

A New Business Brand 「SteelLinC™」

2014.9.29

Nippon Steel & Sumitomo Metal Corporation
Bar & Wire Rod Unit

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Launch of new brand

- ◆ Bar & Wire Rod Unit of Nippon Steel & Sumitomo Metal Corporation launches “SteeLinC™”, a new business brand, together with various bar and wire rod processing companies.



SteeLinC™
NEW STEEL AGE

Definition : A business brand that designates the Bar & Wire Rod operations of NSSMC Group.

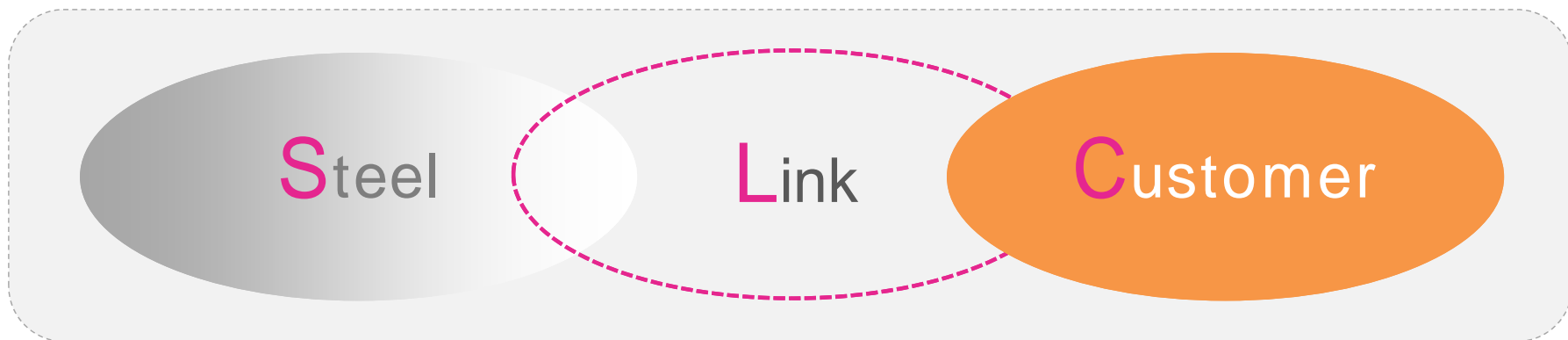
Brand statement (ideals of SteeLinC™)

The bar & Wire Rod Unit of NSSMC Group strives to contribute to enhancing product values and the productivity of customers through activities such as providing the world's most advanced steel bar and wire rod products and by creating new values through the multiplication of “ steel materials × processing methods.”

. Outline of SteeLinC™

SteeLinC™ = Steel + Link + Customer

- ◆ SteeLinC™ is a coined word that designates the Bar & Wire Rod operations of NSSMC Group
- ◆ SteeLinC™ represents our idea of making contributions to enhancing product values and productivity in the aim to forge strong links with customers.



