



It has been some time since Nippon Yakin Kogyo (NYK) last featured in a cover story in Stainless Steel World magazine – December 2009 to be precise. Following Mr. Hajime Kimura's recent appointment as President of the company, we felt it was time to pay another visit to find out what has been happening over the last 3 years, particularly with regard to NYK's role in the high-performance alloys market and the use of high-performance alloys. We met with Mr. Kimura and with Mr. Masao Sato, General Manager, Material Solutions Sales Department, and Mr. Makoto Oikawa, Deputy General Manager, to get an update on what the company is doing today and their plans for the future.

By Thijs Elshof, Kiyo Ichikawa and Gillian Gane

## **COVER STORY**



"Since taking over the role of President just three months ago it has, naturally, been a very busy time for me," Mr. Kimura begins. "Whereas, in my previous role, I was able to work to a weekly schedule and was focused on planning my own agenda, I now have to look at the company's overall activities on a daily basis, including the sales and marketing, materials, plants and raw materials. I also find that much more of my time is spent in meetings with, for example, clients' purchasers and suppliers, amongst others. So, as you can imagine, my business life has changed a lot since last December."

What does Mr. Kimura see as the characteristics of NYK that make the company so successful? He explains: "Firstly our complete range of products, from nickel refining to stainless steels and nickel alloys production. But, more importantly, is the fact that, for the last two decades, we have focused on the manufacture of high-performance alloys high grade stainless steels and nickel alloys in order to establish a demand structure. We manufacture these highperformance alloys utilising raw materials such as ferro-nickel, which we produce ourselves, in order to increase cost competitiveness and to ensure stability and strength of the product. Since we do not have an exclusive manufacturing facility for the production of highperformance alloys, we produce them at standard stainless steel manufacturing facilities which, again, has cost and other competitive advantages." "In addition," continues Mr. Kimura, "last summer NYK invested in improvements to our continuous casting machine, amongst other things, which has led to more efficient production lines, giving rise to improved quality, cost and delivery times. We believe this gives us an advantage and is a unique business development



Mr. Hajime Kimura

in the sense that our high-performance alloys are centred around our exclusive Kawasaki plant. Whilst the scale of our business activities may be globally quite small, these are characteristics that have enabled us to develop our business."

Mr. Kimura goes on to tell us that these high-performance alloys are so important to NYK that their company strategy has changed in order to realise the full potential of this activity. In order to enhance the company's international presence, NYK has joined large overseas exhibitions such as Stainless Steel World Conference & Expo, NACE CORROSION Expo, and ACHEMA Expo. This year NYK plans to exhibit at Power Gen Brazil 2013, Stainless Steel World 2013 and others. Also, NYK has been holding overseas seminars, such as the one held in Shanghai in 2012, which have proved to be of great value in promoting the company name and products further a field.



NYK's newly upgraded continuous casting machine.

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"In December, 2011, a local sales subsidiary was set up in Shanghai. Nippon Yakin Shanghai Co., Ltd," says Mr. Kimura. "This is responsible for the sales of highperformance alloys in China. At the seminar, we were able to show potential Chinese customers that NYK produces good products, at the same time explaining the objectives of our company, its products and operations. Eminent guest speakers, such as university professors, helped to promote NYK's products. Subsequent to this, we established another subsidiary in London, Nippon Yakin Europe Limited, which operates a similar sales structure. We also have a base in Chicago, Nippon Yakin America, Inc., to cater for the North American market, where we have made great strides in the sales of high-performance alloys. Now the company has three overseas sales offices, plus a representative in Bangkok who undertakes information gathering in the ASEAN region, and we are now beginning to reap the benefits of establishing those offices abroad." "Also, two years ago a Material Solutions Sales Department consisting of staff with an in depth technical knowhow was put into place, setting out clearly defined activities.

Part of this team's function is to provide support to the sales team in various ways and to communicate direct with clients with proposed solutions to any problems they may have. These measures have resulted in an increase in the sales of highperformance alloys," Mr. Kimura tells us.

# The use of high-performance alloys

Mr. Oikawa explains to us that superaustenitic high-performance alloys are



Jacket-type marine steel structure.

used, for example, in sheathing material for jacket-type marine steel structures at the offshore runway of Haneda Airport where, being in a coastal area, a greater resistance to seawater is an important requirement. "Applications such as this are becoming more common throughout Japan," he says. "Also, following the catastrophic earthquake that hit Japan in 2011, highperformance alloys are being used in the reconstruction programme in the affected coastal areas. NAS185N (UNS S31254) was chosen to be used as a sheathing material for jacket-type marine steel structures at Ishinomaki port in the Miyagi prefecture, far to the north of Fukushima. This material will be playing a major part in the reconstruction programme. The work is due to be completed by April. 2014." Mr. Sato takes up the story: "There is another example and this relates to the energy sector, particularly the oil & gas sector." The material in question is NAS825



A well-attended seminar held by NYK in Shanghai to promote company products and operation.

