

Kobelco: Improving

Customers around the globe consistently turn to Japan's Kobelco Steel Tube Co., Ltd. (KST) for its rapid delivery of high-quality stainless steel tubes and pipes. In a recent interview with *Stainless Steel World Americas*, company Director Yasutsugu Hayama explains how KST has attracted the company's domestic and international clients, while remaining competitive in a constantly changing economy.

As part of its strategy, KST is focused on innovation, with specialized cold working technology that has increased the diameter of its pipe offerings. The company aims to grow its market share by obtaining certification for each end-user, and increasing the range of its product portfolio with its cold working technology.

By *Kiyo Ichikawa and Joanne McIntyre*

The history of KST

With its headquarters on the western-most edge of the main island of Japan, KST is a specialized seamless stainless steel tubes and pipes manufacturer, known domestically and internationally for quality and innovation. KST's seamless stainless steel tubes and pipes designs serve a variety of sectors, including the petrochemical, chemical, energy, machinery, aerospace, nuclear, semiconductor, and automobiles industries.

The origins of KST can be traced back to 1959 when the Kobe Steel Group was earning a positive reputation for being the very first seamless stainless steel tubes and pipes manufacturer in Japan to use the Ugine-Sejournet extrusion process. The steel tube division of Kobe Steel was divided into its own business segment called Kobe Special Tube Co. Ltd. in 1996. In 2016, the company changed its name to its current form, and the Tokyo location joined the Shimonoseki office and facility under a dual head-office system.

Today, KST relies on its connection to Kobe Steel Co. Ltd. to maintain a stable supply of raw materials in the form of round bar billets. This steady supply allows KST to handle the high demand for general stainless steel tubes and pipes (GTP), as well as high-grade stainless steels such as duplex and high-nickel (Hi-Ni) in all of the company's target markets. Overall, KST manufactures about 16,000 tons of seamless stainless steel tubes per year, with a major portion of its output exported to North America, Korea, Taiwan, Southeast Asia, and Europe.

GTP innovation

With its focus on research and development, KST has introduced novel options to the general seamless stainless steel tubes and pipes market (GTP), bolstering its GTP profits. Hayama explains the company's approach: "We are always trying to use design technology to realize our customer's needs. While we can extrude 5-inch and 6-inch pipes with our 2,000-ton press to cater to the general stainless steel tubes and pipes market, we also developed a new technique to create larger diameter options. By using cold working technology designed in-house, we can enlarge the outer diameter of tubes after hot working, which has increased the number of pipes in our product line. In 2018, we began the production of 8-inch pipes, and



