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In this issue

Feature Story



Global “Monodzukuri” Operations in Thailand and Indonesia
Accelerating Growth Strategies in Dynamic Southeast Asian Markets *(Two-part Series: 1)*



Operating Roundup



Six-inch Diameter Silicon Carbide Single Crystal Wafer

Nippon Steel has successfully developed six-inch diameter silicon carbide single-crystal wafer, which is a key material for mass production and spread of high-performance power semiconductor devices in the future.



Business Integration of Nippon Steel and Sumitomo Metals

Nippon Steel and Sumitomo Metal Industries, Ltd. received from the Japan Fair Trade Commission a “Notification To The Effect That a Cease and Desist Order Will Not Be Issued,” which means that the business integration of Nippon Steel and Sumitomo Metals has thereby been approved by the Commission.





Feature Story

(Two-part Series: 1)

Global “Monodzukuri” Operations in Thailand and Indonesia

Accelerating Growth Strategies in Dynamic Southeast Asian Markets



On the strength of technological and product-making capabilities amassed internally over many years, Nippon Steel actively promotes local production and processing bases abroad, thereby strengthening its international competitiveness. This feature article highlights the continuing efforts of the Nippon Steel Group to tackle global “monodzukuri or product-making” operations in fast growing Thailand and Indonesia.

Nippon Steel News (nos. 389 and 390) presents a two-part series that recounts these efforts:

Two-part series: 1 (No. 389)

- Expanding and Advancing Steel Markets in Southeast Asia
- Cold-rolled Steel Sheets
- Tinplate for Steel Cans

Two-part series: 2 (No. 390)

- Steel Products for Automobiles

The current issue (No. 389) represents Part 1 of the series.

Global Operations of Nippon Steel in Thailand and Indonesia



Nippon Steel News extends its heartfelt sympathies to the victims of the recent floods in Thailand. This feature article is based on materials gathered on site on August 7-12, 2011.

Feature Story

Expanding and Advancing Steel Markets in East Asia

Annual Growth in Southeast Asian Steel Demand Exceeds 10%

It is expected that worldwide steel demand will reach 1,360 million tons in 2011 and that the annual rate of growth will remain firm at 5 to 6% in succeeding years. Asia, alone, currently accounts for approximately 65% of the world's total steel demand. Southeast Asia, in particular, has shown steep annual growth over 10%, helping to create 50 to 60 million tons of new steel demand annually in Asia as a whole.

Meanwhile, we see structural changes in the steel supply-demand picture in Asia. Crude steel output in China alone surpasses 700 million tons a year, thereby exacerbating oversupply issues caused by output that exceeds the increase in de-

mand. In Korea, the commencement of full-capacity operations at mills that were newly installed or reinforced before 2010 has led to a drastic increase in the pace of 2011 steel production, registering close to a 20% year-to-year gain. In August 2010, Korea became a net exporter of steel. Such supply-side changes in China and Korea, combined with the trend of many Asian countries shifting to the local production of iron and steel products, are not merely affecting the global market. These structural changes are also intensifying competition in Thailand, Indonesia, and other countries in the expanding Southeast Asian market.

"Nippon Steel is pressing ahead with a global



Shinya Higuchi
Managing Director
Nippon Steel

player strategy aimed at the establishment of a tri-polar global supply structure based in Japan, Asia, and the Americas/Pan-Atlantic region," says Shinya Higuchi, Managing Director of Nippon Steel. "Thailand and Indonesia, among other Asian countries, while for years maintaining strong relations with Japan, have seen much progress in the

Feature Story

steel market. Nippon Steel sees these two countries as strategically very important. For Japanese steelmakers, a distinctive advantage of the Southeast Asian market is the relatively short transport distance. However, as seen in the accelerating

concentration in recent years of Japanese transplants in such fields as automobiles and home appliances, customer needs have been intensifying for shorter delivery times and higher product quality. In order to realize a tighter global supply chain,

Nippon Steel constantly strives to improve its local production and processing bases abroad and to engender *monodzukuri* or product-making both overseas and domestically, thereby enhancing its international competitiveness.”

