



Nippon Yakin Kogyo: Specialist in high-performance alloys

The Kawasaki plant of Nippon Yakin Kogyo.

When it comes to high-performance alloys like super stainless steels and Ni alloys, Japanese manufacturer Nippon Yakin Kogyo Co., Ltd. (Nippon Yakin) ranks as one of the world's top producers. The executives of Nippon Yakin, such as Mr. Hisashi Kubota, company President and CEO, have put the company's tremendous output to good use: by specializing in applications that require high-performance alloys and developing markets and applications mainly in overseas, the company set a new sales record in 2018. Continued expansion and constant attention to productivity, quality, and delivery have put Nippon Yakin on track to increase revenue dramatically in the years ahead—perhaps breaking even more company records in the process.

By Kiyo Ichikawa and Daniel Sweet

One month before the imperial transition in Japan, Nippon Yakin witnessed a transition of its own. Founded in 1925, the Japanese stainless steel manufacturer welcomed its newest leader, Mr. Hisashi Kubota, on April 1. In a recent interview in Tokyo, Mr. Kubota spoke of the enormous responsibility he has assumed as company president and CEO.

“I feel very strongly that I'm inheriting something that my predecessors built up over 93 years of continued operation. And with just 6 years to go until our centenary year, I have a strong sense of my duty to lead Nippon Yakin forward. Luckily, I am confident in our business model.” Mr. Kubota explained further: “While we manufacture and supply strip, sheet and plate in a wide variety of materials,

including general-purpose stainless steels such as type 304, we have tried to emphasize high-performance alloys such as super stainless steel and Ni alloys. In response to the fierce competition in the world of general-purpose stainless steel products, we have strengthened our high-performance alloy business over the last 20 years and set a new sales record in 2018.



Mr. Hisashi Kubota, President of Nippon Yakin Kogyo Co., Ltd.

The last record was achieved in 2004. At that time, NAS36 (Fe-36%Ni alloy) for shadow mask for CRTs was our main high-performance alloy. But, due to change in demand structure, sales volume of NAS36 for shadow mask had dropped to zero in 2007. So we developed markets and applications for our high-performance alloys, and reformed our operations—with great success.”

The current situation

Mr. Kubota explained the current situation. “In the high-performance alloys sector, the demand from environmental and energy-related applications such as SOx scrubbers for ships, flue gas desulfurization equipment, oil & gas-related applications, and applications for durable consumer goods such as bimetals and sheath heaters remains favorable, centering in overseas.” “Amid this business environment, we focused on increasing our sales of

high-performance alloys even more. We set a sales volume record of 36,000 tons in 2018 and also achieved sales targets for the medium-term management plan 2017 (from 2017 to 2019) one year ahead of schedule. We continue to improve in order to become the top global supplier of high-performance flat product.” “NISCO Nippon Yakin Kogyo Nanjing Co., Ltd., a joint venture with Nanjing Iron and Steel Co., Ltd. (NISCO) has started production and marketing on a commercial basis, and we are anticipating that this will boost sales volumes in the future. In addition, revenue improvement and structural improvements are progressing as scheduled.” “Following that, during the next medium plan period from 2020 to 2022 we plan to implement our capital investment plan so that we can reap the benefits of our high-performance alloys business. As for our strategic capital investments, we recently finished construction on a building complex that houses a portion of the testing and research division’s equipment and some welfare facilities. This has enhanced employee welfare and also boosted work efficiency. For the future, we are considering installing a state-of-the-art electric furnace, enhancing our cold rolling equipment, and replacing key equipment in our thick plate factory, with a focus on improving the work environment and saving energy.”

High-performance applications:

1. Environmental sector

Elaborating on the mainstays of Nippon Yakin’s product line, Mr. Kubota analyzed the various ways high-performance materials are utilized overseas, from the

environmental sector to power generation to oil & gas. “First, I will begin with the environmental sector. Environmental concerns are becoming more important worldwide, and in the shipping sector, moves to regulate sulfur oxides (SOx) in exhaust gases are underway. One way of complying with the regulations is to use a compliant low-sulfur fuel oil, but this is subject to the problems of high fuel costs, and there is also the concern that the availability will be limited. In order to continue using high-sulfur heavy fuel, exhaust gas purification devices known as SOx scrubbers are being installed in new and existing ships.”

“The SOx scrubber reduces the SOx content in the exhaust gas by showering the exhaust gases with seawater. This means that sulfuric acid and seawater are constantly in contact with the inside of the scrubber. General-purpose stainless steel will corrode in this harsh environment, so highly corrosion-resistant material is needed. The materials that are actually used in the scrubbers include duplex stainless



SOx scrubber for ship.