SteeLinC™ member companies

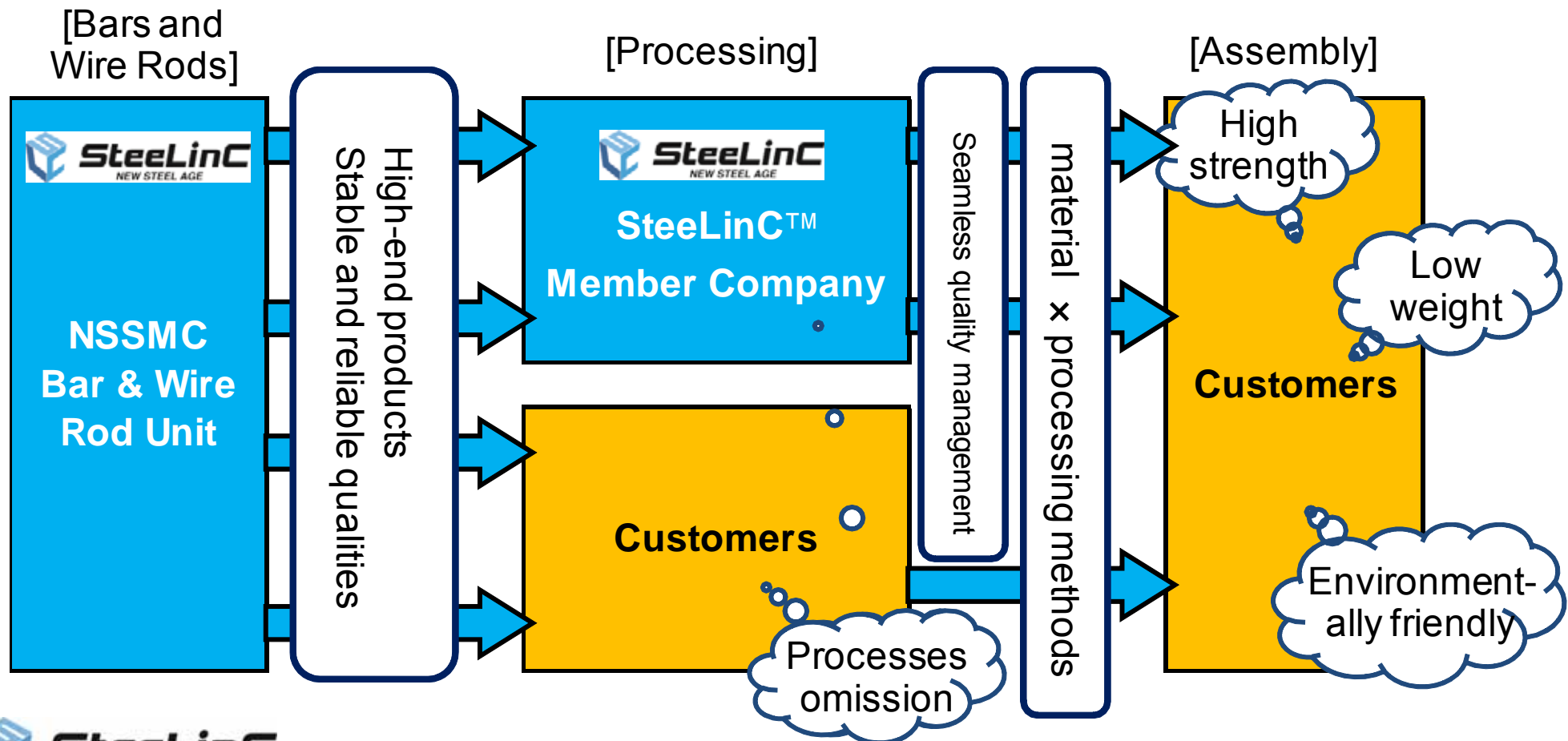
◆ SteeLinC™ is shared with member companies who share business strategies and shoulder main processes.

Sector	Products	Member Companies
Automobiles Construction and industrial machinery	Cold finished steel bars, Steel wire for cold heading	NIPPON STEEL & SUMIKIN Steel Processing Co., Ltd. MATSUBISHI METAL INDUSTRY Co., Ltd. NIPPON STEEL & SUMIKIN Steel Wire Co., Ltd. Miyazaki Seiko Co., Ltd. SANYU Co., Ltd. NBC China NIPPON STEEL & SUMIKIN Steel Processing (Thailand) Co., Ltd.
	Cold forging and machining	Nippon Steel & Sumikin Precision Forge, Inc.
	Suspension springs	Suzuki Metal Industry Co., Ltd.
Construction and public works	PC wire	
	Bolts and nuts	NIPPON STEEL & SUMIKIN Bolten CORPORATION
Welding	Welding materials	Nippon Steel & Sumikin Welding Co., Ltd.

. Outline of SteeLinC™

Map of SteeLinC™

- ◆ SteeLinC™ satisfies customers who uses our bars and wire rods, which feature properties of customer products.

