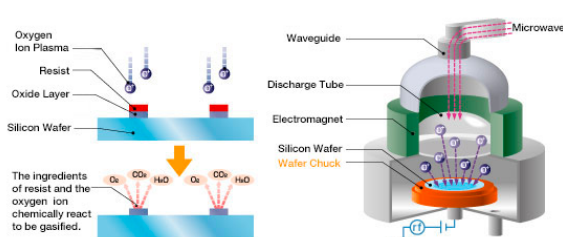
Dry etching equipment schematics



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 bridges, 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.

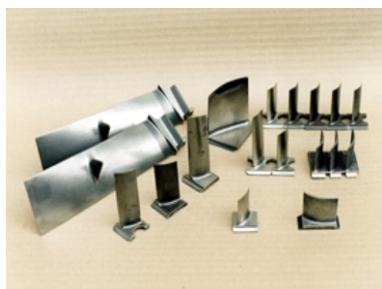
as industry standards in both Chinese railways and in the New York subway system. These bearings are also receiving attention for their application in wind power generators and are being progressively adopted in this capacity.

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.

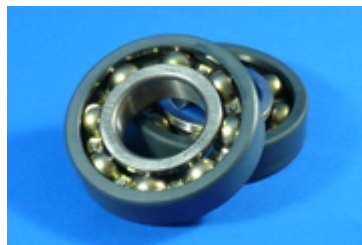
Surface treatment technology is also important in the automotive and aviation equipment industries. However, TOCALO's opportunities to provide contracted thermal spraying services in these industries are limited by major hurdles, such as restrictions aimed at meeting safety standards and capacity for 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 (TSE1: 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. (TSE1: 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.

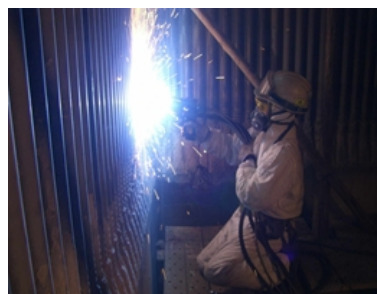
Gas turbines
(industrial equipment,
transportation equipment)



Bearings
(industrial equipment)



Boilers
(energy, petrochemical)



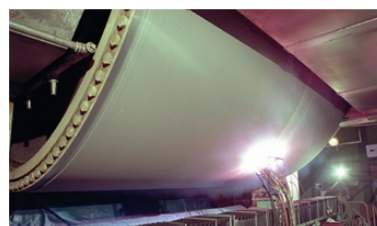
Hearth rolls (steel industry, in-furnace rolls)



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

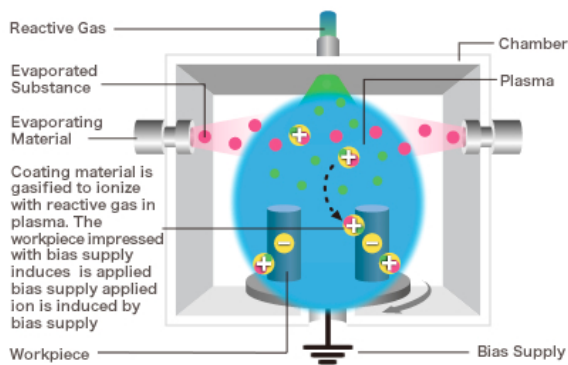
Domestic Subsidiary

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

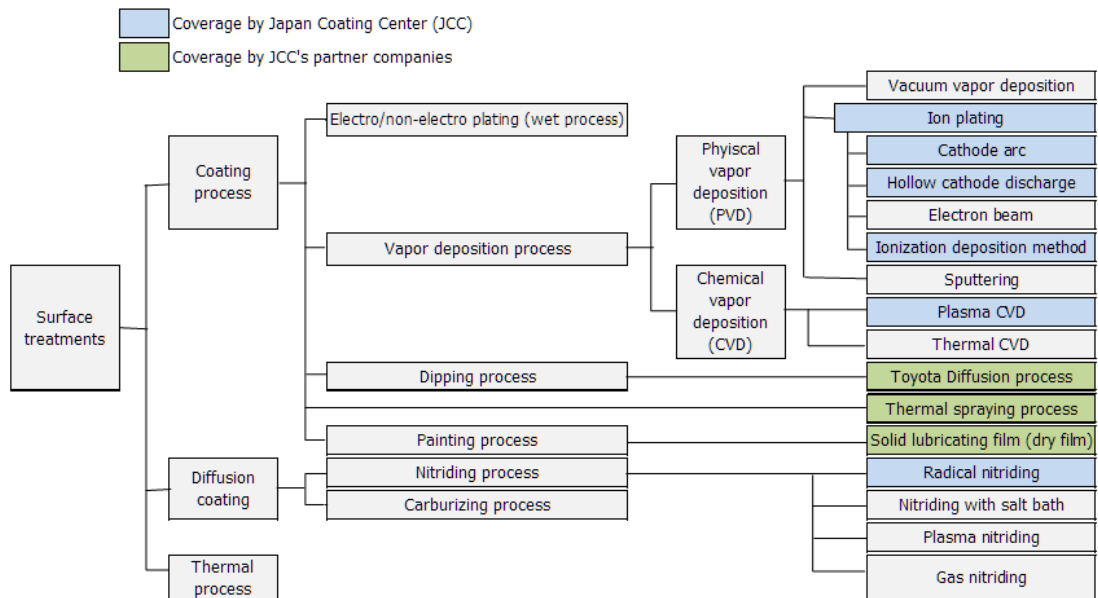


Application example: Cutting tools (hob cutters)



Source: Company data

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



Source: Shared Research based on company data

Other Surface Treatments

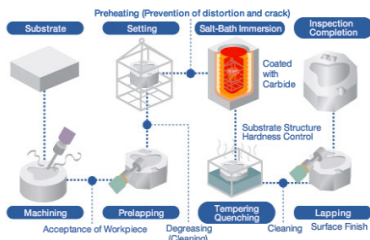
Toyota diffusion (TD) process (external sales of JPY803mn [2.8% of total sales] in FY03/16)

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

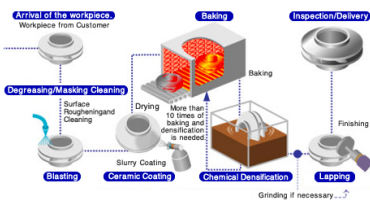
Zinc alloy coating (ZAC) (external sales of JPY406mn [1.4% of total sales] in FY03/16)

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 wire drawing machines, giving them corrosion and abrasion resistance properties.

ZAC coating uses chemical reaction to form composite ceramic coatings primarily composed of chromium oxide (Cr_2O_3). 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.

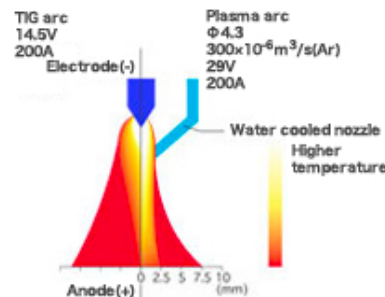
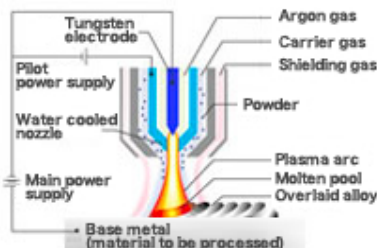
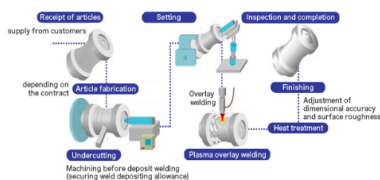
Principle of PTA technology: The next figure (center) illustrates how overlay welding via the PTA process works. First, a pilot power supply is used to start an arc in an argon gas-filled space between a tungsten electrode and a water-cooled nozzle. Argon gas passing through this electric arc is ionized 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 77.1% of sales in FY03/21, while Domestic Subsidiary made up 5.2%, Overseas Subsidiaries 12.3%, and Other Surface Treatments 5.4%. The segment profit margins (recurring profit basis) were 22.0% in Thermal Spraying (Parent), 16.6% in Domestic Subsidiary, 26.8% in Overseas Subsidiaries, and 6.4% 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 (JPYmn)	FY03/13 Act.	FY03/14 Act.	FY03/15 Act.	FY03/16 Act.	FY03/17 Act.	FY03/18 Act.	FY03/19 Act.	FY03/20 Act.	FY03/21 Act.
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,294
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.7%
Domestic	18,713	18,835	21,609	23,678	24,407	28,206	32,155	30,543	30,350
YoY	-	0.6%	14.7%	9.6%	3.1%	15.6%	14.0%	-5.0%	-0.6%
% of total sales	89.4%	83.3%	82.9%	82.4%	84.3%	82.7%	81.3%	80.6%	77.2%
Overseas	2,216	3,764	4,459	5,068	4,557	5,903	7,403	7,352	8,722
YoY	-	69.9%	18.5%	13.7%	-10.1%	29.5%	25.4%	-0.7%	18.6%
% of total sales	10.6%	16.7%	17.1%	17.6%	15.7%	17.3%	18.7%	19.4%	22.2%

