

Nippon Yakin Kogyo: demonstrating high performance



From its humble beginnings making fire extinguishers in 1925, today Nippon Yakin Kogyo Co., Ltd (Nippon Yakin) has evolved into an industry leader in the manufacture of coil and plate in a wide range of materials from general purpose stainless steel to high performance materials such as super stainless, nickel alloy and the like. Nippon Yakin has brought innovation and technology to its products, is dedicated to research and continues its long tradition of creating excellence with a state-of-the-art production system backed by a precision quality system. Stainless Steel World spoke with President and CEO, Hajime Kimura to find out what Nippon Yakin have been up to recently and the company's plans for the future.

By Gillian Gane

Mr. Kimura begins by telling us that business is currently on the up for Nippon Yakin. High levels of domestic production have continued owing to the demand for stainless steel following domestic economic recovery. "Looking at the results of the third quarter for the fiscal year ending March 31st, 2018, we are in a very good situation," he says. "We have recorded normal sales for this period, despite the fire that resulted in a four month shutdown of our Kawasaki hot rolling mill in May 2017, and we are predicting results that exceed the previous year."

The company will be investing 28 billion yen over the next three years. Much of this will be a strategic capital investment in innovation of the manufacturing process and refresh the Kawasaki plant, including an improvement of the staff welfare facilities and a reconstruction of the factory layout.

Mr. Kimura explains: "We will also be updating the dining hall and changing rooms and putting in tennis courts, thereby strengthening our welfare facilities for employees and making effective use of the site for processing. Although each facility has its purpose, I believe it is beneficial to realise labour saving by updating, remodelling and improving quality. We plan to carry out these steps moving forward, in order of priority."

Costs on the rise

Notwithstanding this current success, what must also be taken into account is that, in addition to an increase in the cost of logistics and sub-materials (electrodes, refractories, etc.), labour costs in Japan are currently on the rise, recruiting new staff has become more difficult and the existing labour force is seeking higher salaries. Says Mr. Kimura, "Here in Japan we are looking forward to the Tokyo Olympic Games in 2020, the building of the Chuo Shinkansen maglev rail link, etc. Businesses requiring labour will see an upsurge in many areas and, when that happens, personnel expenses will rise. Where there is a need to ensure staffing levels, supply may become a problem and one result of that is an increase in the cost of transportation. Our company finds itself in a situation where we cannot help but accept this, so the cost of logistics has likewise increased."

Mr. Kimura also tells us that since the cost of sub-materials is also rising, a future price increase may well be on the cards despite the fact that Nippon Yakin



President and CEO Mr. Hajime Kimura: "We are in a very good situation"

have applied themselves to lowering transportation costs wherever possible. "We have used a combination of trailers, ships and trucks to achieve overall cost reductions," he says, continuing; "During periods of increased production, transportation increases raise the unit price, therefore, we have to equalize the production volume in order to suppress the cost increase. We are working to reduce costs internally and, for costs we cannot sustain, we are working with our customers to find acceptable ways of covering any increase."

Not all doom and gloom

There are other ways in which Nippon Yakin are looking to increase cost effectiveness. On the topic of the Krupp-Len method of recycling for high nickel-containing resources at the Oeyama Manufacturing Plant (nickel smelting centre), Mr. Kimura has this to say. "Originally we imported and smelted nickel ore, but we also collected various high nickel industrial recyclable resources (we call it high-grade raw material) and used it to make the raw material ferronickel. Recently, about one third of our ferronickel volume has been produced through using high-grade raw material, which reduces cost." Expanding sales of high performance materials will offset some of the cost increases. One of topics from Nippon Yakin's 2017 medium-term management plan was to establish the company as a top supplier in the Asian high performance materials market displaying Quality, Cost, Delivery (QCD) competitiveness and various

measures are being looked at to further deepen this sector of business.