Capitalizing on Nippon Steel’s Comprehensive Capabilities

Japanese steelmakers embarked on localized production in Southeast Asia in the late 1950s. The first footage was printed on Thailand in the wake of rapidly increasing demand for steel sheets used in construction. To meet the demand, Japanese steelmakers built hot-dip galvanizing plants in Thailand, thereby establishing a system that used cold-rolled sheets supplied from Japan.

In response to growth in the agriculture and fishery and to movements to locally produce the

tinplate used in can making in both Thailand and Indonesia, joint-venture tinplate plants were built in these countries. Later, the Japanese transplants in Southeast Asia became full-fledged manufacturers in such industries as automobiles and home appliances. Particularly, the rapid appreciation of the yen in the late 1980s accelerated such moves, leading Japanese steelmakers to join with Japanese trading companies to establish coil processing centers as distribution bases.

In 1995, Nippon Steel joined with other steelmakers and trading firms to build a local cold-rolled steel sheet plant. To date, Nippon Steel has built and operated local production bases for automotive pipe and tubes and specialty steel wire rods and has also decided to put into operation an automotive steel sheet galvanizing line with a target start-up in 2013.

“From Lines to Planes”

Nippon Steel currently lays stress not merely on reinforcing the production system of each business base, but also on strengthening the alliances between the overseas bases and their

counterparts in Japan through such means as increasing the company’s stake in investment and dispatching staff. In addition, Nippon Steel also endeavors to fine tune moves toward ASEAN’s

internal integration by fostering closer ties among individual business bases, particularly in terms of the supply of base materials to downstream processes.

Feature Story



Cold-rolled Steel Sheets

**High-quality Products and Technical Services
Identical to Those Supplied in Japan**

SUS: Core Operating Base for Nippon Steel Group in Thailand

Jointly with integrated steelmakers and trading companies in both Japan and Korea, Nippon Steel participated in the 1990s in the establishment of The Siam United Steel (1995) Co., Ltd. (SUS), a company that produces and markets cold-rolled steel sheets in Thailand. Initially, the largest shareholder of SUS was The Siam Cement Public Company Ltd., a partner in Thailand, but in 2006 Nippon Steel increased its equity participation

ratio to make SUS a subsidiary of Nippon Steel.

The SUS production plant is located about a 2-hour drive from Bangkok in the Eastern Industrial Estate of Thailand, which has efficient access to the international cargo handling port. The hot-rolled steel sheets that serve as the base material for cold-rolled steel sheets are imported mainly from Nippon Steel, and the cold-rolled steel sheets produced by the plant are destined

for use for automobiles and home appliances, for can-making tinplate and for galvanized sheets for structural use. The entire annual production capacity is one million tons. SUS products are also supplied to Nippon Steel Group companies in Thailand, and are slated for supply to Nippon Steel Galvanizing (Thailand) Co., Ltd. (NSGT), a company that was established by Nippon Steel and is scheduled to start opera-

Feature Story

tions in Thailand in 2013 to produce galvanized automotive steel sheets (see the figure at right).

