Spotlight On...

Nippon Yakin synonymous with high-performance materials

Stainless Steel World magazine are regular visitors to Nippon Yakin having interviewed them most recently in 2014 and in 2013 about the significant role that they play in the sector of high-performance alloys. May 2015 sees us back there to discuss their strategy plans for the future and their continuing success story in penetrating the high-performance materials' global marketplace.

By John Butterfield and Kiyo Ichikawa

1. The current situation

For the past two years Nippon Yakin has increased its profit margins. The company has emerged solidly from the effects of the recent world economic recession, including the collapse of the Lehman Brothers Bank and the subsequent depreciation of the Japanese Yen. Looking at the short term, the company faces some headwinds such as a decline in customer purchasing willingness caused by the drop in nickel prices, and delays and postponements of oil & gas projects due to the decline in oil prices. However, Nippon Yakin has also been able to make use of some tailwinds as well, like the weak Yen that has helped promote exports and the recent economic recovery of Japan. As a result there has been no dramatic change to Nippon Yakin's mid-term strategy plans involving a further expansion of sales in high-performance materials. To this end, the company will also carry out a number of measures as outlined below.

2. Sales of high-performance materials

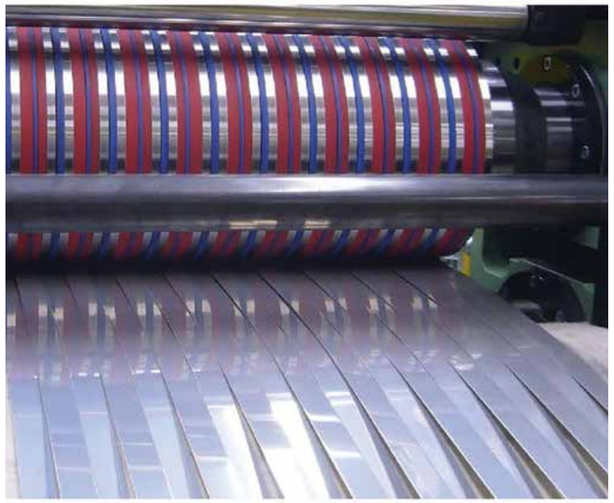
2.1. Increased competitiveness of hot plate and cold strip

Task force activities will be implemented within the company in five target areas. These have been defined as being 'oil & gas', 'power generation', 'chemical process,' 'aviation' and 'electrical and electronic'. These measures will go hand-in-hand with other plans such as dramatically shortening delivery times, alliances with other companies, cost reductions and the further certification of products to international standards. At the same time, the company will continue to work hard to become registered on vender lists. All these actions have been paying off in ensuring the company's further competitiveness. Examples of this have been shown by the receipt of orders for several hundred tons of nickel alloys used in polycrystalline silicon manufacturing equipment, orders for Chinese fuel gas desulfurization equipment, as well as for processing devices in the wake of the Fukushima nuclear accident, etc.

In addition, Nippon Yakin continues to implement its 'high-performance materials generic production system', having completed the equipment remodelling of its annealing and pickling (AP) line for cold-rolled products at the Kawasaki plant. Conventionally, super stainless steel and nickel-based alloys had been made in the company's dedicated AP line, but the AP line for producing Type 304 has been modified with the aim of improving quality, providing shorter delivery times and reducing costs by selecting the pickling method to best suit the steel grade or alloy being produced.

2.2. Received NORSOK certification

In order to strengthen sales in the field of 'Oil & Gas', Nippon Yakin have acquired NORSOK certification (the Norwegian marine standard) for duplex stainless steel S31803/S32205, super-duplex stainless steel S32750 and super-austenitic stainless steel S31254. The NORSOK standard was introduced in the mid-1990s by the Norwegian oil sector, which had promoted the development of North Sea oil, to ensure the safety of work and facilities involved in the drilling and production of oil. Alongside stipulating various kinds of facilities and construction methods, it also specifies material requirements, and has today become one of the standard specifications in the development of the oil & gas industry. By receiving this standard, Nippon Yakin aim to expand their market share to Nordic offshore plants, among other areas.



The new slitting line.