Firstly, through the expansion of high nickel alloy wide coil and wide cold-rolled sheet production. Mr. Kimura explains: "High nickel alloys have superior corrosion resistance compared to super stainless steel and are used in chemical plants and flue gas desulphurisation equipment (FGD) which have extremely severe corrosive environments. This is a product we are focusing on and we are strengthening our competitiveness in coils and cold-rolled sheets widening. Nickel alloys typically resulted in limited coil width due to high temperature strength, however, owing to improvements in hot rolling process conditions in 2015 for NAS NW276 (UNS N10276), we succeeded in manufacturing 4-foot wide coils for the first time. In 2016 we were also able to manufacture 4-foot wide coils with NAS NW22 (UNS N06022) and NAS 625 (UNS N06625). Meanwhile we also increased productivity on 5-foot wide cold-rolled sheets by improving the manufacturing process."

A reduction in the number of welding lines by wider materials has brought a shorter welding period and the sales volume of wide-width materials is steadily increasing. In the 2019 fiscal year, the final year of Nippon Yakin's medium-term management plan, sales should exceed 100 tonnes per month. There is a demand in one of Nippon Yakin's key markets, China, for shorter delivery periods, heavier products and wider products for high performance materials. In order to meet these demands

[COVER STORY]

a joint venture company, Nisco Nippon Yakin Kogyo Nanjing Co., Ltd. has been set up with Nanjing Iron and Steel Co., Ltd (NISCO) and others, which began operations on 16th January this year. Nippon Yakin supplies materials and NISCO has state-of-the-art, high-performance wide plate manufacturing facilities. "We will build a product supply system that meets the advanced market needs by entrusting the wide plate production process to Nanjing Iron & Steel Co., Ltd. and, with the collaboration of Nanjing Iron & Steel Co., Ltd. and Nippon Yakin Shanghai Co., Ltd. (local Chinese subsidiary of Nippon Yakin), we will strengthen sales capabilities of high-performance materials in the Chinese market," Mr. Kimura tells us.

Product applications

Nippon Yakin's main high performance products fall into four fields, namely environment and energy, food, sheathed heaters and electronic and electrical machinery.

Environment and energy fields -

Mr. Kimura: "Environment conscious awareness is increasing globally and a movement to regulate sulphur oxide (SOx) in exhaust gas has begun. As a countermeasure, ships are being installed with SOx scrubbers as exhaust gas purification equipment." "A SOx scrubber, washes the exhaust gas with a shower of seawater to reduce SOx, creating a sulphuric acid environment within the scrubber causing corrosion to general purpose



The company produces NAS NW276 (UNS N10276) hot rolled 4-foot wide coils and is increasing production of 5-foot wide cold-rolled sheets.

stainless steel. To combat this high corrosion resistant duplex stainless steel NAS64 (UNS S32506) and super austenitic stainless steel NAS254N (UNS S32053) and NAS185N (UNS S31254) has been adopted in Japan. Corrosion resistant material is also required for parts around the SOx scrubber, including peripheral components, so we are promoting sales of high performance materials in this field." Flue gas desulphurisation equipment in a coal-fired power plant is another area requiring high corrosion resistant

solutions. The interior of the FGD is a harsh environment where metals such as super austenitic stainless steel, super duplex stainless steel, high nickel alloys and the like come into their own. Since the adoption of super austenitic stainless steel NAS254N (UNS S32053) in FGD systems in Japan in the 1990s, various Nippon Yakin's high performance materials have been used both in Japan and abroad. In recent years, following China, environmental regulations have been strengthened in India and demand there is increasing. In photovoltaic power generation, a type of renewable energy, polycrystalline silicon type solar cells are used. In a plant where polycrystalline silicon, a battery material, is produced, an intermediate process takes place which uses high temperature and high pressure. Thick plates of superior heat resistant nickel alloys such as NASH38X (UNS N08120) and NAS800H (UNS N08810) are used in the reaction vessel during this process. Demand in China for these is currently high due to the active solar power generation backdrop.

The oil and gas sector has been sluggish for a while, but is on a recovering trend, and from many regions, including Europe and the United States, Nippon Yakin are receiving increasing inquiries about high-strength and high corrosion resistant materials. "We expect that future demand in this field will rise. Also, when oil and gas projects restart we expect an increase in



To strengthen the competitiveness in plates is one of Nippon Yakin's measures.



