Sumitomo Metal Industries aims to be "No. 1"

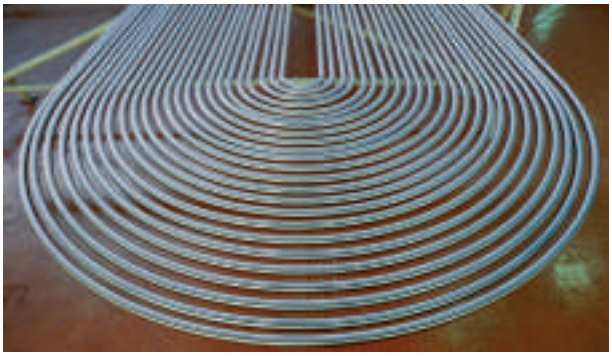
The cold working factory, with cold pilger mill and cold drawing bench, manufactures high quality products and stabilizes a wide range of materials, from stainless steel to Ni and Ni base alloys.

There has been a tremendous growth in the need for tubular stainless steel products in recent years and this trend is likely to continue well into the future due to the rapid rise in energy requirements of both industrialized and developing regions. In addition, the use of specialized pipes and tubes has increased briskly as oil and natural gas developments move into harsher environments (hotter, more corrosive, deeper, greater pressures). Likewise, in the power generation industry, boilers are today required to operate at ever higher pressures and temperatures, boosting the demand for high-quality tubes and pipe. Enter on this scene Sumitomo Metal Industries, one of the world's most comprehensive and established manufacturer's of high-grade stainless steel products and a renowned specialist in making pipes and tubes for over eighty years. Showing great enterprise and expertise in their work, they are dedicated to serving their customers well. Their goal - to become No. 1 in all fields in which they are active. Stainless Steel World went off to Osaka, Japan to meet with Takao Kouda (Export Manager), Hiroyuki Anada (Section Manager), and Masanao Yamashita (Technical Manager) at the company's Amagasaki Steel Tube Works to learn more about the resounding success story of their Steel Tube and Pipe Works.

By John Butterfield

History

The company has a long history, actually starting out as early as the 16th century smelting copper. However, present-day foundations were laid in 1901 with the formation of the company's first steel foundry. Today, Sumitomo Metals already looks back on 105 years of providing expertise, service and quality products to customers. It boasts six different steelworks whose individual characteristics give the company its distinctive qualities as a steel-maker. It has three integrated steel making plants - the Kashima, Wakayama, and Kokura Steel Works. Further, there is also the Osaka Steel Works, the only works in Japan producing railway wheels, and the Steel Tube Works in Amagasaki producing high-grade stainless steel pipes and tubes. Five years ago, an important milestone took place when the company reorganized its businesses into four companies (the Pipe & Tube Company; the Steel Sheet, Plate, Titanium & Structural Steel Company; the Railway, Automotive & Machinery Parts Company; and the Engineering Company). Along with Head Office and the Corporate R&D Laboratories, they form the new basis of Sumitomo Metals. Under this system each business unit has an administrative and operational structure that covers all steps from manufacturing right through to sales.



Sumitomo's heat exchanger tubes are used in various applications, for example, in nuclear, fossil power boiler, and chemical plants. A lot of Sumitomo's experience in U-bend tubes exists in corrosion resistant duplex stainless steels, pure nickel and nickel-based alloys.

Products

True to its reputation as 'Sumitomo Metals - the Manufacturers and Provider of Pipes', the Amagasaki Steel Works has been providing various industries with tubes and pipes for more than eighty years. In 2007, its most important clients come from the thermal and nuclear power, oil & gas, and petroleum & chemicals industries. "Our products are synonymous with the highest attainable standards of quality and reliability," says Mr. Kouda "and with users' needs becoming increasingly rigid, our broad experience, careful workmanship, cutting-edge technology, and modern production equipment and facilities enable us to provide the appropriate product to meet any demand.

"The requirements for the core industries which we serve are changing rapidly," says Mr. Anada "so we have to keep apace with this". These changes include: the development of new materials, refinement of manufacturing techniques, introduction of advanced equipment,

The demand for ethylene cracking plants is increasing rapidly. Sumitomo's internal finned tube for ethylene cracking furnaces has long-term resistance to carburization during operation and provides a highly efficient solution for ethylene cracking reactions due to its fin shape.

and elevation of the standards of quality control.