Source: Shared Research based on company data

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

By segment	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,073
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.1%
Thermal Spraying (Parent)	15,904	16,324	19,176	21,933	22,309	26,183	30,400	28,221	30,141
YoY	-	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%
% of total sales	76.0%	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	77.1%
Domestic Subsidiary (PVD process)	1,698	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018
YoY	-	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%
% of total sales	8.1%	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.2%
Overseas Subsidiaries	-	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800
YoY	-	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%
% of total sales	-	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.3%
Other Surface Treatments	-	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112
YoY	-	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%
% of total sales	-	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%
Segment profit (recurring profit)	3,058	3,657	4,890	5,028	5,801	7,363	8,076	6,812	8,914
YoY	-6.8%	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%
Recurring profit margin	14.6%	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.8%
Thermal Spraying (Parent)	2,431	2,666	3,822	4,520	4,889	6,009	6,515	5,273	6,760
YoY	-10.5%	9.7%	43.4%	18.3%	8.2%	22.9%	8.4%	-19.1%	28.2%
Recurring profit margin	15.3%	16.3%	19.9%	20.6%	21.9%	23.0%	21.4%	18.7%	22.4%
% of total sales	86.3%	76.5%	80.1%	84.1%	82.8%	78.9%	78.7%	74.4%	78.6%
Domestic Subsidiary (PVD process)	167	232	324	272	402	502	545	491	406
YoY	-	38.9%	39.7%	-16.0%	47.8%	24.9%	8.6%	-9.9%	-17.3%
Recurring profit margin	9.4%	12.0%	15.6%	12.5%	16.8%	18.9%	19.2%	17.8%	16.6%
% of total sales	5.9%	6.7%	6.8%	5.1%	6.8%	6.6%	6.6%	6.9%	4.7%
Overseas Subsidiaries	-	297	542	589	491	974	1,064	1,056	1,297
YoY	-	-	82.5%	8.7%	-16.6%	98.4%	9.2%	-0.8%	22.8%
Recurring profit margin	-	11.2%	17.0%	18.1%	17.5%	26.7%	23.9%	21.4%	27.0%
% of total sales	-	8.5%	11.4%	11.0%	8.3%	12.8%	12.9%	14.9%	15.1%
Other Surface Treatments	-	290	81	-4	122	126	152	266	135
YoY	-	-	-72.1%	-	-	3.3%	20.6%	75.0%	-49.2%
Recurring profit margin	-	16.2%	4.6%	-0.3%	7.0%	6.4%	6.9%	11.2%	6.4%
% of total sales	-	8.3%	1.7%	-	2.1%	1.7%	1.8%	3.8%	1.6%
Adjustments	240	171	120	-349	-103	-249	-201	-275	314

Source: Shared Research based on company data

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

Subsegment sales	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
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YoY	-6.4%	2.6%	17.5%	14.4%	1.7%	17.4%	16.1%	-7.2%	6.8%
% of total sales	76.0%	72.2%	73.6%	76.3%	77.0%	76.8%	76.8%	74.5%	77.1%
Semiconductor and FPD equipment parts	5,652	6,054	8,380	10,069	10,003	13,474	17,134	14,102	18,176
YoY	-14.4%	7.1%	38.4%	20.2%	-0.7%	34.7%	27.2%	-17.7%	28.9%
% of total sales	27.0%	26.8%	32.1%	35.0%	34.5%	39.5%	43.3%	37.2%	46.5%
Semiconductor equipment	5,046	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030
YoY	-6.8%	-0.3%	44.5%	18.7%	-1.3%	32.3%	32.1%	-16.1%	28.3%
% of total sales	24.1%	22.3%	27.9%	30.0%	29.4%	33.0%	37.7%	33.0%	41.0%
FPD equipment	605	1,023	1,110	1,441	1,484	2,201	2,238	1,604	2,145
YoY	-48.9%	69.1%	8.5%	29.8%	3.0%	48.3%	1.7%	-28.3%	33.7%
% of total sales	2.9%	4.5%	4.3%	5.0%	5.1%	6.5%	5.7%	4.2%	5.5%
Industrial machinery	3,261	3,369	3,752	4,072	4,050	4,218	4,154	4,782	3,965
YoY	-9.1%	3.3%	11.4%	8.5%	-0.5%	4.1%	-1.5%	15.1%	-17.1%
% of total sales	15.6%	14.9%	14.4%	14.2%	14.0%	12.4%	10.5%	12.6%	10.1%
Steelmaking machinery	2,767	2,989	3,041	3,438	3,497	3,697	3,662	3,899	3,166
YoY	-0.5%	8.0%	1.7%	13.1%	1.7%	5.7%	-0.9%	6.5%	-18.8%
% of total sales	13.2%	13.2%	11.7%	12.0%	12.1%	10.8%	9.3%	10.3%	8.1%
Other applications	4,224	3,912	4,001	4,353	4,758	4,793	5,449	5,437	4,832
YoY	5.2%	-7.4%	2.3%	8.8%	9.3%	0.7%	13.7%	-0.2%	-11.1%
% of total sales	20.2%	17.3%	15.3%	15.1%	16.4%	14.1%	13.8%	14.3%	12.4%
Other Surface Treatments	-	1,790	1,758	1,572	1,736	1,971	2,204	2,384	2,112
YoY	-	-	-1.8%	-10.6%	10.4%	13.5%	11.8%	8.2%	-11.4%
% of total sales	-	7.9%	6.7%	5.5%	6.0%	5.8%	5.6%	6.3%	5.4%
Domestic Subsidiary	1,698	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018
YoY	-	7.6%	6.7%	1.5%	6.8%	9.5%	7.8%	-5.2%	-14.6%
% of total sales	8.1%	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.2%
Overseas Subsidiaries	-	2,658	3,185	3,262	2,806	3,642	4,460	4,925	4,800
YoY	-	-	19.8%	2.4%	-14.0%	29.8%	22.5%	10.4%	-2.5%
% of total sales	-	11.8%	12.2%	11.3%	9.7%	10.7%	11.3%	13.0%	12.3%
Physical vapor deposition (PVD) process	1,698	1,826	1,949	1,978	2,111	2,312	2,493	2,364	2,018
YoY	-	7.5%	6.7%	1.5%	6.7%	9.5%	7.8%	-5.2%	-14.6%
% of total sales	8.1%	8.1%	7.5%	6.9%	7.3%	6.8%	6.3%	6.2%	5.2%
Toyota Diffusion (TD) process	848	936	881	803	-	-	-	-	-
YoY	-6.4%	10.4%	-5.9%	-8.9%	-	-	-	-	-
% of total sales	4.1%	4.1%	3.4%	2.8%	-	-	-	-	-
Zinc-alloy coating (ZAC) process	381	456	449	406	-	-	-	-	-
YoY	-31.7%	19.7%	-1.5%	-9.6%	-	-	-	-	-
% of total sales	1.8%	2.0%	1.7%	1.4%	-	-	-	-	-
Plasma transferred arc (PTA) process	438	397	428	364	-	-	-	-	-
YoY	-12.4%	-9.4%	7.8%	-15.0%	-	-	-	-	-
% of total sales	2.1%	1.8%	1.6%	1.3%	-	-	-	-	-
Other	1,660	2,659	3,186	3,263	-	-	-	-	-
YoY	-44.9%	60.2%	19.8%	2.4%	-	-	-	-	-
% of total sales	7.9%	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. FY03/21 capital expenditures were JPY4.8bn (roughly 2.1x the FY03/20 level). 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 FY03/22 plan calls for capital expenditures to increase to JPY6.0bn, 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 JPY900mn 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 3.4% in FY03/22.

	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Capital expenditures	1,644	2,513	2,678	3,730	5,936	6,361	5,965	2,313	4,822
Depreciation	1,545	1,388	1,440	1,560	1,703	1,948	2,658	2,991	2,771
R&D expenses	630	653	746	862	834	905	1,003	1,159	1,296
R&D ratio	3.0%	2.9%	2.9%	3.0%	2.9%	2.7%	2.5%	3.1%	3.3%

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 FY03/21, 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 FY03/21, it held 146 patents in Japan and 96 patents overseas. The company submitted 35 patent applications in FY03/21 and had 23 patents registered.

Profitability analysis

Profit margins	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Gross profit	6,828	7,564	8,964	9,727	10,536	12,646	13,761	12,780	14,593
Gross profit margin	32.6%	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.3%
Operating profit	2,906	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,669
Operating profit margin	13.9%	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.2%
EBITDA	4,495	4,923	6,064	6,423	7,361	9,058	10,399	9,541	11,440
EBITDA margin	21.5%	21.8%	23.3%	22.3%	25.4%	26.6%	26.3%	25.2%	29.3%
Net margin	8.9%	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	14.0%
Financial ratios									
ROA (RP-based)	10.2%	11.5%	13.9%	13.5%	14.1%	15.2%	14.7%	11.5%	14.2%
ROE	8.8%	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%
Total asset turnover	0.70	0.71	0.74	0.77	0.70	0.70	0.72	0.64	0.62
Inventory turnover	10.5	10.1	9.8	10.1	9.7	8.9	8.5	8.7	9.0
Days of inventory	34.9	36.1	37.3	36.2	37.5	41.1	43.1	42.0	40.4
Working capital	5,703	6,531	7,329	7,953	8,716	13,113	13,647	13,136	12,218
Current ratio	277.1%	266.5%	256.8%	264.4%	258.9%	184.6%	207.7%	281.2%	271.8%
Quick ratio	248.9%	240.0%	228.8%	235.6%	232.0%	164.4%	184.1%	258.6%	248.6%
OCF / Current liabilities	0.48	0.50	0.58	0.56	0.63	0.66	0.59	0.54	0.90
Net debt / Equity	-33.2%	-34.0%	-26.4%	-26.0%	-15.7%	-18.4%	-20.4%	-20.4%	-21.7%
OCF / Total liabilities	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.6
Cash conversion cycle (days)	87.9	90.8	89.2	89.1	96.2	117.4	131.8	137.2	127.0
Change in working capital	-74	828	798	624	763	4,397	534	-511	-918