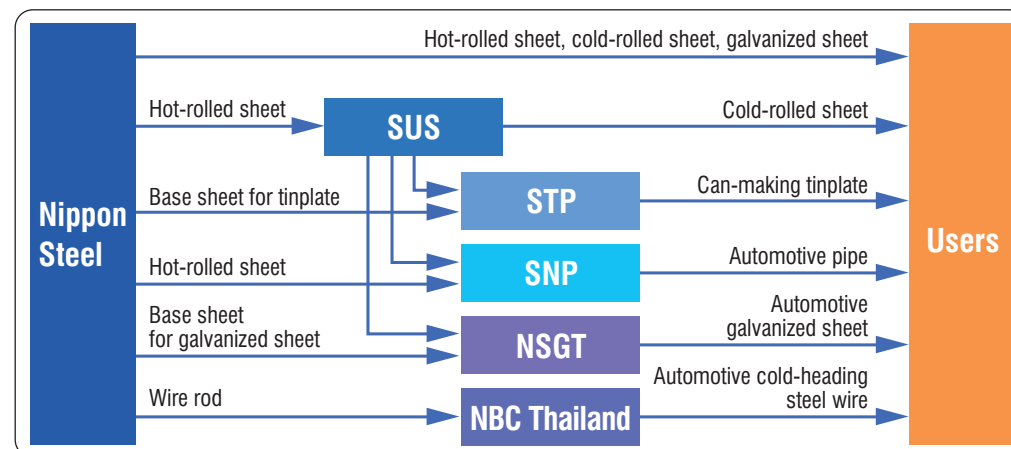
“The Japanese automobile and home appliance transplants and tinplate makers in Thailand consume a large share of the cold-rolled steel sheets supplied by SUS. Because of the strict quality requirements of these companies, quality control similar to that required for Nippon Steel is demanded in the production of cold-rolled sheets at our plant. SUS imports the hot-rolled steel sheets used as base material from Nippon Steel, and produces high-quality, highly-competitive cold-rolled sheets employing our company’s advanced equipment. Recently, local automobile makers began using 590 MPa grade high-tensile steel sheets, and we have started the development of new base sheets for tin-free steel and tinplate. To these ends, we are striving to operate a world-class cold-rolling mill in collaboration with our users.” (says Masao Ono, Director and General Manager of Technical Division, SUS)

“With high-end cold-rolled sheet as a core product, SUS serves as the front-line operating base in Nippon Steel’s global supply chain to

connect Nippon Steel Group companies with users in Thailand. Exports from Thailand are rapidly growing, and the need for advanced products such as high-tensile sheets and high-quality coated sheets is rising. We intend to fulfill our responsibility as a strategic operating base in Southeast Asia

by anticipating such emerging local needs through the concerted efforts of the Nippon Steel Group companies.” (says President Tomomi Ohara of SUS)

Flow of Steel Products and Role of Local Operating Bases in Thailand



Masao Ono

Director and General Manager of
Technical Division
The Siam United Steel (1995) Co.,
Ltd. (SUS)



Tomomi Ohara

President
The Siam United Steel
(1995) Co., Ltd. (SUS)



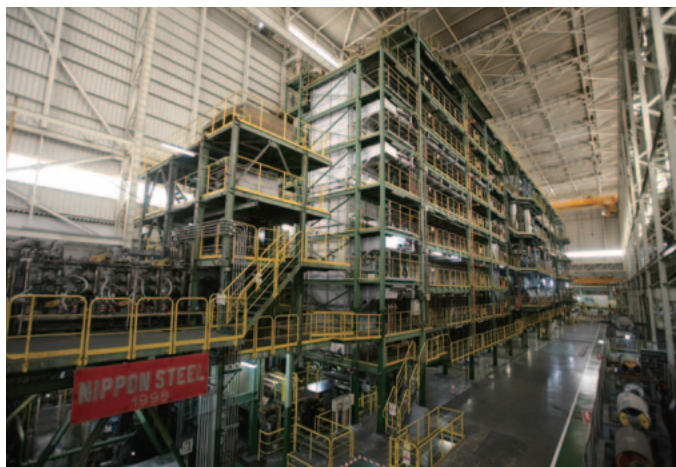
Feature Story

Higher Efficiency of Production Systems and Pursuit of Maximum Safety

The morale of the Thai employees working at SUS is high, and operations have been safe, with no work-loss accidents for the last 10 years. The Thai Government has established the Thailand Prime Minister Awards in six categories with the aim of nurturing and promoting domestic industries. SUS has received these awards in all six

categories: safety control, productivity improvement, quality control, energy control, environmental preservation and logistics control. In addition, due to the highly favorable recognition given to the total productive maintenance (TPM*) activities promoted at SUS since 2005, SUS received a prize for excellence.