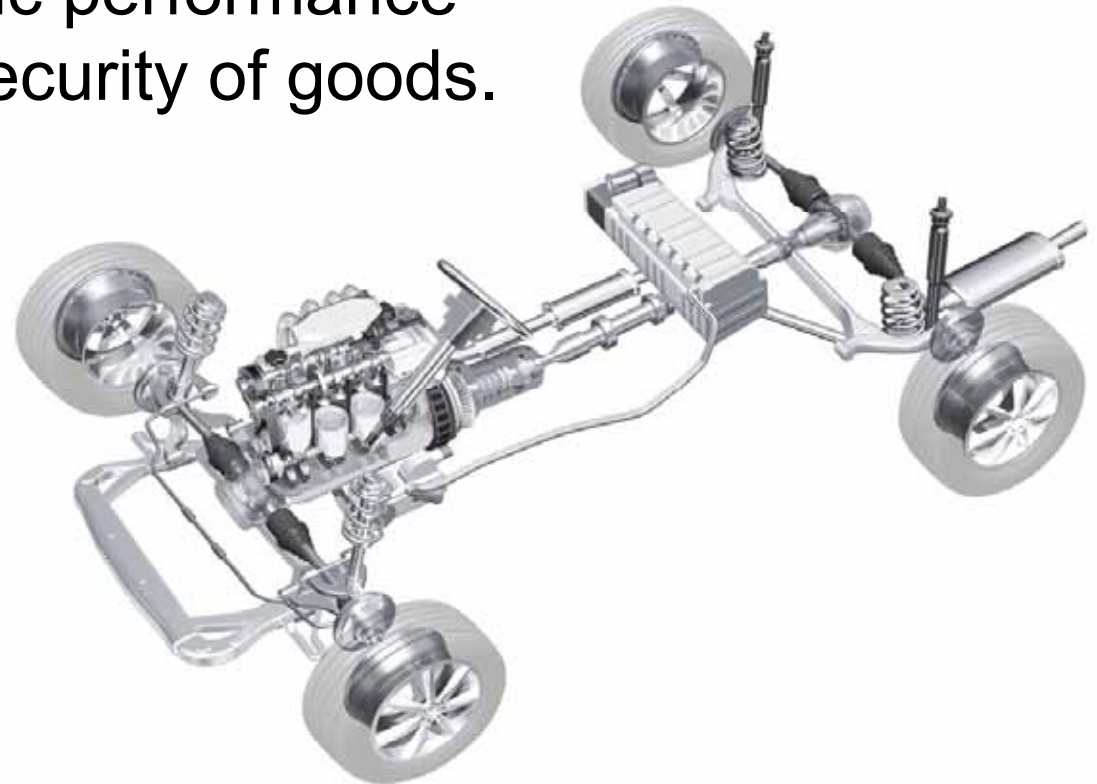


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About bar & wire rod

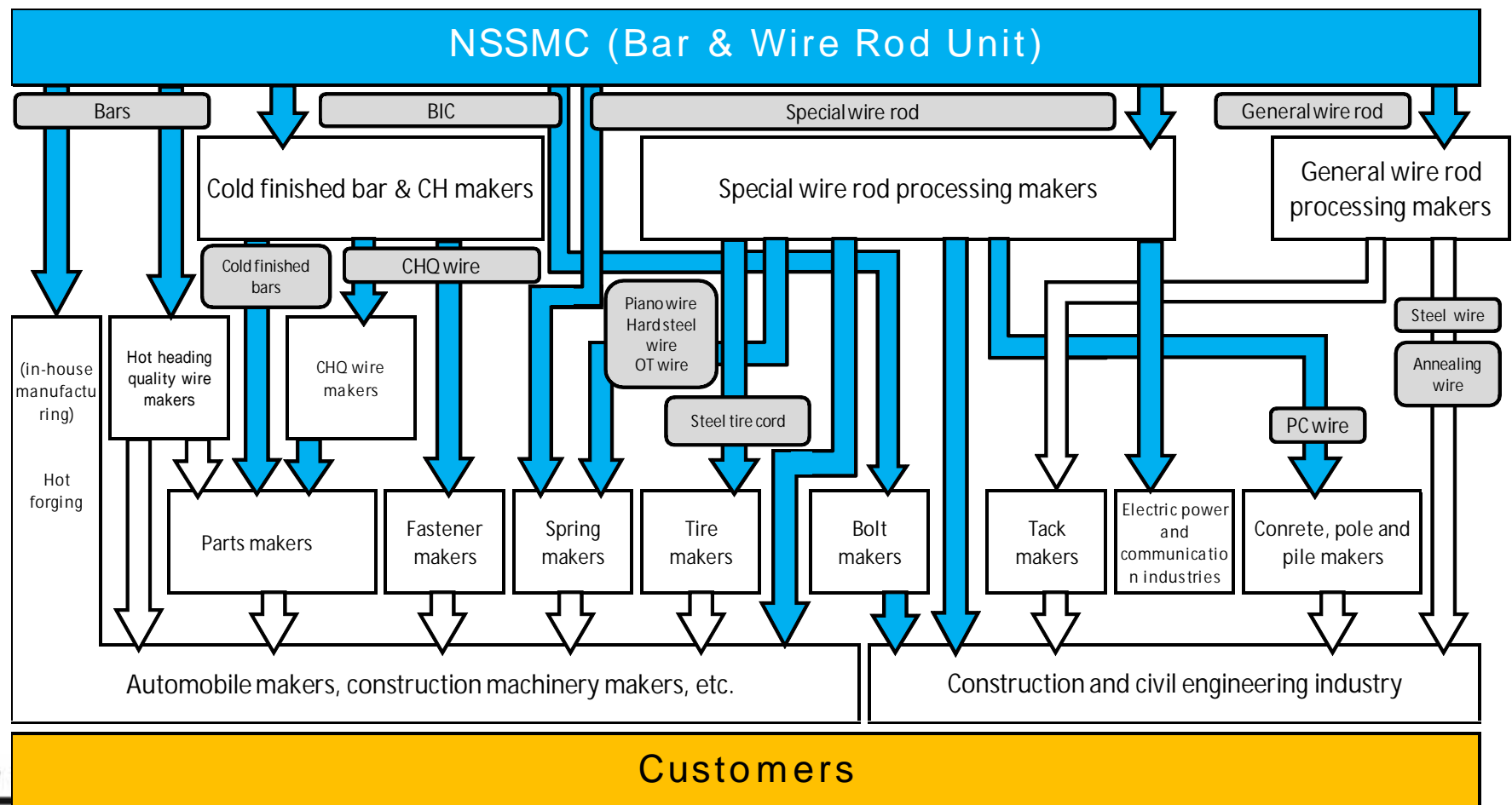
- ◆ Steel material in the shapes of bars and wire rods used in the automobile, construction, and public works sectors.
- ◆ Materials that influence basic performance involved in the safety and security of goods.