2.3. Introduction of a new slitting line

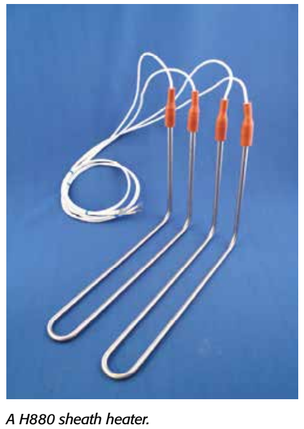
Nippon Yakin's quality precision slitting line for high-performance materials was taken into operation in March 2015. The company sells and supplies narrow width high-performance slitted materials for use in sheathed heaters for electric water heaters and in umbilical tubes for the oil & gas industry, etc. Traditionally, such work had been outsourced in the past, but increased customer requests for slit-edged shapes led Nippon Yakin to bring production in-house and to establish a system that can respond to quality requirements while still reducing delivery times. The new line can cut a maximum width of 600 mm, thicknesses of 0.3 to two mm, product widths of 12 mm to 50 mm, in addition to 20 slits at a time. An automatic packing machine has also been added which has increased productivity 1.5 to two times when compared to conventional stainless steel slitting lines. Moreover, customer welding workability has been improved by the high quality of the slit section. Utilizing this new equipment has further promoted and strengthened the sales of materials, including Alloy 800, Alloy 840, and the new alloy H880 used in various sheath heaters and materials used for umbilical tubes and flexible riser applications.

3. Development and applications of high-performance materials

3.1. Development of the new alloy H880

Nippon Yakin has a large share of the world sheathed heater market for Alloys 840 and 800–a sheathed heater being one where the heating element of Nichrome wire (or the like) is wrapped with an insulating material such as magnesium oxide and then sealed in a metal pipe. This arrangement is widely used in domestic and industrial applications such as electric water heaters and cooker heaters. Types 304 or 310S are also used for making the metal pipes, but Alloys 840 or 800 are the most widely used Nippon Yakin materials being used by customers around the world because of their high quality and price competitiveness. H880 has been developed as a new addition to the company's alloy line-up (Alloy 800, 840, 825), and its basic components are 25Ni-24Cr-Mo, Al, Ti. The reason behind its development has been the demand from customers who need heater sheaths for electrical water heaters that can withstand corrosion in areas of poor water quality. Conventionally, Alloy 825 was used in poor quality water areas, but the disadvantage of using Alloy 825 was its high price. Nippon Yakin has succeeded in developing an alloy, H880, which has satisfactory corrosion resistance and has suppressed any price increases with it as much as possible. Currently, a number of Nippon Yakin customers overseas are evaluating the grade for manufacturability and quality, both of which seem to be earning a good evaluation. Sequential sales are being planned for the future.

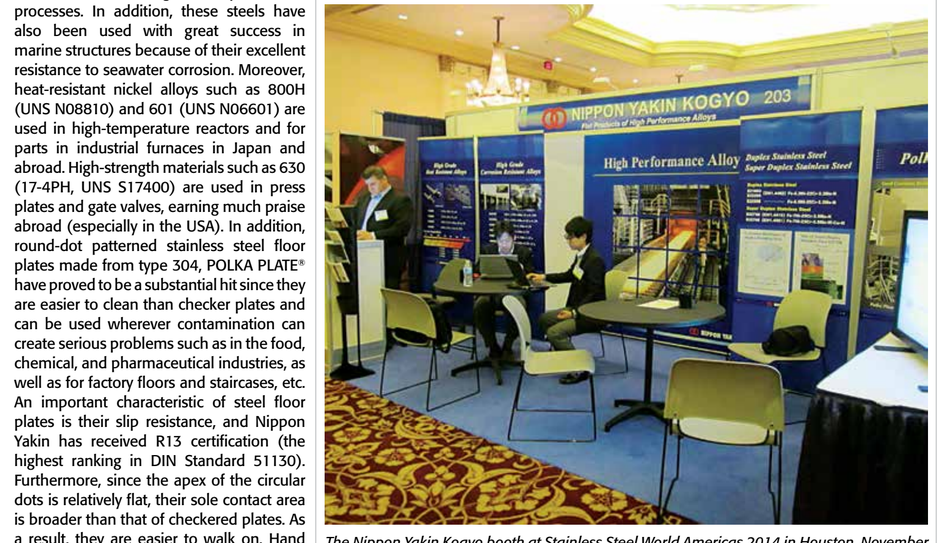
Nippon Yakin's plate mill at Kawasaki, showing as an inlay (top left) its plate heat treatment furnace.



A H880 sheath heater.