Four-foot wide coils of UNS N10276.

steels, super duplex stainless steels, super austenitic stainless steels, and Ni alloys. The most suitable materials are selected depending on the scrubber design and the location of the material within the scrubber. Nippon Yakin has product lines that include duplex stainless steels NAS329J3L (UNS S32205) and NAS64 (UNS S32506); super duplex stainless steel NAS74N (UNS S32750); super austenitic stainless steels NAS185N (UNS S31254), NAS254N (UNS S32053), NAS254NM (UNS N08367) and NAS255NM (UNS N08926); stainless steel with excellent resistance to sulfuric acid corrosion NAS335X (UNS N08020) and NAS325N (UNS N08031); and the highly corrosion-resistant Ni alloy NASNW276 (UNS N10276). Nippon Yakin also has the ability to supply materials such as NASNW276 (UNS N10276) in 4 foot wide coils, which had been difficult to manufacture due to its high strength at high temperature. This potentially reduces the number of welding lines and shortens the welding period at our customer's site, giving our product a competitive advantage. Furthermore, through our network of offices in Japan and overseas, we share information about various regions to sell our products efficiently."

2. Power plants

As is the case with SOx scrubbers, flue gas desulfurization (FGD) equipment also requires higher performing

material than standard stainless steel. Mr. Kubota elaborates: "FGD equipment is well-known as typical pollution control equipment. In coal-fired power plants, FGD equipment is installed to reduce SOx levels in the exhaust gases resulting from combustion, and their internals are subject to an acidic environment and high levels of chlorine. This environment is too harsh for general purpose stainless steel. For this reason, materials with high corrosion resistance are employed, including, for example, super duplex stainless steel

NAS74N (UNS S32750), super austenitic stainless steels NAS254NM (UNS N08367), NAS255NM (UNS N08926) and high Ni alloy NASNW276 (UNS N10276)." "NAS254N (UNS S32053) has been employed in Japan's FGD equipment in the 1990s, and NAS254NM (UNS N08367) has been used extensively in Korea in the early 2000s. In China, steels such as NAS255NM (UNS N08926) have been employed FGD equipment, and in recent years, demand for products such as NASNW276 (UNS N10276) has increased in India as environmental regulations have tightened. In this sector too, wide coils can reduce man-hours and shorten delivery times, and so our offering of NASNW276 (UNS N10276) as 4-foot coil has helped boost sales volume."

3. Oil & Gas

When discussing the final sector for high-performance materials, Mr. Kubota explained that "although the oil and gas sector had been sluggish for some time due to the slump in crude oil prices, demand has been recovering. We receive many inquiries about highly corrosion-resistant materials, such as NAS825 (UNS N08825) and NAS625 (UNS N06625) for pipelines, risers, etc., and such alloys are employed to suit the varied environmental conditions of oil and gas fields. Large quantities of materials tend to be used on each project, and in some cases we promote solution-type sales through responding to special customer requests. Furthermore, NAS625 (UNS N06625) is employed in oil refineries, and demand for NASNW400



Members of Nippon Yakin Shanghai Co., Ltd. Center of front row: Mr. Masafumi Takeda, President

(UNS N04400) for marine equipment has been strong. We anticipate that demand will continue to grow in these sectors.” “Projects in Central and South America are booming now,” Mr. Kubota said, “and we anticipate further opportunities in the North Sea region that will require our duplex stainless steels UNS S31803 and UNS S32205, super duplex stainless steel UNS S32750 and UNS S32760, and super austenitic stainless steels UNS S31254, which are already certified to the NORSOK standard.”