“Our employees not only positively participate in cleaning and maintaining their own production lines, they also launch their own projects to enhance production efficiency and improve safety control. With continued support from Nippon Steel and through the promotion of company-wide control activities from top management to the production floor, we are pursuing the highest possible efficiency in our production systems with operational targets of zero work accidents, zero quality defects and zero line troubles so as to continue stable operations.” (says Director and General Superintendent Bantoon Juicharern of SUS)



C.A.P.L.—continuous annealing and process line—to produce cold-rolled steel sheets (SUS)



A banner celebrating 10 years of continuous zero-accident operations (SUS)

Bantoon Juicharern

Director and General Superintendent
The Siam United Steel (1995) Co.,
Ltd. (SUS)



*TMP (Total Production Maintenance): Measures to prevent disasters, product defects and all other losses from happening over the entire lifecycle of the production equipment, with the participation of all members of the company

Feature Story

Brand Reliability and High Competence as a Local Supplier

Bangkok Eastern Coil Center (BECC) was established in 1997 with joint investments by Nippon Steel, Mitsui & Co., Ltd. and Nippon Steel Trading Co., Ltd. BECC cuts and processes cold-rolled sheet supplied by SUS into small-lot multi-grade products having the shapes and dimensions requested by automobile and home appliance makers, and then markets these products to users.

BECC fulfills the important function of a logistics center in two major ways: responding to production lots specified by steelmakers by putting together user-requested small-lot orders of products marked by ever expanding quality, size and delivery terms; and just-in-time delivery specified by users.

“SUS not only offers reliability rooted in the quality and technical capabilities provided by Nippon Steel but also boasts competitive capabilities as a local supplier of high-quality steel sheets. BECC is aggressively promoting new market development based on the quality products sup-



Taro Kuribayashi
President
Bangkok Eastern Coil Center
(BECC)

plied by SUS, the efficient logistics supplied by Nippon Steel Logistics Co., Ltd., the proprietary real-time production control system of our company, and the strong marketing capabilities of Nippon Steel Trading Co., Ltd. and Nippon Steel.” (says President Taro Kuribayashi of BECC)



Cutting and processing of base sheets into products with shapes and dimensions conforming to user needs, and just-in-time delivery of finished products (BECC)

Feature Story



Tinplate

Meeting the Robust Need for Tinplate in a Country That Is a Mass Consumer of Canned Foods

Contributing to the Development of Thailand's Food Industry

Thailand harvests abundant amounts of agricultural products such as pineapples and corn and possesses a highly improved fishery infrastructure that easily handles tuna and skipjack caught in nearby seas and the Indian Ocean. The Thai Government is promoting a policy of using these richly available natural products to serve as a kitchen to the world and at the same time is striving to develop foreign trade in agricultural and

fishery products. As a result, the country has become one of the largest exporting countries in the field of vegetables, fruits and canned fish meat. In order to meet the robust demand in Thailand for tinplate, a can-making material, Nippon Steel established a joint venture, Siam Tinplate Co., Ltd. (STP), that started operations in 1992.

"High quality is demanded of cans in the major export markets of Japan, Europe and the U.S.

The method of producing tinplate with high corrosion resistance, high strength, and flawless surface is governed largely by the quality of the sheet material and the manufacturer's coating skill. On the production floors of STP, periodic inspection, cleaning and other basic quality-control activities have been fully implemented. Further, the utmost efforts are being made to nurture human resources who are capable of in-

Feature Story

tuitively analyzing operational data and who, by deepening their knowledge of coating conditions and equipment, can propose ideas conducive to improving practical operations.” (says President and Managing Director Toshihiko Kaji of STP)

STP’s annual tinplate production capacity is 260,000 tons, which accounts for about one-third the total demand in Thailand. About 70% of the tin mill black plate, the base sheet for tinplate, is procured from SUS, and the remaining amount is purchased from Nippon Steel. In 2009, the No. 2 coating line, incorporating the most advanced technologies offered by Nippon Steel and Nippon Steel Engineering Co., Ltd., was newly built to reinforce the company’s ability to produce tin-free steel sheets having thinner gauges, high strength and excellent workability.