Cash conversion cycle	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Accounts receivable turnover	2.9	3.2	3.3	3.2	3.0	3.2	3.4	3.2	3.5
Days in accounts receivable	125.2	114.8	112.0	112.6	120.5	115.8	107.8	112.8	104.1
Inventory turnover	10.5	10.1	9.8	10.1	9.7	8.9	8.5	8.7	9.0
Days in inventory	34.9	36.1	37.3	36.2	37.5	41.1	43.1	42.0	40.4
Accounts payable turnover	5.1	6.1	6.1	6.1	5.9	9.2	19.1	20.7	20.8
Days in accounts payable	72.2	60.1	60.1	59.7	61.8	39.5	19.1	17.6	17.5
Cash conversion cycle (days)	87.9	90.8	89.2	89.1	96.2	117.4	131.8	137.2	127.0
ASSETS	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Total current assets	17,568	19,700	21,527	20,830	23,000	25,941	27,749	31,837	33,140
(% of total assets)	58.4%	58.8%	58.7%	54.8%	51.9%	49.3%	48.4%	52.1%	51.6%
Accounts receivable	6,805	7,405	8,593	9,138	9,986	11,654	11,716	11,712	10,571
(% of total assets)	22.6%	22.1%	23.4%	24.1%	22.5%	22.1%	20.5%	19.2%	16.5%
Total fixed assets	12,504	13,807	15,120	17,163	21,332	26,722	29,529	29,285	31,043
(% of total assets)	41.6%	41.2%	41.3%	45.2%	48.1%	50.7%	51.6%	47.9%	48.4%
Investment securities	186	202	240	682	684	1,015	886	1,317	1,322
(% of total assets)	0.6%	0.6%	0.7%	1.8%	1.5%	1.9%	1.5%	2.2%	2.1%
Total assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183
Total asset turnover (times/year)	0.70	0.71	0.74	0.77	0.70	0.70	0.72	0.64	0.62
LIABILITIES	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Total current liabilities	6,339	7,393	8,383	7,877	8,884	14,054	13,362	11,323	12,193
Accounts payable	2,509	2,442	3,189	3,036	3,207	1,434	1,271	1,157	1,194
Short-term debt	1,027	1,137	943	511	905	879	1,218	2,153	1,802
Accounts payable turnover (times/year)	5.1	6.1	6.1	6.1	5.9	9.2	19.1	20.7	20.8
Current ratio	277.1%	266.5%	256.8%	264.4%	258.9%	184.6%	207.7%	281.2%	271.8%
Total liabilities	7,417	8,814	9,495	8,922	12,079	16,524	17,613	18,487	17,291
Total interest-bearing debt	1,277	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069
Dependence on interest-bearing debt	4.2%	5.3%	3.3%	1.7%	7.5%	4.9%	8.0%	13.4%	9.5%
Net debt	-7,531	-8,391	-7,177	-7,569	-5,063	-6,654	-8,105	-8,691	-10,158
Dependence on net interest-bearing debt	-25.0%	-25.0%	-19.6%	-19.9%	-11.4%	-12.6%	-14.2%	-14.2%	-15.8%
Total liabilities and net assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183
Shareholders' equity	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Shareholders' equity (JPYmn)	21,831	23,361	25,453	27,365	30,296	33,726	37,343	40,076	44,020
Equity ratio	72.9%	70.8%	71.5%	73.3%	69.1%	64.9%	65.6%	65.9%	68.9%
Net interest-bearing debt	1,277	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069
Net debt / Equity ratio	0.06	0.08	0.05	0.02	0.11	0.08	0.12	0.20	0.14

Source: Shared Research based on company data

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

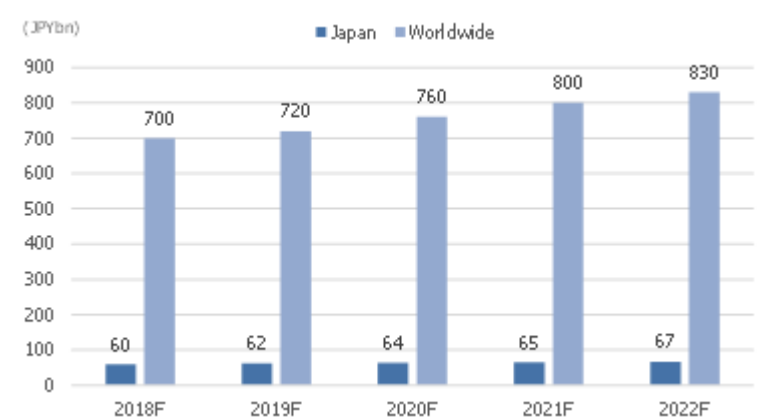
Market and value chain

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 22.2% of the company's overall sales in FY03/21, primarily coming from Japanese companies that have expanded abroad. The company has concluded a number of licensing agreements with companies overseas.

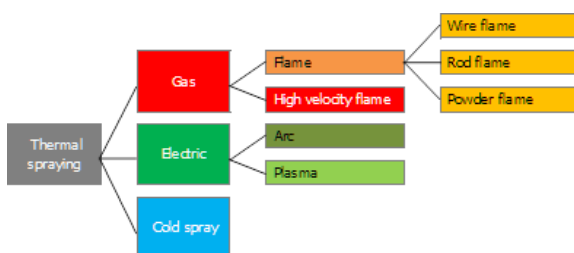
Thermal spraying market forecasts (Japan, worldwide)



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

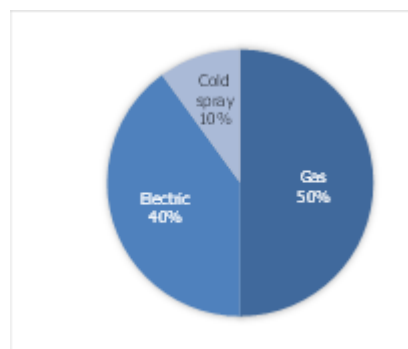
In 2018, gas-based thermal spraying methods accounted for 50% of the Japanese thermal spraying market, while electricity-based methods accounted for 40%, and cold-spray methods accounted for 10% (Source: Yano Research Institute).

Classification of thermal spraying methods



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

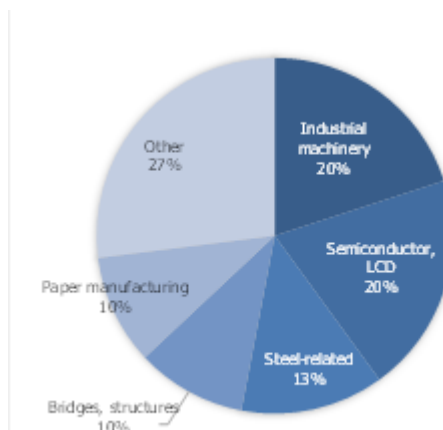
Breakdown of thermal spraying market (JPY60.0bn in FY2018) by method



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).

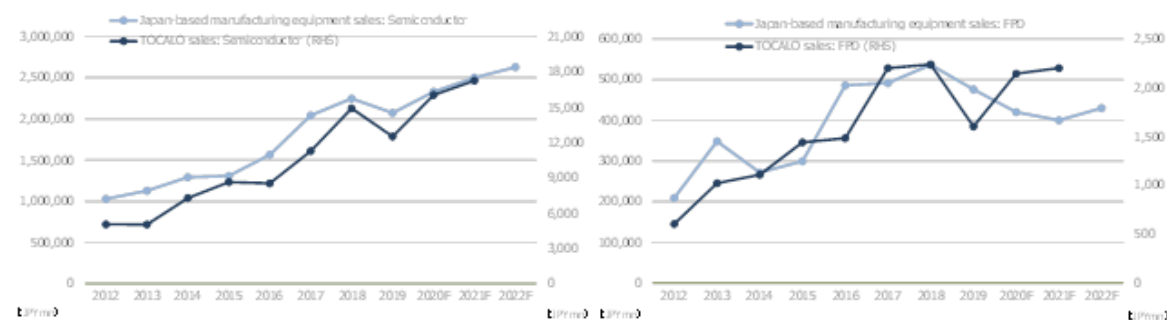
Breakdown of FY2018 thermal spraying market
(JPY60.0bn) by field of demand



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

Japan-based manufacturing equipment sales (JPYmn)										Forecast			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Semiconductor	1,263,700	1,028,400	1,127,800	1,292,100	1,308,900	1,564,200	2,043,600	2,247,900	2,073,000	2,330,000	2,500,000	2,630,000	
YoY	1.8%	-18.6%	9.7%	14.6%	1.3%	19.5%	30.6%	10.0%	-7.8%	12.4%	7.3%	5.2%	
FPD	325,000	208,900	348,500	271,700	299,300	485,700	491,600	536,400	475,800	420,000	400,000	430,000	
YoY	-15.4%	-35.7%	66.8%	-22.0%	10.2%	62.3%	1.2%	9.1%	-11.3%	-11.7%	-4.8%	7.5%	
Semiconductor and FPD	1,588,700	1,237,300	1,476,300	1,563,800	1,608,200	2,049,900	2,535,200	2,784,300	2,548,800	2,750,000	2,900,000	3,060,000	
YoY	-2.3%	-22.1%	19.3%	5.9%	2.8%	27.5%	23.7%	9.8%	-8.5%	7.9%	5.5%	5.5%	
TOCALO sales (JPYmn)	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21	FY03/22	Est.	
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Est.	
Semiconductor	5,415	5,046	5,030	7,270	8,628	8,519	11,273	14,895	12,497	16,030	17,260		
YoY	-8.9%	-6.8%	-0.3%	44.5%	18.7%	-1.3%	32.3%	32.1%	-16.1%	28.3%	7.7%		
FPD	1,184	605	1,023	1,110	1,441	1,484	2,201	2,238	1,604	2,145	2,202		
YoY	16.2%	-48.9%	69.1%	8.5%	29.8%	3.0%	48.3%	1.7%	-28.3%	33.7%	2.7%		
Semiconductor and FPD	6,600	5,652	6,054	8,380	10,069	10,003	13,474	17,134	14,102	18,176	19,462		
YoY	-5.2%	-14.4%	7.1%	38.4%	20.2%	-0.7%	34.7%	27.2%	-17.7%	28.9%	7.1%		

TOCALO's sales in the semiconductor field versus sales of semiconductor equipment by Japan-based manufacturers (left), TOCALO's sales in the FPD field versus sales of FPD manufacturing equipment by Japan-based manufacturers (right)



 **Shared Research**

TOTAL/ 3433

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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.