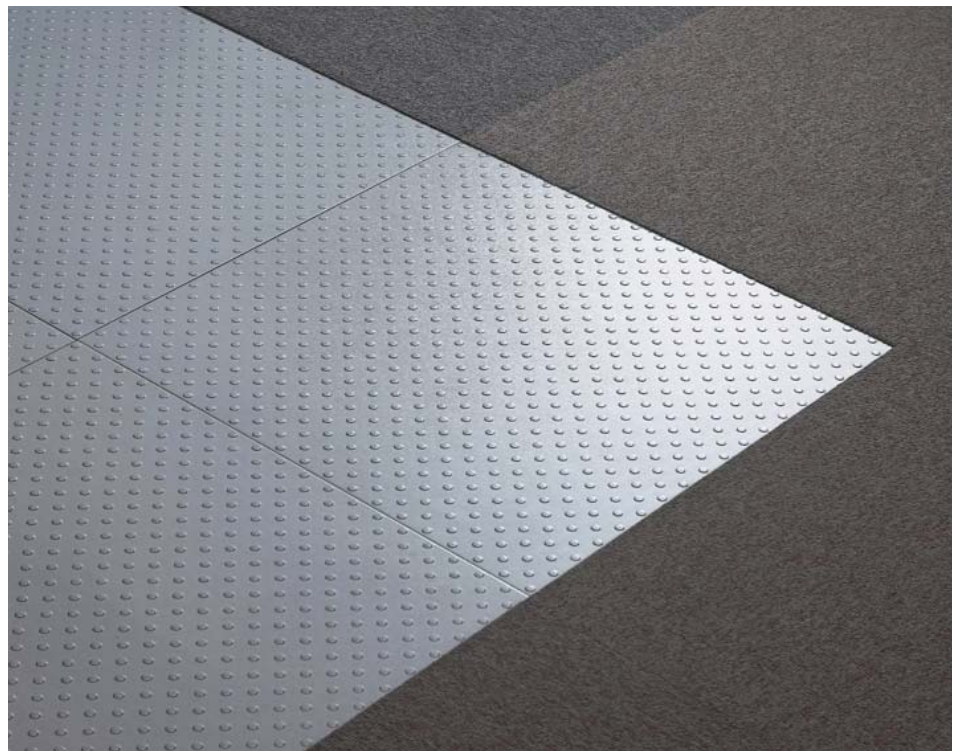
Nippon Yakin Shanghai

In order to successfully target overseas customers, a physical presence in the foreign market is always desirable. For this reason, Nippon Yakin has created an integrated network of subsidiaries—located in Japan, Asia (Shanghai, Singapore), the US (Chicago), and Europe (London)—with the goal of expanding high-performance materials sales. During the interview with Mr. Kubota, president of Nippon Yakin Shanghai Mr. Masafumi Takeda added a brief comment on his company’s operations: “At Nippon Yakin Shanghai, we provide sales and technical support based on the same level of Japanese standards to expand our sales of high-performance materials in China, where the market is enormous. Currently, the demand for SOx scrubbers for ships is strong, and we are operating in close cooperation with customers, by making use of our long-established technological capabilities as a competitive advantage. We also anticipate increasing opportunities in the expanding sector of petroleum refining equipment and oil pipelines. With the rise of China Mill, the market has become even more competitive, but we intend to continue to make full use of our technical sales capabilities to meet the needs of our customers.”

Value-added

Resuming the interview, Mr. Kubota turned to a new topic of conversation: Nippon Yakin’s high value-added stainless steel products. In particular, he described one of their more popular products, the curiously named POLKA PLATE.

“A POLKA PLATE is a type-304 flooring-use stainless steel plate that has protrusions that look like polka-dots—hence the name! Thanks to its non-slip and easy-cleaning properties, it is used for factory floors and stairs in the food, chemical, and pharmaceutical sectors,



A POLKA PLATE is a type-304 stainless steel plate used for flooring and is one of Nippon Yakin’s value-added products.

where contamination is an operation-critical consideration. Because it does not become slippery, even when wet, it is also attracting attention from customers concerned about safety in locations where food is processed (such as kitchens where pans and other utensils are being washed). The flooring material has also been used for truck beds. In addition, thanks to its attractive design, it is being used in public spaces, such as in libraries and transit stations, and for the floors and stairs of commercial facilities.

“We’ve found that users immediately understand the advantages of POLKA PLATES and become fans of that, which in turn leads to further demand. As the material is used not only in Japan but also in the United States and Southeast Asia, we are also seeing sales volumes increasing.”

Improving presence

Before concluding the interview, Mr. Kubota touched on public outreach and improving Nippon Yakin’s presence in the industry. “One measure we have always found successful in marketing and in making new contacts is attending international exhibitions. International exhibitions allow us to boost our profile, promote our high-performance materials to prospective customers, and facilitate negotiations with existing customers.”

“In particular, the Stainless Steel World exhibition, which happens to be the largest in the stainless steel and Ni alloy sector, affords us a great opportunity in booth activities. At SSW 2019, which will be held in Maastricht in the Netherlands in November, Nippon Yakin Europe Limited (the UK-based subsidiary of Nippon Yakin) will have a stand. Every time we attend, we engage with customers and have valuable commercial discussions. Stainless Steel World exhibitions also allow us to develop new and promising leads, and we are hoping for the same results in 2019.

Customers can also find us this year at Power Gen International 2019, which is being held in the US state of Louisiana in November. There, our booth activities will be centered on Nippon Yakin America, Inc.”

Facts & Figures

Name:	Nippon Yakin Kogyo Co., Ltd.
Established:	1925
Employees:	1,093
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/