3.2. Applications

Nippon Yakin high-performance materials with special features are used in various application fields. Super stainless steels with a high corrosion resistance 185N (UNS S31254) and 254N (UNS S32053) have been used widely to help with environmental pollution prevention due to their use in flue gas desulphurization processes. In addition, these steels have also been used with great success in marine structures because of their excellent resistance to seawater corrosion. Moreover, heat-resistant nickel alloys such as 800H (UNS N08810) and 601 (UNS N06601) are used in high-temperature reactors and for parts in industrial furnaces in Japan and abroad. High-strength materials such as 630 (17-4PH, UNS S17400) are used in press plates and gate valves, earning much praise abroad (especially in the USA). In addition, round-dot patterned stainless steel floor plates made from type 304, POLKA PLATE® have proved to be a substantial hit since they are easier to clean than checker plates and can be used wherever contamination can create serious problems such as in the food, chemical, and pharmaceutical industries, as well as for factory floors and staircases, etc. An important characteristic of steel floor plates is their slip resistance, and Nippon Yakin has received R13 certification (the highest ranking in DIN Standard 51130). Furthermore, since the apex of the circular dots is relatively flat, their sole contact area is broader than that of checkered plates. As a result, they are easier to walk on. Hand carts and trolley bags can also run more smoothly on them as they can glide over the surface more easily, which greatly reduces vibrations and noise. In addition to these features, the appearance of POLKA PLATE® is also attractive, leading it to be used not only in production facilities but also increasingly in facilities such as public buildings and stations.



The Nippon Yakin Kogyo booth at Stainless Steel World Americas 2014 in Houston, November 2014.

Examples of the use of POLKA PLATE®.

4. Exhibition activities

To improve worldwide recognition of the Nippon Yakin brand, to promote the company's high-performance materials to potential customers, and to further lower thresholds in meeting customers, exchanging knowledge and doing business, the company has exhibited at numerous trade fairs in Europe and in the USA since they first appeared at *Stainless Steel World* 2004 in the United States.

The company established Nippon Yakin Asia Pte. in Singapore last year and took the opportunity to exhibit at POWER-GEN ASIA 2014 in Malaysia, in September. It was the first time that Nippon Yakin had taken a booth in the ASEAN region in a power-related exhibition and it proved very successful by providing Nippon Yakin Asia with a platform for PR activities and to gain the company new customers in Southeast Asia.

In the United States, Nippon Yakin continue to exhibit every year, thus raising further awareness of the company and its subsidiary Nippon Yakin America, Inc. in the marketplace Recently, the company also took booths at Stainless Steel World Americas 2014 (Houston, November 2014) and NACE 2015 (Dallas, March 2015).

In Europe, Nippon Yakin Kogyo is scheduled to exhibit at two events this year. The first is at ACHEMA 2015 that will be held in Frankfurt, Germany, in June. This exhibition is organized once every three years and is probably the largest exhibition for the chemical process industry in the world. It will provide them with the opportunity to promote their products to the chemical sector following on from their previous appearance there in 2012. In November, the company will be at Stainless Steel World 2015, which will be held in in Maastricht in The Netherlands (November 17– 19). They will have a booth near to the venue entrance (S155). This is an exhibition where some of the world's largest stainless steel nickel alloy manufacturers are to be found. Every appearance of Nippon Yakin Kogyo there has led to them doing some good business as well as gaining new customers. They expect to do the same again this year. Future exhibition activities will concentrate on public relations and customer development for their high-performance materials.

Nippon Yakin America (left to right): Kobayashi/President; Madokawa/Sales Manager Technical Sales; Sue/Administrative Secretary; and Perry/Sales Manager.

5. Nippon Yakin America, Inc. (US subsidiary of Nippon Yakin)

"We have had our headquarters in Chicago, USA since 2011," says President Kobayashi of Nippon Yakin America, Inc. "Here our activities are centred on providing sales and technical support to North, Central, and South American customers. We do this by supplying them with high-performance materials which are based on Japanese technology and service culture. The materials are used in a wide range of application fields but primarily in the energy industry, the aircraft industry, and the appliance industry."

6. Summary

The market sector of high-performance materials field has always been a highly competitive market. Nevertheless, Nippon Yakin Kogyo with its clearly defined strategy plan and concrete goals continually receive top marks from its customers around the world. As such the Nippon Yakin Kogyo brand continues to steadily and increasingly penetrate the global market place, its name synonymous with high-performance quality materials.

Nippon Yakin at a glance

Company Name:	Nippon Yakin Kogyo Co. Ltd
Established:	1925
Employees:	1,067
Headquarters:	Tokyo, Japan
Overseas offices:	Nippon Yakin America, Inc. (Chicago, USA) Nippon Yakin Europe Limited (London, UK) Nippon Yakin Shanghai Co., Ltd. (Shanghai, China) Nippon Yakin Asia Pte. Ltd. (Singapore)
Products:	Plates, sheets and coils
Materials:	Stainless steels, super stainless steels, nickel alloys and iron–nickel alloys
Website:	www.nyk.co.jp/en