Characteristics of bar & wire rod market

Diversity in product lines and areas of demand

Length of process



Various manufacturing and product menu items

◆ Manufacturing sites

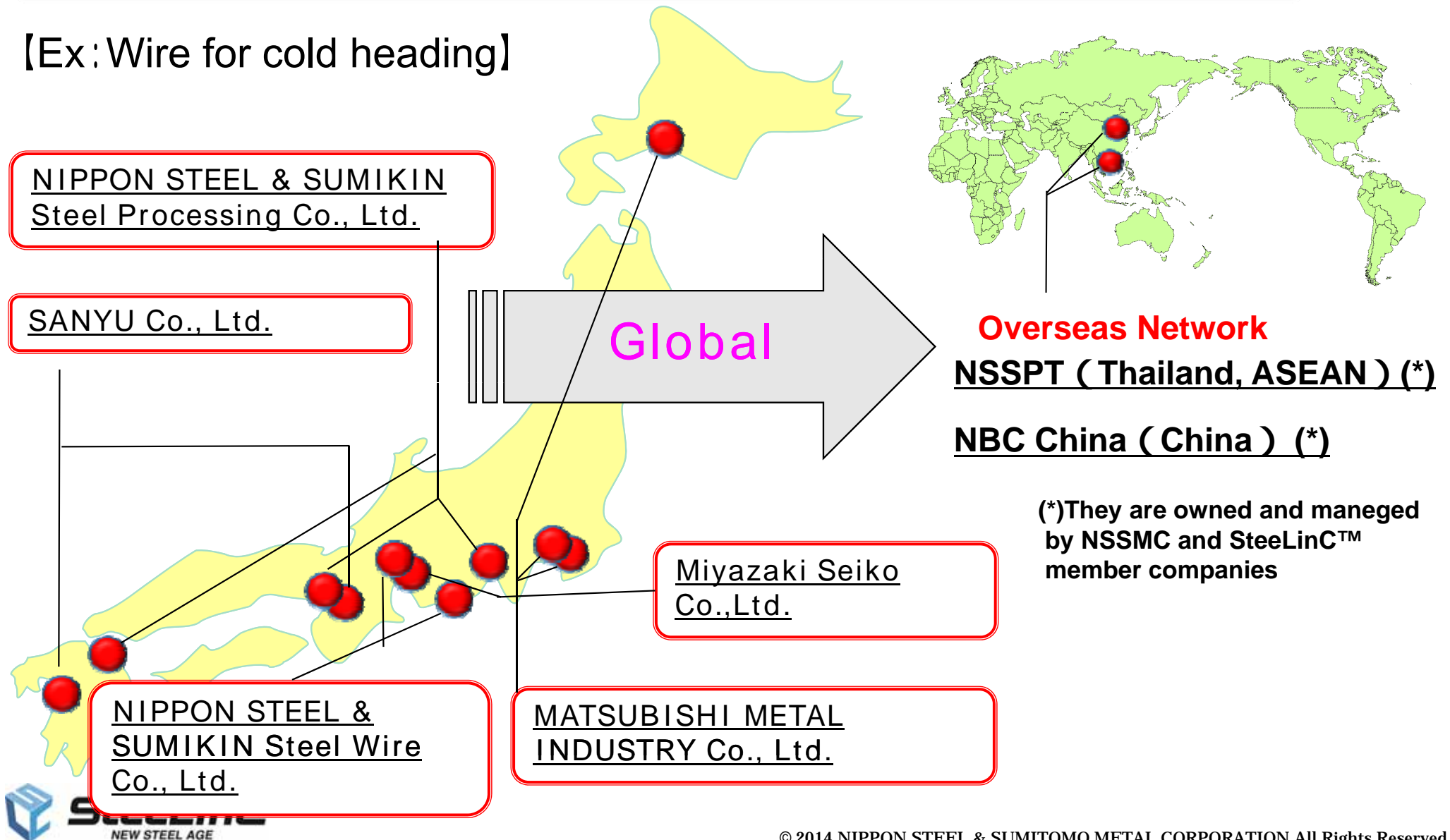
		Sizes (mm)	Processing Line (in-house)
Muroran Bar	Bar	19 ~ 350	-
Yawata Bar	Bar	19 ~ 220	Heat treatment
Wakayama Bar	Bar	230 ~ 400	
Muroran Wire rod	BIC Wire rod	19 ~ 60 5.5 ~ 22	Pickling, Heat treatment Coating, Half drawing
Yawata Wire rod	BIC Wire rod	18 ~ 52 5.5 ~ 21	Pickling, Heat treatment Coating, Half drawing
Kimitsu Wire rod	Wire rod	5 ~ 15	-
Kamaishi Wire rod	Wire rod	5 ~ 15	-

◆ Products (Ex: Automobiles)