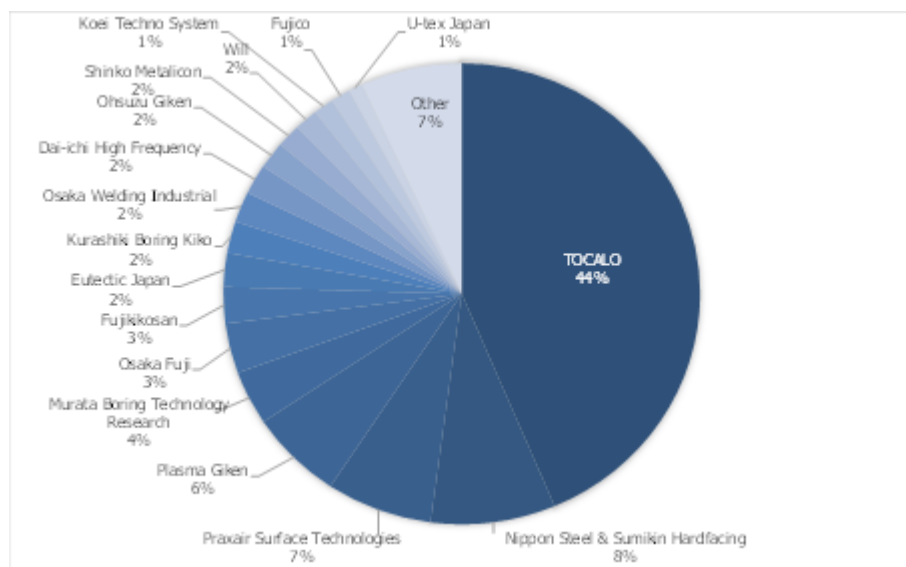
Nippon Steel Hardfacing Corporation (former name: Nippon Steel and Sumikin Hardfacing Co., Ltd.)

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 [TSE1: 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 FY03/21. One of the largest drivers of its semiconductor-related business is Tokyo Electron, which accounted for 34.7% of consolidated sales in FY03/21. 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 FY03/21, overseas sales only accounted for 22.2% 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 6.4% in FY03/21, paled in comparison to the 22.0% profit margin in Thermal Spraying, 16.6% in Domestic Subsidiary (Japan Coating Center), and 26.8% 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	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Sales	20,929	22,599	26,068	28,746	28,964	34,109	39,558	37,896	39,073
YoY	-4.7%	8.0%	15.4%	10.3%	0.8%	17.8%	16.0%	-4.2%	3.1%
Cost of sales	14,101	15,034	17,104	19,020	18,428	21,462	25,797	25,116	24,479
Gross profit	6,828	7,564	8,964	9,727	10,536	12,646	13,761	12,780	14,593
YoY	-6.1%	10.8%	18.5%	8.5%	8.3%	20.0%	8.8%	-7.1%	14.2%
Gross profit margin	32.6%	33.5%	34.4%	33.8%	36.4%	37.1%	34.8%	33.7%	37.3%
SG&A expenses	3,923	4,081	4,396	4,921	4,890	5,536	6,019	6,229	5,924
YoY	-4.5%	4.0%	7.7%	11.9%	-0.6%	13.2%	8.7%	3.5%	-4.9%
SG&A ratio	18.7%	18.1%	16.9%	17.1%	16.9%	16.2%	15.2%	16.4%	15.2%
Operating profit	2,906	3,483	4,568	4,806	5,646	7,110	7,741	6,550	8,669
YoY	-8.0%	19.9%	31.2%	5.2%	17.5%	25.9%	8.9%	-15.4%	32.4%
Operating profit margin	13.9%	15.4%	17.5%	16.7%	19.5%	20.8%	19.6%	17.3%	22.2%
Non-operating income	210	231	376	294	211	283	386	367	294
Non-operating expenses	57	57	54	71	55	30	52	105	48
Recurring profit	3,058	3,657	4,890	5,028	5,801	7,363	8,076	6,812	8,914
YoY	-6.8%	19.6%	33.7%	2.8%	15.4%	26.9%	9.7%	-15.7%	30.9%
Recurring profit margin	14.6%	16.2%	18.8%	17.5%	20.0%	21.6%	20.4%	18.0%	22.8%
Extraordinary gains	0	28	3	3	5	2	85	0	13
Extraordinary losses	15	11	51	342	3	198	83	17	361
Income taxes	1,141	1,392	1,646	1,467	1,540	2,008	2,273	2,038	2,675
Implied tax rate	37.5%	37.9%	34.0%	31.3%	26.5%	28.0%	28.1%	30.0%	31.2%
Net income attributable to non-controlling interests	29	106	164	206	193	322	363	351	428
Net income	1,873	2,176	3,031	3,016	4,070	4,836	5,441	4,404	5,463
YoY	-5.5%	16.2%	39.3%	-0.5%	34.9%	18.8%	12.5%	-19.1%	24.0%
Net margin	8.9%	9.6%	11.6%	10.5%	14.1%	14.2%	13.8%	11.6%	14.0%

Source: Shared Research based on company data

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

Balance sheet

Balance sheet	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
ASSETS									
Cash and deposits	8,808	10,181	8,404	8,197	8,387	9,234	12,660	16,889	16,227
Notes and accounts receivable	6,805	7,405	8,593	9,138	9,986	11,654	11,716	11,712	10,571
Operational investment securities	0	0	2,000	1,000	2,000	2,000	0	0	3,000
Inventories	1,407	1,568	1,925	1,851	1,937	2,893	3,202	2,581	2,841
Deferred tax assets	459	458	486	489	499	0	0	0	0
Allowance for doubtful accounts	-78	-70	-67	-72	-50	-54	-48	-20	-10
Other	167	158	186	227	241	214	219	675	511
Total current assets	17,568	19,700	21,527	20,830	23,000	25,941	27,749	31,837	33,140
Buildings and structures	4,680	4,460	5,433	6,325	6,247	9,871	12,974	12,416	12,273
Machinery, equipment and vehicles	2,021	1,871	2,275	2,321	2,484	3,941	4,476	4,207	3,644
Land	4,306	4,996	4,982	6,003	7,305	8,246	8,652	8,648	9,050
Lease assets	92	31	14	21	110	88	72	50	36
Construction in progress	89	1,140	1,038	1,200	3,828	2,014	670	742	2,849
Other fixed assets	219	238	313	281	332	426	548	720	739
Total tangible fixed assets	11,406	12,735	14,055	16,151	20,305	24,589	27,395	26,786	28,594
Total intangible assets	533	519	467	97	115	260	295	338	264
Investment securities	186	202	240	682	684	1,015	886	1,317	1,322
Deferred tax assets	84	105	92	100	112	712	819	668	606
Allowance for doubtful accounts	0	0	0	0	0	-28	-14	0	-5
Other	294	246	265	132	115	172	147	175	260
Investments and other assets	564	553	597	914	911	1,871	1,838	2,160	2,183
Total fixed assets	12,504	13,807	15,120	17,163	21,332	26,722	29,529	29,285	31,043
Total deferred assets	543	563	578	589	611	712	819	668	64,183
Total assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183
LIABILITIES									
Notes and accounts payable	2,509	2,442	3,189	3,036	3,207	1,434	1,271	1,157	1,194
Electronically recorded monetary obligations	0	0	0	0	0	5,991	5,004	3,660	3,849
Short-term debt	1,027	1,137	943	511	905	879	1,218	2,153	1,802
Short-term borrowings	501	555	571	165	151	155	112	47	15
Current portion of bonds	441	563	364	339	730	702	1,082	2,083	1,765
Lease obligations	85	19	8	7	24	22	24	23	22
Income taxes payable	395	846	1,043	922	965	1,353	1,361	737	1,722
Accrued expenses	1,435	2,067	1,966	2,131	2,745	2,555	2,755	1,578	1,570
Provision for bonuses	629	694	768	836	891	993	1,084	1,018	1,277
Other	344	207	474	441	171	849	669	1,020	779
Total current liabilities	6,339	7,393	8,383	7,877	8,884	14,054	13,362	11,323	12,193
Long-term debt	250	653	284	117	2,419	1,701	3,337	6,045	4,267
Long-term borrowings	221	635	273	100	2,324	1,628	3,282	6,015	4,249
Lease obligations	29	18	11	17	95	73	55	30	18
Deferred tax assets	227	356	297	116	29	0	0	0	0
Provision for directors' retirement benefits	571	383	502	0	0	0	0	0	0
Reserve for retirement benefits	0	0	0	790	724	745	876	1,085	789
Other	31	29	29	22	23	24	37	33	41

Total fixed liabilities	1,079	1,421	1,112	1,045	3,195	2,470	4,250	7,163	5,097
Total liabilities	7,417	8,814	9,495	8,922	12,079	16,524	17,613	18,487	17,291
NET ASSETS									
Capital stock	2,659	2,659	2,659	2,659	2,659	2,659	2,659	2,658	2,658
Capital surplus	2,294	2,294	2,294	2,294	2,294	2,294	2,294	2,293	2,293
Retained earnings	17,652	19,181	21,273	23,187	26,117	29,547	33,165	35,898	39,841
Treasury stock	-773	-773	-773	-773	-774	-774	-774	-773	-773
Shareholders' equity	21,831	23,361	25,453	27,365	30,296	33,726	37,343	40,076	44,020
Other	83	361	529	412	351	448	216	187	182
Non-controlling interests	739	972	1,170	1,291	1,606	1,965	2,105	2,371	2,690
Total net assets	22,654	24,694	27,152	29,070	32,253	36,139	39,665	42,634	46,891
Total liabilities and net assets	30,072	33,507	36,647	37,992	44,331	52,664	57,278	61,122	64,183
Working capital	5,703	6,531	7,329	7,953	8,716	13,113	13,647	13,136	12,218
Total interest-bearing debt	1,277	1,790	1,227	628	3,324	2,580	4,555	8,198	6,069
Net debt	-7,531	-8,391	-7,177	-7,569	-5,063	-6,654	-8,105	-8,691	-10,158