The Amagasaki Steel Work's main manufacturing products are high-quality stainless steel tubes and pipes for almost every requirement (outside dimensions 6-952.5 mm). For thermal power plants these include: superheater and re-heater tubes, pipes for water feed and steam piping and composite tubes, and various types of fitting. Of particular current importance to the company is the growing demand for ultra-super critical (USC) boilers in thermal plants. These require materials that can function well at high temperatures and pressures, larger capacities, and with a diversity of fuel types. To accommodate this need on the domestic front the company has developed tubes to handle boiler temperatures of 600°C+ and they are seeing this market spreading to all over the world. "USC boilers," says Mr. Anada "not only help to boost generating efficiency but also reduce carbon dioxide emissions, thereby indirectly contributing to a reduction in global warming."

The need to rapidly innovate has given a continual impetus to technological betterment at Sumitomo Metals and, as a result, not only are the materials which the company uses for its tubes and pipes of a high quality, performance and economy, they are more often than not tailor-made to meet the specialty requirements of the customer. "We are masters at this," adds Mr. Yamashita. "We are further capable of delivering our products according to a wide variety of standards including ASME, BS, DIN and JIS (Japanese Industrial Standards) among others. "

For nuclear power plants, company products include heat-exchange- and steam-generator tubes for pressurized water reactor as well as stick elbows for boiling water reactors. "Our history of delivering materials to the energy industries going back to 1969," says Mr. Yamashita . "To date we have been very successful and our products are noted for the reliability and performance - there has never even been any hint of problems." Backing this up is the fact that the company has recently received its first mammoth order from China amounting to one billion Yen to supply steam generator tubes for the Qinshan Nuclear Power Plant in China. Particularly successful segments of the energy market for Sumitomo are: their full line-up of, fit-for-purpose products in corrosion-resistant alloyed tubes for the oil &gas industry.

Production expansion

With so much interest in their products how are Sumitomo increasing their capacity? "During 2006 we made full use of the comprehensive strength of our production facilities," says Mr. Kouda. "In addition, we operated our present facilities at their full capacity by consolidating sizes and production lots. This enabled us to produce 1.13 million tons of seamless pipes and 460,000 tons of large-diameter welded steel pipes." It is a figure close to the company's maximum production level. However, to keep ahead of the continuing rising demand for their seamless pipes, construction is already underway to produce a new plant at the Amagasaki Works to boost production capacity even further for high-nickel and high-chrome boiler tubes - an investment costing $55.5 million. This money will be spent on installing a third cold-drawing machine and a third heat-treatment facility to raise capacity from 12,000 to 18,000 mT/Y. Foundations have already been laid and both sets of equipment will be taken into production in October 2007.

The vertical piecing press provides large diameter pipes (with an outside diameter of up to approximately 950 mm) that satisfy demands not only for nuclear and fossil power boiler applications, but also for chemical applications.

Technology is the way forward

A factor that enhances the company's reputation as a leader in tube and pipe manufacturing is its application of technology to provide end-user materials solutions. Mr. Kouda: "We continually strive to augment our research and technical development knowing that this is a factor heightening our reputation among our customers. Developments are therefore conducted in close coordination between customers, the corporate R&D Laboratories, and each company's steel works manufacturing plants and sales departments throughout every phase of research, development, and implementation. Materials are developed for tailor-made customer solutions. "A great many new materials have been introduced into the market in this way," says Mr. Anada. Within Sumitomo Metals there are more than 250 research scientists involved in R&D projects at any one time." One of the most famous of these being Dr. Ueda, the General Manager of the Quality Control and Technical Service Department at Sumitomo's Wakayama factory who recently won the 2006 Frank Newman Speller Award at NACE for his significant contribution to corrosion engineering. Just some of the outstanding alloys which have been introduced are: SUPER304H (18Cr-9Ni-3Cu) and HR3C (25Cr-20Ni-Nb-N) for boiler tubes, DP28W (27.5Cr-7.7Ni-MoW-N) for various use in urea plants, Super Duplex-DP3W (UNS NO S39274, 25Cr-7Ni-3Mo-2W-N) for high resistance to corrosion, crevice corrosion, and pitting in sea water, 347AP (UNS NO S34751, Low C-18Cr-8Ni-Nb-N) for use in furnace tubes for resistance to stress corrosion cracking in polythionic acid in petroleum plants, and HK4M (25Cr-25Ni-Ti-Al-B) and HPM (25Cr-38Ni-Ti-Mo-B) for use in furnace tubes in ethylene cracking plants where corrosion resistant materials are needed. In addition to the distinctive stainless steels, some nickel base alloys are included recently in the line-up of Sumitomo Metals to meet the demand under highly corrosive environments in petroleum and chemical industries.