Application		Products
Engines	Hot forged parts	High-strength untempered steel for hot forging
	Cold-headed parts	Steel bars for cold heading
	Connecting rods	High-strength steel for FS/cracking connecting
	Valve springs	Wire rods for high-strength valve springs
Trans- missions	Gears	Steel for high-strength gears (XG5, CM201, etc.)
	Nitrocarburized parts	Highly durable nitrocarburized steel
	Carburized parts	Steel that prevents large grain (NSACE)
		Super mild alloy Mild alloy
Suspension systems	High-frequency hardened parts	Steel for high-frequency haedening with high strength
	Cold-headed parts	Super forging (SF)
	Shafts	Directly normalized processed steel
	Suspension springs	High-strength suspension spring steel
	Tires	Wire rods for steel tire cords
Fasteners	Bolts and nuts	Steel for high-strength bolts
		Boron steel for cold forging
		Untempered steel for cold forging
		Low-carbon aluminum killed steel without annealing
		New soft wire rods
		Soft wore rods
		Wire rods with simplified annealing

Development of supply chain networks

【Ex: Wire for cold heading】



Market share in Japan

◆ Bars

NSSMC (20%)	A (20%)	B (15%)	C (15%)	Others
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No.1 

◆ BIC

NSSMC (35%)	A (40%)	Others
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No.2 

◆ Special Wire Rod

NSSMC (45%)	A (35%)	Others
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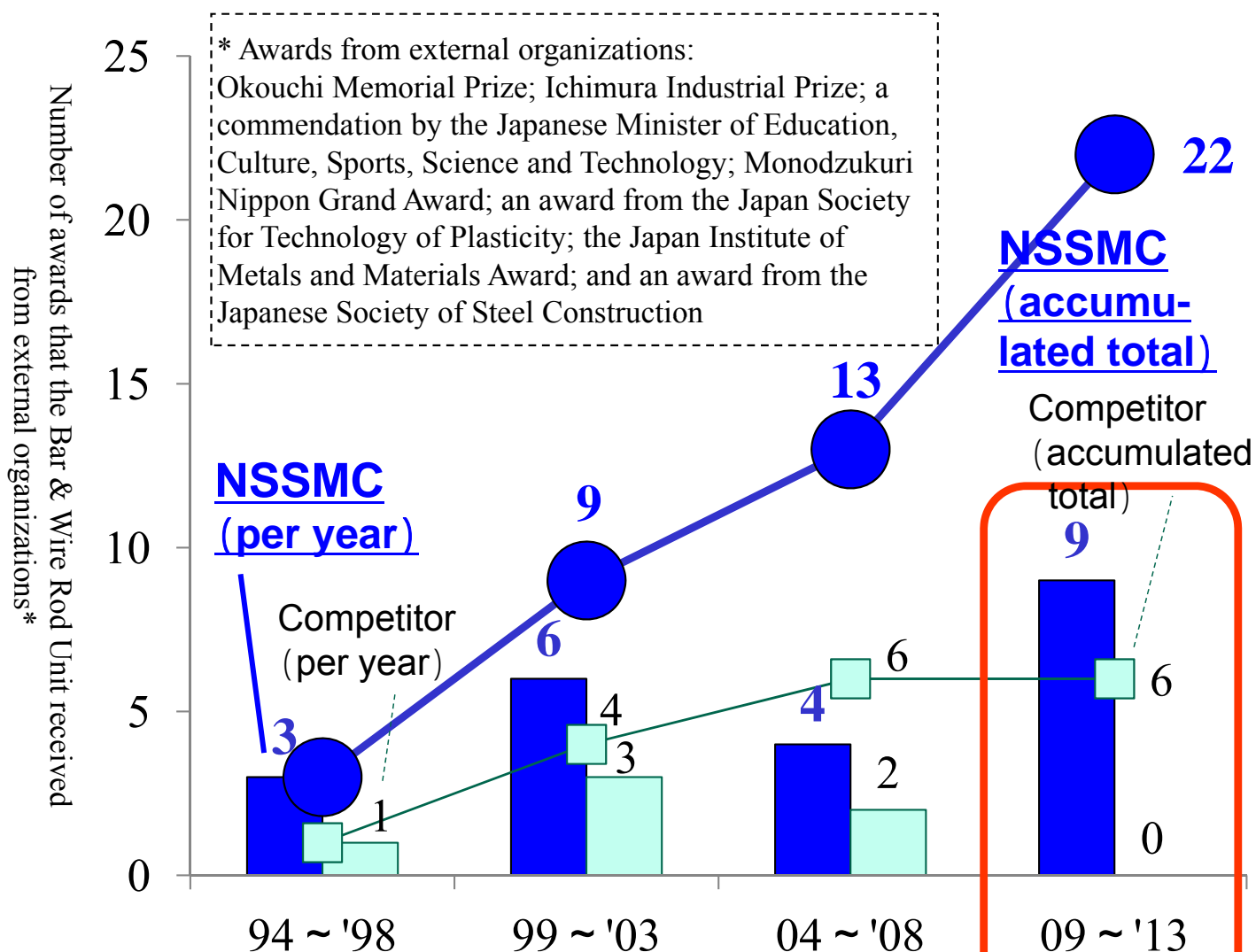
No.1 