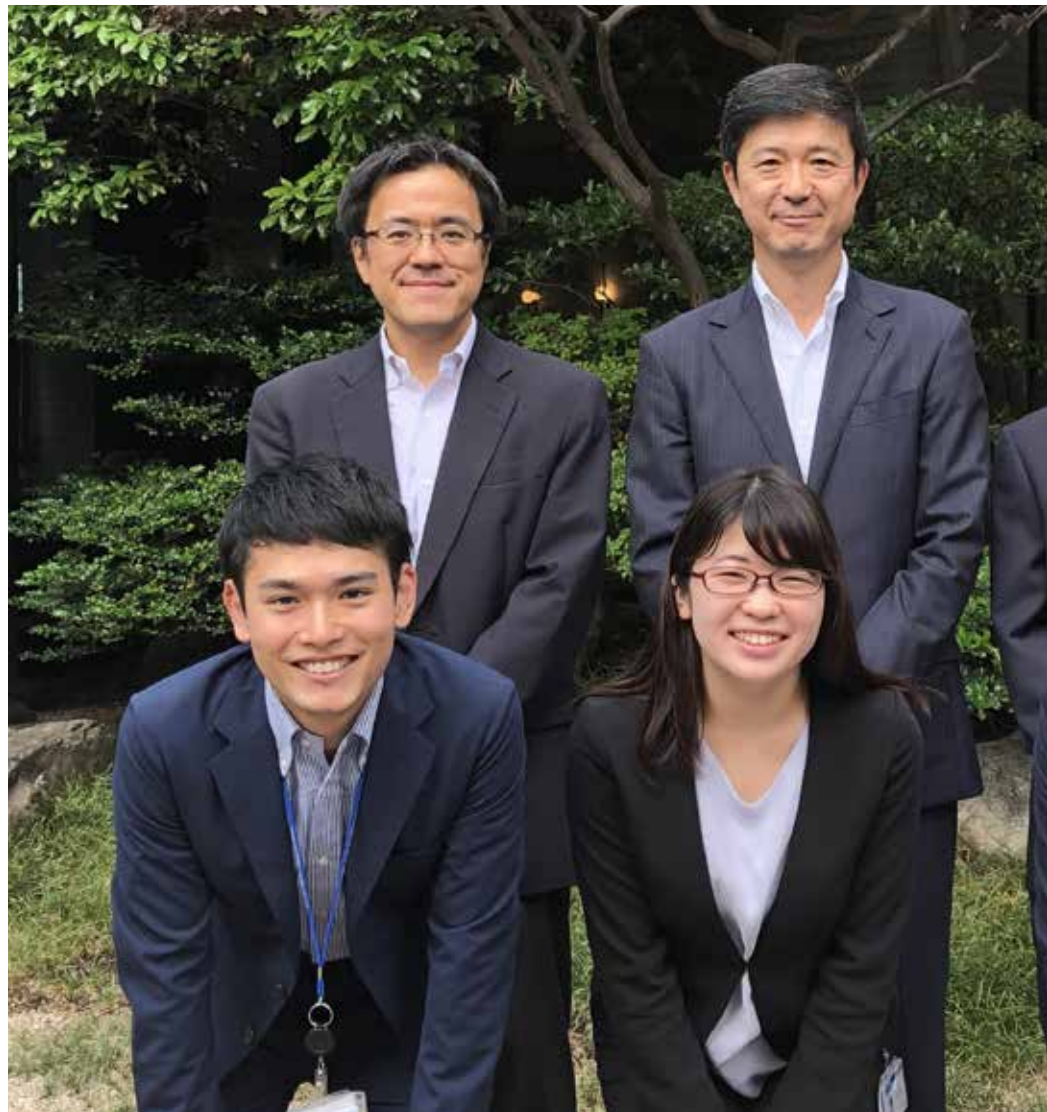
Bright annealed tubes for semiconductor applications.

we have plans to manufacture 10-inch pipes in the near future. These innovative pipes, which are the result of a dedicated team of KST engineers and our company's advanced technological capabilities, will be offered in highly corrosion-resistant stainless steel, as well as other materials."

Hayama continues, "We are also working on expanding the product range of large-diameter, thin-walled pipes using our cold working technique. We expanded the general-purpose steels to 8-inch x Schedule (Sch.) 10 in 2018, and will expand to 10-inch x Sch. 10 sometime in 2019. The order volume of the general-purpose steels has increased drastically, and it is now possible to produce 5- and 6-inch x Sch. 10 for the special steel grades such as duplex, and Hi-Ni.

Instrumentation tubes

Hayama offers an overview of KST's recent activity, and explains its instrumentation tubes, a core company product. "One important product for KST is high-quality instrumentation tubes for semiconductors, automotive applications, and oil and gas projects. To improve productivity, we have recently invested in our equipment, which has really paid off. Operations are currently running smoothly, and our investments have increased productivity from 700 km (2,300,000 feet) to 850



Back row from the left: Mr. Horiuchi, Mr. Hayama, Mr. Teshima, Ms. Moriyama; front row from the left: Mr. Kato, Ms. Aimatsu, Mr. Oshima.