Two subsidiaries in Shanghai and Singapore play an important role in the Asian high performance materials market.

sales of duplex stainless steels UNS S31803, UNS S32205, super duplex stainless steels UNS S32750, UNS S32760 and super austenitic stainless steel UNS S31254, all of which have already acquired the NORSOK standard,” says Mr. Kimura.

Food applications - “A leading Korean food company placed an order with us for 180 tonnes of super austenitic stainless steel NAS254N (UNS S32053) for their soy sauce brewing tank, the second such order” reveals Mr. Kimura. He explains: “Since soy sauce has 17% salt content it is highly corrosive. General purpose stainless steel does not have sufficient corrosion resistance and cannot be used in tanks. This austenitic material has high corrosion resistance, even for soy sauce, making it maintenance-free and contributing to lifecycle and cost reduction. In Japan it is also employed in salt tanks and salt mirin tanks.

Sheathed heaters - Nippon Yakin manufactures coil material for sheathed heaters, NAS 800 (alloy 800), NAS H840 (alloy 840), NAS 825 (alloy 825) being the main products. Mr. Kimura declares that; “Recently demand has been good especially for coffee makers. Inquiries are coming in too from newly established hotels and convenience stores, and sales

figures are going up. In addition demand for NAS H880 (25Ni-24Cr-Mo, Al, Ti), developed several years ago, which has excellent corrosion resistance, is expected to increase.

Electronic and electrical machinery - Liquid crystal panels are often used in televisions and mobile phone displays, but the next generation organic EL (electro-luminescence) panel has attracted attention. By using NAS36 (Fe -36% Ni alloy), which has low thermal expansion characteristics, in organic EL panel manufacturing equipment, sales of the alloy to Korea are currently strong. The organic EL field is growing, and the sales volume of NAS36 (Fe-36% Ni alloy) is expected to increase.

Promotion through exhibitions

“We promote Nippon Yakin and our high performance materials at overseas exhibitions to cultivate new customers and strengthen the existing customers’ network,” Mr. Kimura tells us. “Our UK subsidiary Nippon Yakin Europe Limited organised a stand at Stainless Steel World 2017, in Maastricht catering chiefly to the activities of their customers. We also took the opportunity to visit existing customers from Europe, Asia and the United States to conduct business negotiations. It demonstrated our international representation and we also achieved good results from technical meetings and in developing new customers. We feel such events have a very important public relations role to play.”

Network of companies

With the introduction of two subsidiaries in Asia which play an important role in the Asian high performance materials market, Nippon Yakin is expanding sales via a network of the bases in Japan, China, the United States and the United Kingdom.

Mr. Kimura elaborates on the two bases: “Nippon Yakin Shanghai Co., Ltd., based

in Shanghai, provides technical and sales support in the rapidly evolving Chinese market, which is the largest market in East Asia. To meet such needs, through collaboration with NISCO for manufacturing and sales, we plan to respond more to our customers’ needs for high-performance materials for wide-width and large-scale products.”

“Located in Singapore, Nippon Yakin Asia Pte. Ltd. is engaged in the sale and market development of high performance materials products in Southeast Asia and other countries, such as India, where economic growth is prominent, and the Middle East where oil and gas related projects are concentrated. Recently, demand in the environment-related equipment field has risen against the backdrop of strengthened environmental regulations in India, and we are actively targeting this field. Signs of recovery have also been seen in the oil and gas industry and we have high expectations that demand will rise.”

In conclusion

Mr. Kimura sums up the future outlook by saying; “Nippon Yakin, through further measures such as deepening our high-performance materials business, intend to increase our corporate value as a competitive specialty stainless steel manufacturer in Japan and overseas, through the dual arms of our high performance materials business and general-purpose stainless steel business.”



Mr. Kimura believes events such as Stainless Steel World conference and exhibition have play a very important public relations role.

Facts & Figures
 Name: Nippon Yakin Kogyo Co., Ltd.
 Established: 1925
 Employees: 1,091
 Headquarters: Tokyo, Japan
 Products: Plates, sheets and coils
 Materials: Stainless steels, super stainless steels, nickel alloys and iron-nickel alloys
 Website: www.nyk.co.jp/en/