◆ General Wire Rod

NSSMC (50%)	A (25%)	Others
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No.1 

Past record of recognition by external organizations



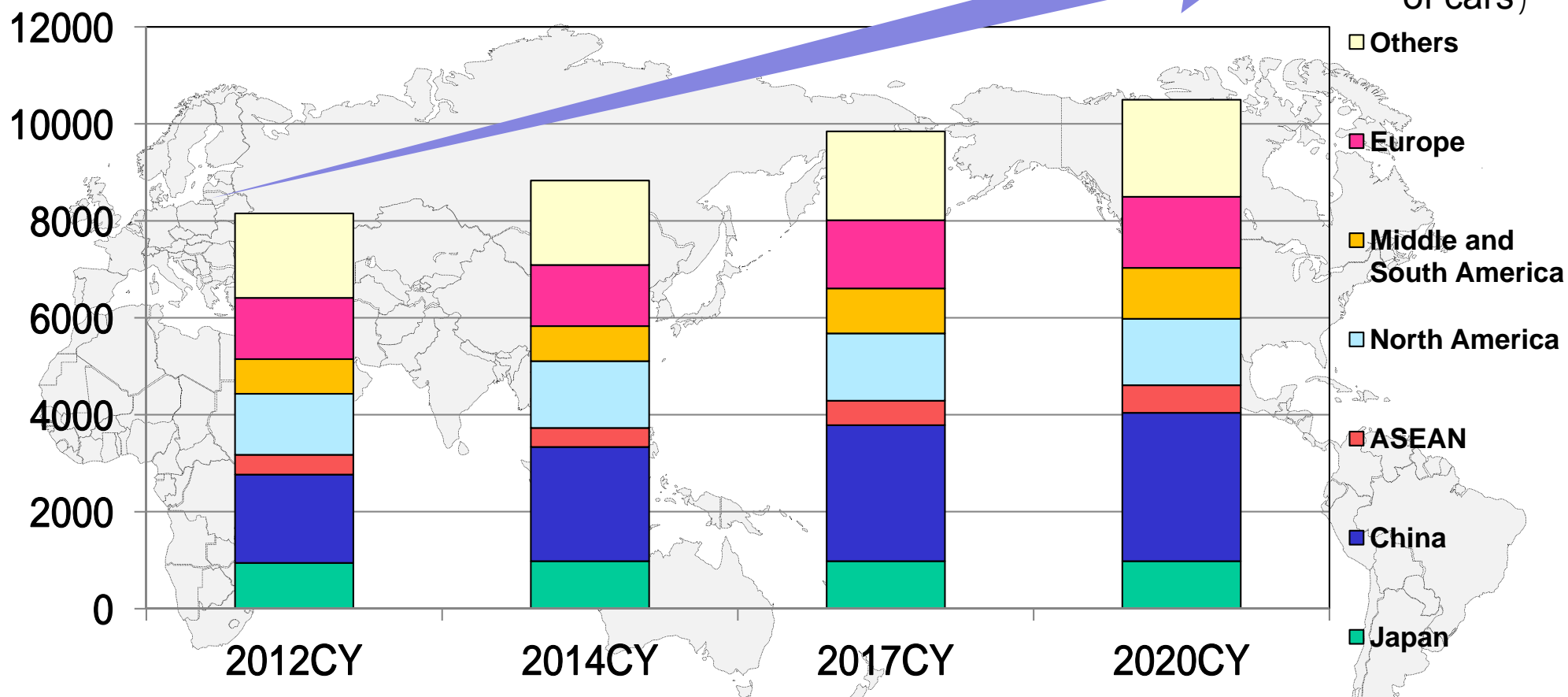
Awards that NSSMC has won ('09 ~)