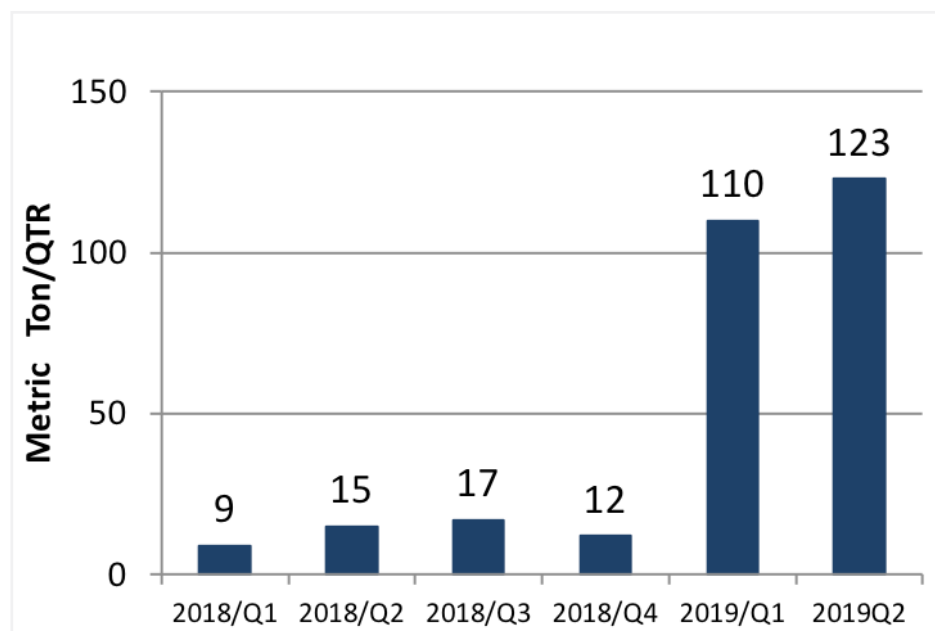
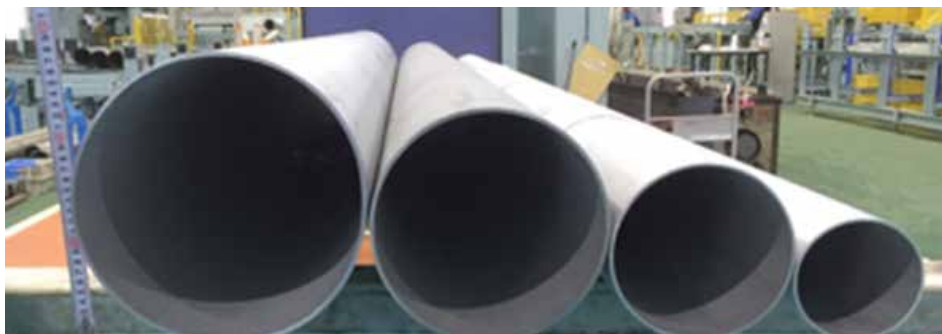


Table 1: Normal pipe size (NPS) 8 inches x Sch. 10, NPS 10 inches x Sch. 10, order quality trend.

km (2,800,000 feet) per month, which is a 20% increase. Our market share in 2018 was 5.7%, which positions us as the third largest supplier of stainless steel tubes and pipes in the world," he says.

"Our instrumentation tubes are used for a number of reasons," Hayama continues, "but the main applications are in semiconductors and automotive applications, where bright annealed (BA) tubes and pipes are used. These markets are excellent due to a robust demand. For example, in the semiconductor market, smartphones, Internet of Things (IoT), and the artificial intelligence (AI) sector continue to drive growth and expansion. KST was the first company to venture into the semi-conductor market, and today we are one of the biggest producers of semiconductor tubing in the world, and certainly the biggest in Japan. In response to the vigorous demand for semiconductors, capital invest-

“Every stage of the production process, from the acceptance of orders to the shipment of products, is carefully controlled by our online, real-time system. As a result, we can precisely and rapidly meet all the requirements of our customers through detailed tracking.”