(alloy 825), a strong corrosion-resistant alloy used in offshore oil and gas. Since oil and gas are extremely corrosive, materials have to be highly corrosion-resistant. NAS 825 (alloy 825) is used, for example, in umbilical cables which contain sensors to control oil pressure in the gas and oil fields. It can also be used internally in pipes forming part of injection lines, which connect an offshore oil field to oil or gas treatment facilities. The usage, or rather the application environment, changes depending on the quality of the gas or the oil. At present, more and more highly corrosive gas is being extracted from much greater depths. For these applications, NYK produce NAS 625 (alloy 625), with an even higher corrosion resistance. The company is, therefore, linked to the energy sectors by providing materials suitable for use in extreme marine environments. Mr. Oikawa says: "Although we have talked mainly about corrosion resistance which is one of the major characteristics of high-performance alloys, there is another interesting example of the application. We produce NAS36 (FeNi36 alloy), its most important feature being its low coefficient of thermal expansion. An example of the use of this alloy concerns a carbon fibre composite material, CFRP, which is used in the wings and parts of the fuselages of aircraft. One part of the manufacturing process involves heating and cooling in a metal mould. Deformation can occur when a metal mould expands or contracts through temperature changes and this needs to be prevented in order to improve the precision. NAS36 is a material which has extremely low thermal expansion in

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temperature changes ranging from room temperature to around 200°C. So, although you won't be aware of it, our NAS36 has been contributing to things we all find fundamentally useful in our lives." Yet another use for NAS36 concerns the ALMA (Atacama Large Millimeter / submillimeter Array) international project in the scientific field. A great number of antennae have been installed at the top of a mountain in Chile to work as a single radio telescope for exploring the universe. CFRP pipe with a very small thermal expansion coefficient is used for the main structural element of the antennae and NAS36 is used for the pipe joints. The accuracy would be lessened if the shapes were to change between day and night times, or according to whether they are subjected to sunlight or not. The characteristic of low thermal expansion is effectively used in researching the history of the universe. Mr. Oikawa adds: "Finally, I must also mention our POLKA PLATE®, which is one of our unique products. This is a round-dot textured plate made from type 304 stainless steel. Compared to conventional checker-patterned plate, POLKA PLATE<sup>®</sup> has the aesthetic appeal of round-dot with better performance, specifically an extremely high level of antislip performance as tested by the German Institute for Standardisation (DIN). It is easy to clean since the dots are round so water and dust do not accumulate, and it is comfortable to stand on and safe. Since the POLKA PLATE® is made from stainless steels, it is ideal for use on the floors of food factories, boutiques, department stores and welfare facilities where hygiene, safety and comfort are all important factors although the applications are expanding."



NYK's POLKA PLATE. Made from type 304, they offer a hygienic, safe, comfortable solution in the food and health sectors, amongst others.

Says Mr. Sato, "Whilst we have not seen much in the way of exports on the POLKA PLATE<sup>®</sup> as yet, it is currently being used in the equipment at one hydroelectric plant in China and in food factories in Thailand and the US. Since it is rated at the highest level of anti-slip performance under DIN standards, we plan to begin selling it to Europe too."

#### New projects and products

Mr. Sato tells us that NYK have a companywide project, rather than a product, in which they are investing in facilities and equipment to increase the company's competitiveness in the high-performance alloy sector, and to simplify the production process with a view to enhancing the

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	Nippon Yakin Europe Limited (nyklondon@yakin.co.uk)
	Nippon Yakin Shanghai Co., Ltd (info@nyk-sh.cn)
	Bangkok office (yakin@nyk.co.th)
Employees:	1,079
Turnover:	JPY 107 billion (fiscal year of 2011)
Products:	Plates, sheets and coils in stainless steels, high grade stainless
	steels, nickel alloys and iron-nickel alloys
Industries:	Oil and gas, chemical, petrochemical, power generation

activity ratio of ferro-nickel and improve the overall production process. He says that whilst, currently, ferro-nickel does show some problems as a raw material, NYK are looking to solving these. Also, simply put, they recognise the need to produce highperformance alloys within the same manufacturing lead times of type 304 and are looking at what technical improvements can be carried out in order to achieve this.

#### A final word

Mr. Kimura sums up NYK's strategy for the future. "Our mission is to produce a complete range of products from raw materials through to high-grade products. Type 304 is facing fierce competition, so we need to enhance the business of industrial materials if we are to move forward and make a profit overall. To achieve this, cost reduction, exportation and faster delivery times are necessary, together with the need to expand our share in the global market place. We have already made inroads in the development of good products towards that aim. It is not enough just to establish three or four local subsidiaries overseas, but with other plans in place we hope to keep increasing our sales of products in the global market. According to our own market research, NYK has already been ranked second in the production volume of plate and coil in the world of nickel alloys and we are aiming to become the world's Number 1 as soon as possible."

Facts & Figures