“Our clients, can-making and packing companies, ask us to supply high-quality tinplate and tin-free steel sheet with diverse dimensions and

specifications. We hold periodic meetings with SUS, our base sheet supplier, and Nippon Steel to improve our integrated technical services and marketing systems—from optimized base sheet procurement to flexible delivery that fully uses the comprehensive capabilities of the Nippon Steel Group companies.” (says Executive Vice President Shigeru Takahashi of STP)

Toshihiko Kaji

President and Managing Director
Siam Tinplate Co., Ltd. (STP)



Shigeru Takahashi

Executive Vice President
Siam Tinplate Co., Ltd. (STP)



Tinplate production floor—thoroughly cleaned and operating with a high safety record (STP)



Feature Story

Investing in Indonesia with the World's Fourth Highest Population

In Indonesia, the high demand for canned pineapples and fish meat is similar to the trend seen in Thailand and is accompanied by growing demand for canned powdered milk, which reflects the population increase, and for canned confectionaries, which are popular as gifts given

at the end of the Islamic month of Ramadan.

PT Pelat Timah Nusantara, Tbk. (LATINUSA) is the only tinplate maker in Indonesia and has an annual production capacity of 130,000 tons that is equivalent to more than 50% of total tinplate demand in the country. LATINUSA was estab-

lished as a subsidiary of the state-operated tin mining company PT Timah in 1982 and became affiliated with the state-operated steel-maker PT Krakatau Steel in 1991. With privatization planned for the company in 2009, Nippon Steel participated in the tender by organizing a consortium of Japanese enterprises to make LATINUSA a subsidiary of Nippon Steel. This was the first acquisition of an overseas enterprise by Nippon Steel.

"Customer's reliability has been far more strengthened with the combination of Krakatau Steel's

Ardhiman T.A

President Director
PT Pelat Timah Nusantara, Tbk.
(LATINUSA)



tradition and Nippon Steel's brand. The stable procurement of high-quality base sheets from Nippon Steel secures high product reliability for our users. While it seems to be taking much time to instill Japanese culture in our production-floor workers, I am determined to contribute to the development of our company by smoothly connecting Nippon Steel with Krakatau Steel." (says President Director Ardhiman T.A of LATINUSA)

Construction of a new tinning line is being promoted to reinforce production capacity by a consortium mainly of Nippon Steel Engineering Co.,



A new electrolytic tinning line being constructed in a spacious plant site with the aim of improving quality and reinforcing capacity (LATINUSA)



Feature Story

Ltd. The new line is slated for start-up in 2012, which will increase LATINUSA's annual production capacity to 160,000 tons, and will be operated by introducing Nippon Steel's operational system, which will further enhance product quality.

"Tinplate is a fine product into which the ultimate steel sheet-manufacturing technologies are packed. LATINUSA still has ample room for further quality improvement. So we are making extensive efforts to improve production-floor capability through diverse measures such as hold-

ing exchange meetings between our company and Siam Tinplate Co., Ltd. and by dispatching our employees to Japan to learn *monodzukuri* (product making) practices amassed by Nippon Steel. Meanwhile, the voices of our users suggest many hints for improving product quality. To this end, we are making an in-depth examination of these hints while at the same time making the most of our strength: being the only tinplate maker in Indonesia." (says Executive Vice President Yoshimitsu Honda of LATINUSA)



Yoshimitsu Honda

Executive Vice President
PT Pelat Timah Nusantara, Tbk.
(LATINUSA)

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