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

Cash flow statement

Cash flow statement	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Cash flows from operating activities (1)	3,266	3,465	4,546	4,534	5,238	7,611	8,044	6,621	10,588
Pre-tax profit	3,043	3,674	4,841	4,689	5,803	7,167	8,078	6,794	8,566
Depreciation	1,545	1,388	1,440	1,561	1,703	1,948	2,658	2,991	2,771
Amortization of goodwill	44	52	56	56	12	0	0	0	0
Increase (decrease) in accounts receivable	762	-478	-1,103	-586	-888	-1,607	-131	0	1,149
Increase (decrease) in inventories	-119	-161	-318	54	-107	-925	-357	604	-252
Increase (decrease) in accounts payable	-561	-67	733	-146	173	1,228	-24	-961	-70
Cash flows from investing activities (2)	-3,971	-177	-4,889	-895	-6,537	-4,681	-4,617	-4,217	-4,615
Purchase of tangible fixed assets	-1,707	-2,076	-2,957	-3,588	-5,512	-4,312	-6,943	-3,641	-4,348
Purchase of intangible assets	-8	-34	-18	-4	-55	-137	-135	-152	-25
Purchase, sale, and redemption of investment securities	-4	0	-2,000	-1,360	30	-333	114	-435	0
Increase in investments affecting scope of consolidation	-132	0	0	0	0	0	0	0	0
Free cash flow (1+2)	-705	3,288	-343	3,639	-1,299	2,930	3,427	2,404	5,973
Cash flows from financing activities	-1,169	-165	-1,475	-1,743	1,581	-2,217	40	1,871	-3,798
Change in short-term borrowings	-3	54	-48	-394	0	0	-33	-63	-30
Change in long-term borrowings	-399	527	-564	-189	2,620	-730	2,042	3,734	-2,083
Acquisition of treasury stock	0	0	0	0	0	0	0	0	0
Dividends paid	-608	-645	-797	-1,101	-1,142	-1,405	-1,822	-1,670	-1,520
Depreciation and amortization (A)	1,589	1,440	1,496	1,617	1,715	1,948	2,658	2,991	2,771
Capital expenditures (B)	-1,707	-2,076	-2,957	-3,588	-5,512	-4,312	-6,943	-3,641	-4,348
Change in working capital (C)	-74	828	798	624	763	4,397	534	-511	-918
Simple FCF (NI + A + B - C)	1,829	712	772	421	-490	-1,925	622	4,265	4,804

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

Historical performance

Q1 FY03/22 results (out July 30, 2021)

Performance overview

Q1 FY03/22 results: Sales came in at JPY10.7bn (+7.9% YoY), operating profit at JPY2.8bn (+21.6% YoY), recurring profit at JPY2.8bn (+24.7% YoY), and net income at JPY1.9bn (+27.2% YoY). However, on a quarterly basis, although sales and operating profit have risen YoY for six consecutive quarters. Note, however, that the company has only retroactively applied its new accounting standards (reclassification of past results) to results in Q1 FY03/21.

Segment-specific trends

Sales generated by the core business of thermal spraying (handled by TOCALO, the parent company) amounted to JPY8.2bn (+4.6% YoY), and corresponding profit (recurring profit) was JPY2.1bn (+15.5% YoY). Results from thermal spraying were the primary driver of the company's overall performance. Of the JPY8.2bn, JPY5.0bn (+10.2% YoY) was generated by thermal spraying for semiconductors and flat-panel displays (FPDs), JPY820mn (-29.6% YoY) by thermal spraying for industrial machinery, JPY876mn (-10.2% YoY) by thermal spraying for steel, and JPY1.5bn (+29.2% YoY) by thermal spraying for other purposes. The double-digit rate of YoY increase in sales generated by thermal spraying for semiconductors and FPDs (high margin business for the company) compensated for the downturn in sales generated by thermal spraying for industrial machinery and steel. 92% of the thermal spraying for semiconductor and FPDs accounts for semiconductor, and its proportion of FPDs are on a declining trend. The decline in sales from thermal spraying for industrial machinery was due to ongoing sluggish performance that carried over from FY03/21 and stemmed from stagnation related to bearings. Despite the decline, sales generated by thermal spraying for steel exceeded the company's initial projections.

Under these circumstances, profit generated by thermal spraying rose 15.5% YoY thanks to the increase in sales from thermal spraying for semiconductors and FPDs and stabilization of production. In the past, production efficiency associated with the company's thermal spraying for semiconductors had declined during peak seasons due to operational variations between the

company's factories. However, during its latest peak season, the company has been able to carry out stable operations thanks to its standardized acceptance of orders (JPY4.5–5.0bn per quarter), which has enabled it to limit increases in factory staff and overtime work. These achievements have led to improved productivity, raising the quarterly profit margin associated with thermal spraying in Q1 to 26.1%, on par with the highest level on record (in FY03/17).

In segments other than thermal spraying, sales generated by domestic subsidiaries (whose core operations are concentrated in the automotive field) amounted to JPY611mn (+32.3% YoY), and corresponding profit was JPY152mn (+117.1% YoY). This growth in performance was primarily due to recovery in automotive demand. At the same time, sales generated by overseas subsidiaries were JPY1.3bn (+22.8% YoY), and corresponding profit was JPY353mn (+0.9% YoY). Year-on-year profit growth in Q1 FY03/22 was limited to 0.9% in part as profit in Q1 FY03/21 was boosted by special factors in China and in part because the company recorded upfront costs associated with the construction of a new factory in Taiwan. Other surface modifications generated sales of JPY597mn (+9.3% YoY) and profit of JPY117mn (+116.7% YoY), with the year-on-year increases stemming primarily from surface treatments for agricultural machinery. With these results, sales and profit in Q1 FY03/22 increased in all four of the company's core business segments. With the application of new accounting standards, in Q1 FY03/21, the company began classifying royalty income that it previously recorded under the category of non-operating income as sales. Sales associated with this royalty income amounted to JPY23mn in Q1 FY03/22 (-43.3% YoY) and had a limited impact on overall financial results.

Factors driving change in recurring profit

Recurring profit rose to JPY2.8bn, up JPY562mn from JPY2.3bn in Q1 FY03/21 (April–June 2020). The primary factors associated with this change were a sales increase of JPY523mn, upward impact of JPY5mn from a decline in the company's variable expense ratio, downward impact of JPY71mn from a rise in personnel expenses, a boost of JPY42mn stemming from a decline in depreciation, a contribution of JPY74mn from exchange rate impact, and downward impact of JPY12mn from other sources. The most noteworthy of these factors were the increase in sales and the company's lowering of its variable expense ratio. TOCALO successfully lowered its variable expense ratio primarily through improvement in its marginal profit ratio that stemmed primarily from the aforementioned operational standardization and reduction of costs associated with the outsourcing of surface modification processes. Meanwhile, the company maintains that the increase in personnel expenses, which was mainly due to the resumption of sales activities, was limited in scale.

Full-year FY03/22 forecast: The company has made no changes to its forecast, which calls for full-year FY03/22 sales of JPY41.0bn (+4.3% YoY), operating profit of JPY9.0bn (+1.2% YoY), recurring profit of JPY9.0bn (+1.0% YoY), and net income of JPY5.8bn (+6.2% YoY). The EPS forecast is JPY95.4. The company expects sales and profit growth on continued strength in semiconductor/FPD-related business and forecasts record profit for the second consecutive year. It forecast an annual dividend of JPY35.0 per share (in line with the expected DPS for FY03/21), and a payout ratio of 36.7%.

Full-year FY03/21 results (out May 10, 2021)

Earnings overview

Full-year FY03/21 sales were JPY39.1bn (+3.1% YoY), operating profit was JPY8.7bn (+32.3% YoY), recurring profit was JPY8.9bn (+30.9% YoY), and net income was JPY5.5bn (+24.0% YoY). Results exceeded forecasts as of the Q3 results announcement (including operating profit of JPY8.0bn). Industrial machinery and steelmaking-related sales slumped, but we understand that sales to the semiconductor and flat panel display (FPD) sectors grew significantly (+28.9% YoY), driving earnings growth. With the added benefit of cost reductions, profit rebounded to a new record. By reporting segment (recurring profit in the income statement), Thermal Spraying (Parent) drove overall growth with profit up roughly 28%, and Overseas Subsidiaries also put in a solid performance, more than making up for slumps elsewhere. Due to the strong earnings performance, the company announced a hike in its 2H dividend forecast from JPY17.5 per share to JPY22.5, for a forecast full-year dividend of JPY35.0 per share (up from JPY25.0 in FY03/20; payout ratio of 38.9%).

Recurring profit grew from JPY6.8bn to JPY8.9bn. The JPY2.1bn YoY increase breaks down as follows. Higher sales, +JPY732mn; lower variable expense ratio, +JPY1.1bn; higher personnel expenses, -JPY194mn; lower depreciation, +JPY220mn; forex, +JPY42mn; other, +JPY232mn. The JPY194mn drag from higher personnel expenses reflected a one-time reduction in retirement benefit expenses of JPY358mn (i.e., boost to profit of that amount). This was primarily because investment returns on pension fund assets exceeded expected returns, and actuarial differences under retirement benefit accounting became positive (gains) and were amortized in a lump sum. We note that the company employs lump-sum amortization every year. At the results briefing, the president commented that recurring profit was not actually JPY8.9bn, but JPY8.6bn excluding the one-time factor. The company also booked an impairment loss on fixed assets of JPY349mn at its US subsidiary as an extraordinary loss. For this reason, bottom-line growth came in slightly below that in operating profit and recurring profit.