Tubes manufactured in 10-inch outside diameter (O.D.), 8-inch O.D., 6-inch O.D., and 4-inch O.D.

steel tube technology |



Pipes with a size range of 5 inches and bigger

Size						GRADE-S31803/S32205/S32750, N08800/N08810/N08811,N08020,N08825, Austenitic Stainless etc.			TP304/L,TP304H,TP316/L		
OD			WT								
NPS	In	mm	SCH	In	mm	H/C	20ft	17ft	H/C	20ft	17ft
5	5.563	141.3	SCH10S	0.134	3.4	C	X				
5	5.563	141.3	SCH40S	0.258	6.55				H	X	
6	6.625	168.3	SCH10S	0.134	3.4	C	X				
6	6.625	168.3	SCH40S	0.280	7.11				H		X
OD						TP304/L,TP304H			TP316/L		
NPS	In	mm	SCH	In	mm	H/C	20ft	17ft	H/C	20ft	17ft
8	8.625	219.1	SCH10S	0.148	3.76	C	X		C	X	
			SCH20	0.250	6.35	C	X		C		X
			SCH30	0.277	7.04	C		X			
10	10.75	273.0	SCH10S	0.165	4.19	C	X		C	X	

Table 3: Increased size ranges now available.

increase production because we have the in-house expertise.”

The straight tubes and pipes, and coil tube product groups are the company’s third largest market after semiconductors and automobiles, and to match KST’s strategy in instrumentation tubes; KST is also considering further expansion into the oil and gas market with straight tubes and pipes.

Production time

One hallmark of KST service is its highly accurate production control, and Hayama outlines the company’s system for production. “Every stage of the production process, from the acceptance of orders to the shipment of products, is carefully controlled by our online, real-time system. As a result, we can precisely and rapidly meet all the requirements of our customers through detailed tracking. A great example of this technology, in-action, is found with our heat exchanger tubes. KST specializes in heat exchanger tubes of 1 inch or less – that is our signature size. We can produce these tubes from order to shipment in about 1.5 months, which is very short by extrusion mill standards. For customers who need quick delivery, KST has no problem.” The company’s share of the heat exchanger tube market in 2018 was the fourth in the world (Source: Steel & Metals Research).

History of specialization

KST’s experimentation in tubes of varying diameters dates back to its history of producing precision tubes and instrumentation for the demanding nuclear power industry. KST’s precision tubes acquire a high level of smooth inner and outer surfacing and cleanliness by repeated special cold working, and bright annealing. It can also handle requests for cold-finished and

outer surface polishing. KST’s instrumentation tube applies these technologies, and it is also expanding to the piping market for the hydrogen gas station applications.

Conclusion

Hayama concludes with a thoughtful reflection on KST and its relationship with its customers. “Overall, our increasing market share, the improvements we have introduced to our product line, and our rapid production and delivery are the results of two persistent

KST goals: identify new market needs, while maintaining a high level of service for existing customers. We strive for the creation of new value through continuous innovation, we always aim to realize operational excellence, and provide reliable products for our customers, wherever they may be. In Japan and overseas, our high-quality management of delivery dates and short lead times, and our proprietary production management system has earned us trust and loyalty. It is our job to honor that bond.”



Coil tube products are one of the new release items.

ments are being implemented or planned at semiconductor factories in South Korea, the United States (U.S.), Taiwan, and China.”

KST also plays a big role in the automotive industry. “In the automotive field, a rapid increase in the number of vehicles equipped with gasoline direct injection (GDI) engines is anticipated in order to meet fuel efficiency and environmental regulations. It is here that KST wants to step in: we supply BA tubes and pipes for these GDI engine parts. We are also looking to implement capital investment to improve the production capacity of BA tubes and pipes for the oil and gas market. In general, if we see a potential market, we invest in equipment quickly and set up a system to