For the oil & gas industries an array of alloys have been developed for their resistance to high temperatures, seawater, CO_2 and H_2S.

All the high-quality steel products start-out with proper, carefully controlled steel refining, necessitating the use of an electric arc furnace and a vacuum oxygen decarbonisation furnace etc., depending on the quality of stainless steel required. Sophisticated technologies, such as cold drawing, cold rolling heat treatment and non-destructive testings, are typical elements in the manufacturer of the company's higher quality products. Further, the company is progressive in its development and utilization of the most modern tube making methods, with the tube mills being constantly updated to take advantage of the latest technology and equipment. This assures the constant availability of a broad size and grade range of tubular products produced as economically as possible.

Inspection guarantees quality

In order to meet the specifications of its customers, Sumitomo Metals implements strict quality assurance control throughout all the processes of steel-making, rolling, tube making, heat treatment and finishing. It goes without saying that material controls are exercised.

The hot extrusion mill is highly efficient for producing hot finished pipes.

Sumitomo supplies many kinds of stainless steel and mickel-based alloy tubes for chemical and petroleum refinery plants.

Tests are numerous and include such matters as: mechanical testing, corrosion testing and microscopic structure. “These controls and tests,” says Mr. Anada “are supplemented by an exacting quality inspection of each and every pipe both exterior and interior and for dimensions, etc. and by hydraulic pressure tests. We are also equipped with the necessary facilities for non-destructive testing, the deployment of which is determined by the specific requirements of each particular case. “This so that we can safeguard the standards of our deliveries to our customers - each piece of pipe or tube having its own pedigree,” says Mr. Kouda. Further, the company has adopted ASME’s documentation control and audit system to provide its customers with complete quality assurance.

Preserving the environment

As part of its progressive views, Sumitomo Metals also takes environmental preservation very seriously recognizing it as an important global issue. Since 1998, the company has had an environmental management system in place with all production sites being certified under ISO 14001. As of 2006 environmental audits are carried out. In 2005, the company in its entirety spent 5.1 billion Yen on environmental investments and 36.1 billion Yen on maintenance costs related to environmental preservation. A further 2.5 billion Yen has been devoted to environmentally-related R&D. It also collaborates on a number of international environmental projects, utilizing its accumulated technology in environmental improvement and energy conservation to achieve some significant goals.

Looking to the future

“We have become the leading brand in seamless pipes and tubes,” says Mr. Anada “owing to the overwhelming advantage of our product development technology and to our broad product range. For the future, to further accelerate distinctiveness we will use extra capital investment to respond to the continuing needs for cutting-edge products and leverage to our brand power. We intend to strengthen our position as the world’s leading comprehensive pipe and tube manufacturer by offering solutions which continue to make the difference to our customer’s success.” And indeed Sumitomo Metals, with its exceptionally strong line-up of stainless steel and super-high alloys for any service conditions and its VAM series of premium joints for harsh environments are in an ideal position to provide its customers with the right product for any operating environment. “Customers have faith in us because of our strong track record and the fact that all our relationships are based on trust and performance, says Mr. Kouda. “By making use of our reservoir of technologies and the latest research, we are able to work with our clients hand in hand, ultimately creating new value-added products. This approach has allowed us to win even greater trust with them by accurately meeting their needs - a positive cycle and one of our undoubted strengths.”

In terms of sales, the company plans to extend its market share in the petrochemical and chemical industries in much the same way as it has been doing in the oil & gas and the energy industries. So from the land of the rising sun, Sumitomo Metals is already laying out an ambitious path to continue its shining success story further around the world.

Facts & Figures

Name:	Sumitomo Metal Industries, Ltd.
Founded:	1897 (Incorporated:1949)
Business:	Steel Division
	Tubes & pipes
	Steel sheets & plates
	Bars & wire rods, and construction materials
	Railways, automotive & machinery parts
	Stainless steel & titanium
	Construction and Plant Engineering
	System Engineering
	Electronics
	Silicon wafers
Crude steel output:	13 million tons
No. of employees:	6,668

Outline of the Amagasaki steel tube works

Founded:	1919
Products:	Seamless pipes & tubes
	Carbon-, alloy-, stainless-, and nickel-based alloy steels
Dim. Pipes & tubes:	6-952.5 mm
No. of employees:	2005: 550
Website:	www.sumitomo-tubulars.com