Q4 (January–March 2021) results: Sales were JPY9.9bn (+5.7% YoY), operating profit was JPY2.3bn (+68.3% YoY), recurring profit was JPY2.4bn (+56.8% YoY), and net income was JPY1.3bn (+24.4% YoY). There is a tendency for the company's Q4 operating profit to be significantly below that for Q3 (October–December), but Q4 marginally exceeded Q3 (by JPY6mn). This highlights that Q4 results were remarkably strong, but this appears to be due in part to the one-time gain from retirement benefit expenses.

Q4 orders came in at JPY10.1bn (+0.7% YoY). Orders for semiconductor/FPD-related applications, which account for the largest share of sales in the Thermal Spraying (Parent) business, grew, and Overseas Subsidiaries orders rose significantly. As a result, orders remained above the JPY10.0bn mark, despite slower growth.

Segment results

Thermal Spraying (Parent)

In FY03/21, sales in the Thermal Spraying (Parent) segment were JPY30.1bn (+6.8% YoY) and recurring profit was JPY6.8bn (+28.2% YoY). Semiconductor/FPD-related sales were JPY18.2bn (+28.9% YoY), industrial machinery-related sales were JPY4.0bn (-17.1% YoY), steelmaking-related sales were JPY3.2bn (-18.8% YoY), and other sales were JPY4.8bn (-11.1% YoY). Lower operating rates due to the pandemic saw sharp falls across the board in industrial machinery-related and steelmaking-related sales. However, sales for semiconductor/FPD-related applications, which have the largest sales weighting, grew sharply due to strong semiconductor demand. Of particular note, high-margin semiconductor-related sales grew by more than JPY3.5bn, from JPY12.5bn in FY03/20 to JPY16.0bn in FY03/21. As a result, recurring profit rose sharply by 28% YoY to JPY6.8bn, surpassing the previous record of JPY6.5bn set in FY03/19.

In Q4 (January–March 2021), sales were JPY7.4bn (+5.2% YoY) and recurring profit was JPY1.5bn (+10.7% YoY). Semiconductor/FPD-related sales were JPY4.6bn (+25.8% YoY), industrial machinery-related sales were JPY831mn (-26.4% YoY), steelmaking-related sales were JPY776mn (-28.3% YoY), and other sales were JPY1.2bn (+2.0% YoY). Semiconductor/FPD-related sales remain strong and recurring profit grew at a double-digit pace, but the profit growth rate decelerated. This is because in Q4 FY03/20 (January–March 2020), the sales recovery was clearly in place, and profit had already bottomed out. However, the recurring profit margin remains high at above 20%.

Q4 orders were JPY7.6bn (-2.4% YoY), showing a YoY decline on a quarterly basis for the first time in five quarters. Semiconductor/FPD-related orders continued to grow to JPY4.9bn (+5.2% YoY), but industrial machinery-related orders were JPY754mn (-35.6% YoY), and steelmaking-related orders JPY741mn (-12.2% YoY). Note: While semiconductor/FPD-related orders slowed to single-figure growth, they came in at a quarterly record, amid still-strong inquiries from semiconductor equipment makers in Japan and abroad. The sharp drop in industrial machinery-related orders suggests that it is taking time to make a full recovery from the impact of the COVID-19 pandemic.

Domestic Subsidiary (Japan Coating Center)

In FY03/21, sales were JPY2.0bn (-14.6% YoY) and recurring profit was JPY406mn (-17.3% YoY). Due to a decline in automobile production, primarily in 1H, sales of PVD processing for cutting tools used to machine automotive parts slumped. Sales and profit declined for the second consecutive year.

However, there were signs of an incipient recovery in Q4 with sales of JPY587mn (+1.6% YoY) and recurring profit of JPY144mn (+24.1% YoY). This was primarily due to the start of a rebound in automobile production from autumn 2020 as it made up lost ground following a significant decline in 1H. Another factor that boosted the rate of profit growth was somewhat low profit levels in Q4 FY03/20.

Overseas Subsidiaries

FY03/21 sales in the Overseas Subsidiaries segment (December financial year-end) were JPY4.8bn (-2.5% YoY) and recurring profit was JPY1.3bn (+22.8% YoY). Sales declined due to a slump in China's steel, oil and gas industries, partially offset by higher sales for semiconductor/FPD-related applications. Recurring profit reached a record high, significantly above the previous record of JPY1.1bn recorded in FY03/19.

In Q4, the Overseas Subsidiaries reported sales of JPY1.4bn (+15.0% YoY) and recurring profit of JPY351mn (3.8x the Q4 FY03/20 level). The unusually strong profit growth was due to low levels in Q4 FY03/20 amid turmoil in the Chinese economy stemming from the US–China trade friction, but quarterly profit in absolute terms was not far from record levels.

Other Surface Treatments

Sales for Other Surface Treatments were JPY2.1bn (-11.4% YoY) and recurring profit was JPY135mn (-49.2% YoY). Sales and profit declined as processing orders for agricultural machinery parts continued to stagnate due to lingering impact of the US–China trade friction. Q4 sales were JPY552mn (-4.3% YoY) and recurring profit was JPY39mn (-38.1% YoY).

Q4 orders excluding those for the Thermal Spraying (Parent) business were JPY598mn (+2.7% YoY) at the Domestic Subsidiary, JPY1.3bn (+29.3% YoY) at Overseas Subsidiaries, and JPY545mn (-9.9% YoY) at Other Surface Treatments. Some trends became clear, including signs of bottoming out at the Domestic Subsidiary and record quarterly orders for Overseas Subsidiaries.

Capital expenditures, depreciation, and R&D expenses

FY03/21 capital expenditures were JPY4.8bn (roughly 2.1x the FY03/20 level). This was largely in line with initial plans to spend JPY4.7bn. In FY03/20, capital expenditures were relatively low at JPY2.3bn as the company postponed or scaled back some planned spending in light of the prevailing order environment for semiconductors. A significant increase followed in a rebound from this low level as semiconductor demand recovered, but it was still below the average annual spend of JPY6.1bn between FY03/17 and FY03/19. This was partly due to the impact of the COVID-19 pandemic, primarily in 1H. Capital expenditures broke down to JPY2.5bn at TOCALO (parent), JPY1.1bn at Domestic Subsidiary, and JPY1.2bn at Overseas Subsidiaries. Depreciation was JPY2.8bn (-7.4% YoY). R&D expenses were JPY1.3bn (+11.8% YoY, 3.3% of sales). The R&D expenses-to-sales ratio has been gradually climbing, and 3.3% is a historical high.

Q3 FY03/21 results (out January 29, 2021)

Performance overview

Cumulative Q3 FY03/21 sales were JPY29.1bn (+2.3% YoY), operating profit was JPY6.4bn (+22.9% YoY), recurring profit was JPY6.5bn (+23.2% YoY), and net income attributable to owners of the parent was JPY4.2bn (+23.9% YoY). Demand of thermal spraying treatments on semiconductor and FPD manufacturing equipment was steady owing to the expansion of teleworking and the start of 5G service. Orders from many other business circles, including general industry and steel industry, struggled due in part to the impact of the COVID-19 pandemic, but the company managed to secure sales and profit growth nonetheless.

Quarterly Q3 FY03/21 results: On a quarterly basis, Q3 sales were JPY10.0bn (+3.6% YoY), operating profit was JPY2.3bn (+24.2% YoY), and recurring profit was JPY2.3bn (+24.2% YoY). On a segment basis, sales and profit grew in Thermal Spraying (Parent), driving earnings growth in part thanks to strength in semiconductor/FPD-related orders. Recurring profit rose JPY449mn YoY. A rise in personnel expenses held back profit by JPY127mn while exchange rate fluctuations represented a JPY4mn hindrance to profit. However, the increase in sales contributed JPY225mn to YoY profit growth, a decrease in the ratio of variable costs to sales contributed JPY214mn, a downturn in depreciation expenses contributed JPY63mn, and other factors JPY78mn, offsetting negative factors.

Full-year FY03/21 forecast: The company forecasts full-year FY03/21 sales of JPY38.2bn (+0.8% YoY), operating profit of JPY8.0bn (+22.1% YoY), recurring profit of JPY8.2bn (+20.4% YoY), net income of JPY5.2bn (+18.1% YoY), and EPS of JPY85.5. These forecasts have been upgraded from sales of JPY37.0bn, operating profit of JPY6.6bn, recurring profit of JPY6.8bn, and net income of JPY4.4bn (announced on October 30). The company previously maintained that predicting the impact of the COVID-19 pandemic was prohibitively difficult and had therefore drafted a somewhat conservative forecast. However, the company has revised its projections upward because Q3 results exceeded its expectations, driven by strong semiconductor/FPD-related performance. The company has also revised its annual dividend forecast upward to JPY30 per share (a payout ratio of 35.1%; previous forecast: JPY25 per share). The revised full-year forecast implies the company will target sales of JPY9.1bn (-3.6% YoY) and operating profit of JPY1.6bn (+19.2% YoY) in Q4.

Trends by segment

Thermal Spraying (Parent)

In Q3, orders in the Thermal Spraying (Parent) segment were JPY8.1bn (+12.6% YoY), sales were JPY7.7bn (+9.7% YoY), and recurring profit was JPY1.8bn (+36.0% YoY). Mainstay semiconductor/FPD-related orders grew to JPY4.8bn (+35.2% YoY). The company states that the volume of orders it is receiving from major semiconductor equipment makers in Japan and the United States is growing due to expanding semiconductor demand associated with the expansion of teleworking and 5G communications services. Semiconductor/FPD-related sales were JPY4.5bn (+23.8% YoY).