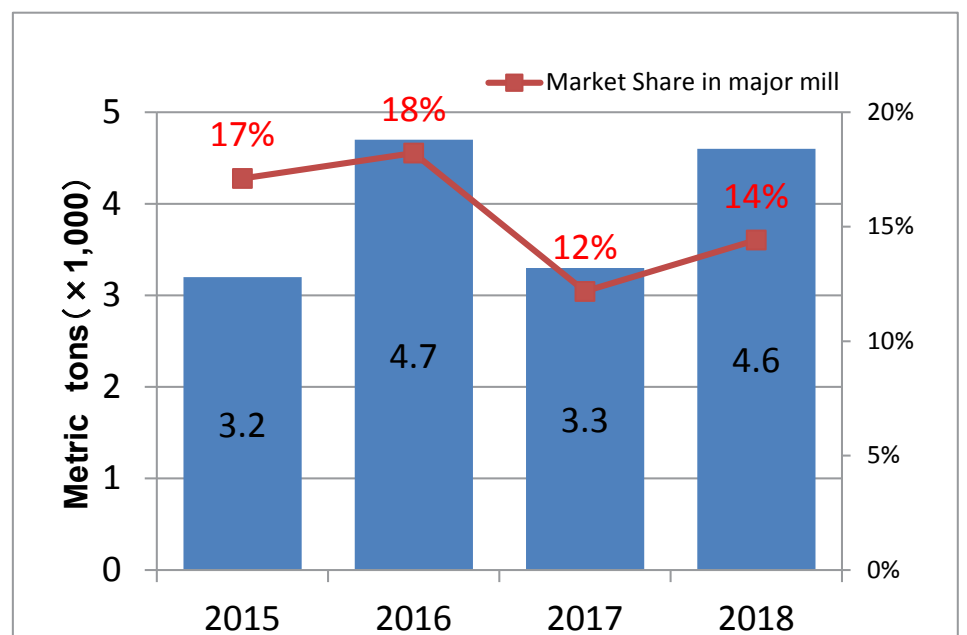
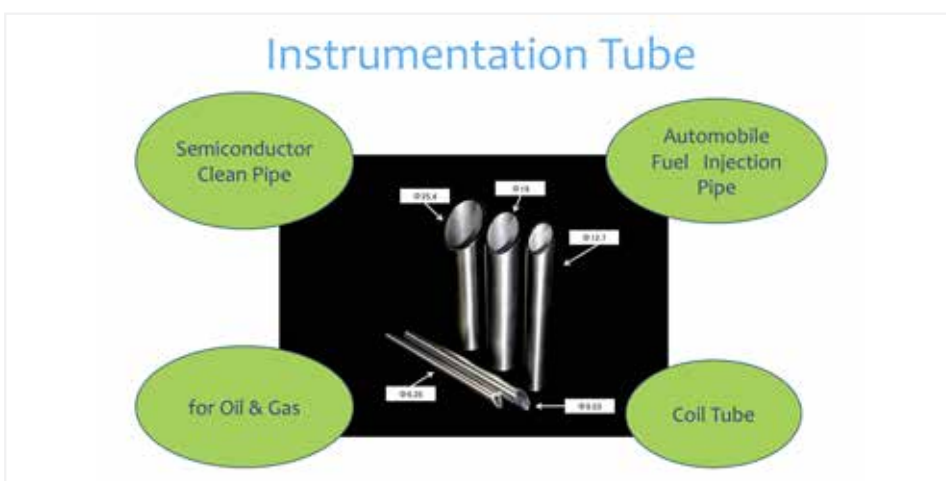


Table 2: Production in KST heat exchanger tubes and market share in a major mill.



► Facts and figures

Name	Kobelco Steel Tube Co., Ltd.
Founded	1959 (as a factory of Kobe Steel, Ltd.)
Independence	April 1996 (as Kobe Special Tube Co., Ltd.)
Equity capital	JP¥4.25 billion (approx. USD\$40 million)
Employees	365 (as of March 2019)
Shareholder	Kobe Steel, Ltd. (100%)
Email	inquire-kobest@kobelco.com, and sales-kobest@kobest.com
URL	www.kobest.co.jp