Industrial machinery-related orders were JPY991mn (-13.7% YoY). The decline occurred despite firm power plant boilers-related performance because bearing-related orders of thermal spraying treatments decreased. Apparently, this was attributable to ongoing adjustments to inventories of bearings used for high-speed railway. Industrial machinery-related sales were JPY1.1bn (-10.2% YoY). In Q1 FY03/21, the company encountered some projects for which thermal spraying could not be conducted due to the COVID-19 pandemic. However, operations associated with these projects exhibited recovery in Q3.

Steelmaking-related orders continued to decline substantially, dropping to JPY765mn (-29.7% YoY). Apparently, steel manufacturers postponed nonessential and nonurgent repair work, and orders accordingly decreased by a large margin. Steelmaking-related sales were JPY651mn (-23.0% YoY).

Thermal Spraying (Parent) orders for other purposes were JPY1.5bn (+9.6% YoY), and corresponding sales were JPY1.5bn (+9.2% YoY). Due to postponements and other complications caused by the COVID-19 pandemic, orders were low at JPY1.1bn (-36.9% YoY) in Q1 and at JPY1.1bn (-9.9% YoY) in Q2. However, in Q3, projects on which the company had initially planned to work during 1H began to pick up and orders started to recover accordingly.

Thermal Spraying (Parent) sales increased by JPY682mn YoY, and recurring profit rose by JPY488mn YoY. Semiconductor/FPD-related treatments require less outsourced processing compared to those related to steel making and other industries. Accordingly, Shared Research believes this business generates higher added value. Shared Research also understands that profitability improved as semiconductor/FPD-related sales commanded a larger share of overall sales. The company maintains that efforts to increase productivity primarily in semiconductor/FPD-related operations (curtailment of subsequent touch-ups, etc.) also contributed to growth in profitability.

Domestic Subsidiary (Japan Coating Center)

Orders were JPY542mn (-9.7% YoY), sales were JPY539mn (-8.5% YoY), and recurring profit was JPY140mn (-4.1% YoY). It appears that automobile-related sales (PVD processing for cutting tool surfaces, etc.) account for 60–70% of overall segment sales, and due to a decline in automobile production, orders in Q1 were JPY457mn (-22.5% YoY) while orders in Q2 came to JPY442mn (-23.7% YoY). In Q3, orders recovered along with domestic automobile production. Construction machinery-related orders are also returning upward to prior levels due to recovering demand. However, both sales and profit fell short of corresponding levels reached in Q3 FY03/20.

Overseas Subsidiaries

In Q3 (July–September 2020), the Overseas Subsidiaries reported orders of JPY1.3bn (+6.6% YoY), sales of JPY1.2bn (-12.2% YoY), and recurring profit of JPY341mn (+4.3% YoY). Orders in the semiconductor and FPD fields were generally strong at the subsidiaries in Taiwan and Kunshan, China. Meanwhile, the subsidiary in Guangzhou, China, which conducts thermal spraying primarily in steel making and petroleum-related industries, continues to face tough circumstances. However, after reaching a nadir of JPY978mn (-20.5% YoY) in Q1, orders received by overseas subsidiaries are steadily growing, reaching JPY1.2bn in Q2 (+5.4% YoY) and JPY1.3bn in Q3 (+6.6% YoY).

Other Surface Treatments

Orders for other surface treatments in Q3 were JPY561mn (-9.1% YoY), sales were JPY531mn (-17.8% YoY), and recurring profit was JPY47mn (-39.7% YoY). TD processing orders for agricultural machinery parts continue to be low due to stagnation caused by trade friction between the US and China. Despite this trend, the company maintains that signs of recovery are beginning to appear. Performance from ZAC coating treatments was favorable. Meanwhile, orders for steel and automobile-related PTA processing, particularly steelmaking-related orders, remained low.

1H FY03/21 results (out October 30, 2020)

Performance overview

1H FY03/21 sales were JPY19.1bn (+1.6% YoY), operating profit was JPY4.1bn (+22.2% YoY), recurring profit was JPY4.2bn (+22.7% YoY), and net income attributable to owners of the parent was JPY2.7bn (+25.1% YoY). Although the novel coronavirus outbreak caused industrial machinery- and steelmaking-related sales to decline due to reduced utilization rates and postponed capital expenditure across the manufacturing industry, the semiconductor/FPD-related business performed well, allowing the company to secure improvements to sales and profit. Both sales and profit outperformed the company's forecast of sales of JPY18.5bn and operating profit of JPY3.3bn.

Full-year FY03/21 forecast: The company forecasts full-year FY03/21 sales of JPY37.0bn (-2.4% YoY), operating profit of JPY6.6bn (+0.8% YoY), recurring profit of JPY6.8bn (-0.2% YoY), net income of JPY4.4bn (-0.1% YoY), and EPS of JPY72.37. These forecasts have been upgraded from sales of JPY36.5bn, operating profit of JPY5.8bn, recurring profit of JPY6.0bn, and net income of JPY3.9bn (announced on July 31) mainly on account of 1H results outperforming its forecasts. The company's outlook for 2H remains largely unchanged. Although demand is projected to increase in the medium term in the semiconductor industry, driven by worldwide progress in digitalization and digital transformation (DX), the company expects the business environment to remain severe across various industries due to the prolonged impact from the novel coronavirus pandemic. The company has kept its forecast for the annual dividend at JPY25 per share (a payout ratio of 34.5%).

Q2 FY03/21 results: In Q2, sales were JPY9.2bn (+3.2% YoY), operating profit was JPY1.9bn (+38.4% YoY), and recurring profit was JPY1.9bn (+35.8% or JPY500mn YoY). Driven by strong semiconductor/FPD-related performance, both sales and profit grew in Thermal Spraying (Parent) and offset YoY declines in other businesses. The increase in sales contributed JPY157mn to YoY growth in recurring profit, while a decrease in the ratio of variable costs to sales contributed JPY335mn, a decline in depreciation contributed JPY75mn, and other factors JPY30mn. Meanwhile, a rise in personnel expenses held back profit by JPY92mn while exchange rate fluctuations represented a JPY7mn hindrance to profit. The variable costs to sales ratio fell due to a decline in steelmaking-related sales, industrial machinery-related sales, and sales related to other industries that also required outsourced processing (polishing, finishing, etc.). Personnel expenses rose mainly due to semiconductor/FPD-related recruitment.

Trends by segment

Thermal Spraying (Parent)

Thermal Spraying (Parent) orders in Q2 amounted to JPY7.0bn (+5.0% YoY). Orders associated with semiconductor and FPD manufacturing equipment (JPY4.3bn; +27.0% YoY) were the primary driving force behind this performance, offsetting decreases in industrial machinery-related orders (JPY1.0bn; -18.2% YoY), steelmaking-related orders (JPY642mn; -26.3% YoY), and other orders (JPY1.1bn; -9.9% YoY). As a result, Thermal Spraying (Parent) orders increased overall.

Active capital investment from overseas semiconductor manufacturers led to an increase in orders related to semiconductor and FPD manufacturing equipment. However, these orders have been gradually declining on a QoQ basis, having already dropped from JPY4,620mn in Q4 FY03/20 to JPY4,599mn in Q1 FY03/21. The company expects medium-term growth in the field of semiconductor and FPD manufacturing equipment and plans to continue investing management resources in this area. Industrial machinery-related orders fell off due to underwhelming performance in energy-related orders (e.g., power generation equipment) and high-speed railway-related orders. Performance associated with energy-related orders was bogged down in part by postponements to on-site construction caused by the COVID-19 pandemic. The company may record these postponed orders in 2H or later. Steelmaking-related orders were negatively impacted by slumping performance associated with blast furnaces among other factors.

Thermal Spraying (Parent) sales were JPY7.1bn (+7.7% YoY) as semiconductor/FPD-related sales grew to JPY4.5bn (+38.4% YoY), offsetting declines in sales related to industrial machinery and steel making, as well as other applications. Recurring profit rose significantly to JPY1.6bn (+51.5% YoY). Product mix improved as semiconductor/FPD-related sales commanded a larger share of overall sales.

Domestic Subsidiary

In Q2, orders were JPY442mn (-23.7% YoY), sales were JPY430mn (-27.4% YoY), and recurring profit was JPY52mn (-44.1% YoY). Performance associated with PVD processing for cutting tools fell significantly due to a decrease in domestic automobile production and stagnation in the export of construction machinery. Despite efforts to curb overtime work and other initiatives aimed at cutting costs, recurring profit declined substantially as the marginal profit ratio was high. Domestic automobile production is gradually recovering from its major decline in Q1. Accordingly, Shared Research sees a strong possibility for gradual recovery in orders and sales at TOCALO.

Overseas Subsidiaries

Orders in Q2 amounted to JPY1.2bn (+5.4% YoY), while sales were JPY1.2bn (+0.8% YoY), and recurring profit was JPY255mn (-8.9% YoY). Results were strong at the company's Taiwanese subsidiary, which primarily performs recoating for parts used in semiconductor and FPD manufacturing equipment repair, and at its subsidiary in Kunshan, China. Meanwhile, the company's subsidiary in Guangzhou, which conducts thermal spraying in steel making and petroleum-related industries within China, suffered from both declining crude oil prices and a decrease in demand related to oil-well drilling.

Other Surface Treatments

In Q2, orders were JPY455mn (-19.8% YoY), sales were JPY483mn (-12.3% YoY), and recurring loss was JPY5mn (versus a profit of JPY40mn in Q2 FY03/20). The falloff in results was primarily due to a decline in TD processing for agricultural machinery parts caused by trade friction between the US and China and underwhelming results from steel and automobile-related PTA processing.

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 JAFSCO Buyout Number One Investment Limited Partnership operated by JAFSCO Co., Ltd.; renamed to JAFSCO 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 JAFSCO 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 JAFSCO SIG Co., Ltd. in an absorption-type merger and delisted the OTC shares

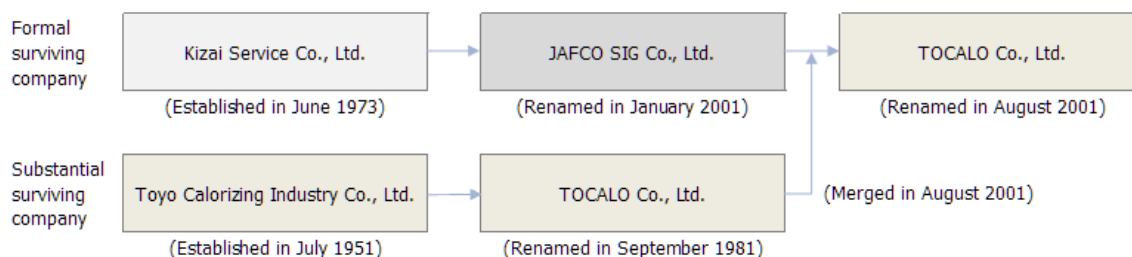
Source: Shared Research based on company data

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, JAFSCO Buyout No. 1 Investment Limited Partnership (operated by JAFSCO Co., Ltd. [now, JAFSCO Group Co., Ltd.; TSE1: 8595]) acquired 100% of the outstanding shares in Kizai Service and changed its name to JAFSCO SIG Co., Ltd. Between late January and early March of 2001, JAFSCO 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, JAFSCO 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 Steel Trading Corporation [TSE1: 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)

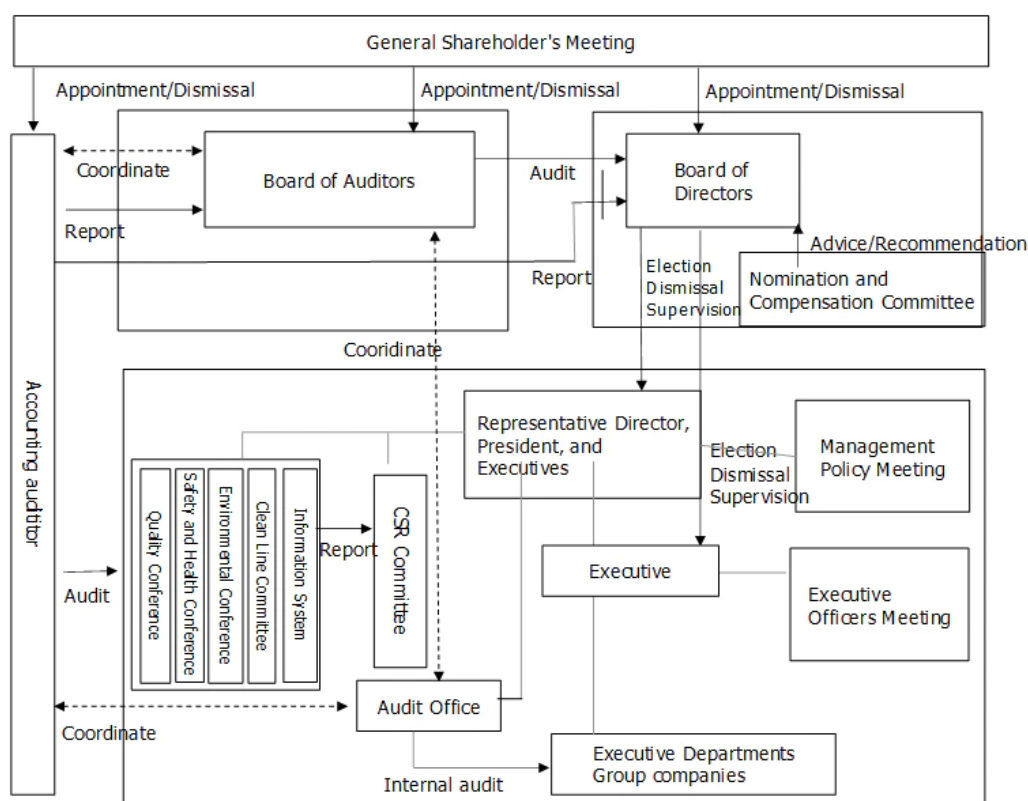
December 1979	Joined the company
June 2009	Director, and plant manager, Akashi Plant
June 2013	Director, general manager of manufacturing
October 2014	Managing director, general manager of manufacturing
June 2019	Senior managing director, general manager of manufacturing
June 2021	Director, senior executive 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 FY03/21, the company expects to pay dividends of JPY35 per share (versus JPY25 per share in FY03/20), including an interim dividend of JPY12.5 per share (versus JPY12.5 per share in FY03/20), for a consolidated payout ratio of 38.9%. Note: Because the FY03/21 dividend is subject to approval at the shareholders' meeting, it is currently a forecast.

	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPY)	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Dividend per share	10.0	12.5	15.0	18.8	21.3	26.3	30.0	25.0	35.0
Payout ratio	32.4%	34.9%	30.1%	37.8%	31.7%	33.0%	33.5%	34.5%	38.9%
DOE	2.9%	3.3%	3.7%	4.2%	4.4%	4.9%	5.1%	3.9%	5.0%
ROE	8.8%	9.5%	12.2%	11.2%	13.9%	14.9%	15.2%	11.3%	12.9%

Source: Shared Research based on company data

Major shareholders

Top shareholders	Shares held ('000)	Shareholding ratio
The Master Trust Bank of Japan, Ltd.	8,628	14.19%
Custody Bank of Japan, Ltd.	8,501	13.98%
TOCALO Employees Shareholding Association	2,795	4.60%
BBH FOR FIDELITY LOW-PRICED STOCK FUND (PRINCIPAL ALL SECTOR SUBPORTFOLIO) (Standing proxy: MUFG Bank, Ltd.)	2,634	4.33%
NORTHERN TRUST CO.(AVFC) RE FIDELITY FUNDS (Standing proxy: The Hongkong and Shanghai Banking Corporation, Ltd. Tokyo Branch)	2,288	3.76%
GOVERNMENT OF NORWAY (Standing proxy: Citibank Japan, Ltd., N.A Tokyo Branch)	1,554	2.56%
NORTHERN TRUST CO.(AVFC) RE HCROO (Standing proxy: The Hongkong and Shanghai Banking Corporation, Ltd. Tokyo Branch)	1,395	2.29%
Kumiko Saijo	1,036	1.70%
RBC IST 15 PCT NON LENDING ACCOUNT - CLIENT ACCOUNT (Standing proxy: Citibank Japan, Ltd., N.A Tokyo Branch)	863	1.42%
KIA FUND F149	858	1.41%
SUM	30,555	50.24%

Source: Shared Research based on company data

Note: As of end-March 2021

Employees

Number of employees, other	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	FY03/20	FY03/21
(JPYmn)	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.	Act.
No. of employees (ex. temp. employees)	795	802	824	857	898	955	1,021	1,060	1,121
Thermal Spraying (Parent)	403	405	418	430	449	504	538	553	569
Domestic Subsidiary (PVD process)	43	88	88	100	112	113	120	125	142
Other	285	247	256	263	265	275	292	309	328
Adjustments	64	62	62	64	72	63	71	73	82
Avg. number of temporary employees	273	242	243	239	245	236	251	263	253
Thermal Spraying (Parent)	125	116	115	117	111	108	114	128	139
Domestic Subsidiary (PVD process)	18	65	67	65	71	70	67	62	43
Other	121	53	54	50	56	52	60	61	60
Adjustments	9	8	7	7	7	6	10	12	11
Segment sales per employee	19.6	21.6	24.4	26.2	25.3	28.6	31.1	28.6	28.6
Thermal Spraying (Parent)	30.3	31.7	36.5	40.6	40.3	43.3	47.3	42.3	43.4
Domestic Subsidiary (PVD process)	29.2	12.7	13.4	13.2	13.0	14.5	15.2	14.7	13.2
Other	8.4	14.9	16.1	15.6	14.3	17.4	19.2	20.0	18.5
Adjustments	-4.2	-5.1	-7.3	-7.8	-7.8	-11.8	-11.7	-14.5	-12.6
Segment profit per employee	2.9	3.5	4.6	4.6	5.1	6.2	6.3	5.1	6.5
Thermal Spraying (Parent)	4.6	5.1	7.2	8.3	8.7	9.8	10.0	7.7	9.5
Domestic Subsidiary (PVD process)	2.7	1.5	2.1	1.6	2.2	2.7	2.9	2.6	2.2
Other	0.5	2.0	2.0	1.9	1.9	3.4	3.5	3.6	3.7
No. of employees (parent)	510	505	517	534	560	605	648	667	695
Avg. number of temporary employees	152	134	132	137	131	123	132	148	158
Average age	37.8	38.1	38.5	38.7	38.7	38.3	38.1	38.3	38.4
Average years of service	12.9	13.1	13.2	13.4	13.4	12.7	12.5	12.3	13.1
Average annual salary (JPY'000)	6,627	6,705	6,890	7,068	6,992	7,104	7,264	7,389	7,164

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)

News and topics

Revisions to its dividend forecast

2021-05-10

On May 10, 2021, TOCALO Co., Ltd. revised its dividend forecast.

Profile

Company Name

TOCALO Co., Ltd.

Phone

078-303-3433

Established

1951-07-01

Website

<https://www.tocalo.co.jp/>

IR Contact

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

IR Phone

-

Head Office

6-4-4, Minatojimaminami-Machi, Chuoku, Kobe

Listed On

First Section of the Tokyo Stock Exchange

Exchange Listing

2003-12-19

Fiscal Year-End

Mar

IR Web

<https://www.tocalo.co.jp/english/ir/>

IR Email

-

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Contact Details

Company name

Shared Research Inc.

Phone

+81 (0)3 5834-8787

Address

3-31-12 Sendagi Bunkyo-ku Tokyo, Japan

Email

info@sharedresearch.jp

Website

<https://sharedresearch.jp>

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