- (1) High-strength Pb-free untempered steel for cracking
(High strength + untempered + environmental friendliness)
- (2) High-strength nitrocarburized steel for cranks that allows normalizing to be omitted
(High strength + omission of a manufacturing process)
- (3) New steel material that can extend fatigue life (longer service life)
- (4) High-toughness steel for hot forging (untempering)
- (5) Small-diameter high-carbon chrome steel wires (omission of wire drawing and heat treatment)
- (6) "SumiGreen CS," a low-carbon lead-free free-cutting steel
- (7) Low-carbon free-cutting steel without lead

Changes (1): Growth in the demand for bars and wire rods in the global market

【Example: Outlook for the number of automobiles to be produced*】

(ten thousand of cars)



*Source: Various statistical data and our own estimations

We expect that the demand for bars and wire rods will increase toward CY2020, as automobile production will increase across the world.

. Background of SteeLinC™

Changes (2): Sophistication of need for bars and wire rods

【Japan】

- ◆ Shortage of human resources and increasing energy costs
→ Expectations for material that contributes to stable quality and the omission of processing
- ◆ Development of automobile modularization (normalization and standardization)
→ More trends seeking new functions and products

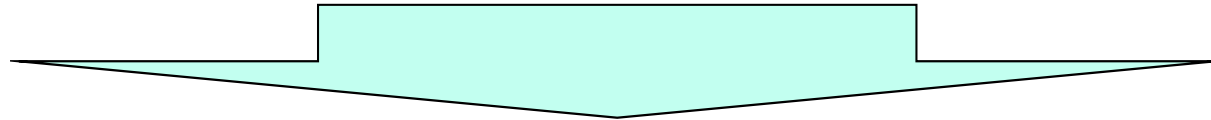
【Overseas】

- ◆ Rise in income levels and growing environmental consciousness
→ Demand for high-performance products



Demand for our bar & wire rod business in the future

- ◆ Changes (1): Growth in the demand in the global market
- ◆ Changes (2): Sophistication of need for our steel



Providing solutions including processes for steel material processing (contribution in a integrated manner)

Accelerating the development and application of high-performance and high-end products

Strengthening our excellence in manufacturing ability

SteeLinC™ has been set up as a business brand for the purpose of strengthening and promoting the above measures

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Three key elements of SteeLinC™

The structure of SteeLinC™

◆SYNERGIA™, XSTEELIA™, and MAESTRIA™, have been set up as three concepts to give form to SteeLinC™ principle

Brand	Definition
SteeLinC™	<u>Business brand</u>
MAESTRIA™	<u>On-site competence brand</u>
XSTEELIA™	<u>Product brand</u>
SYNERGIA™	<u>Solution brand</u> (including products)



Innovation of next-generation values through the multiplication of "steel materials x Manufacturing methods"



High-end products created through our pursuit of the "full potential of steel"

- EXTREME
- EXCELLENCE
- EXCEPTIONAL
- EXPERT



Strength in advanced technologies and on-site capability (i.e., strength in basic quality)

- Strength in basic quality
- Quality management systems



Three key elements of SteeLinC™

(1) About SYNERGIA™

◆SYNERGIA™ is a general name for solutions and products that create new product values through the multiplication of “steel materials × processing methods.”



Innovation of next-generation values through the multiplication of “steel materials × processing methods”

NSSMC's steel material

- XSTEELIA high-end products
- Steel materials with excellent basic quality
- Technologies that allow steel materials to be completely used within its potential



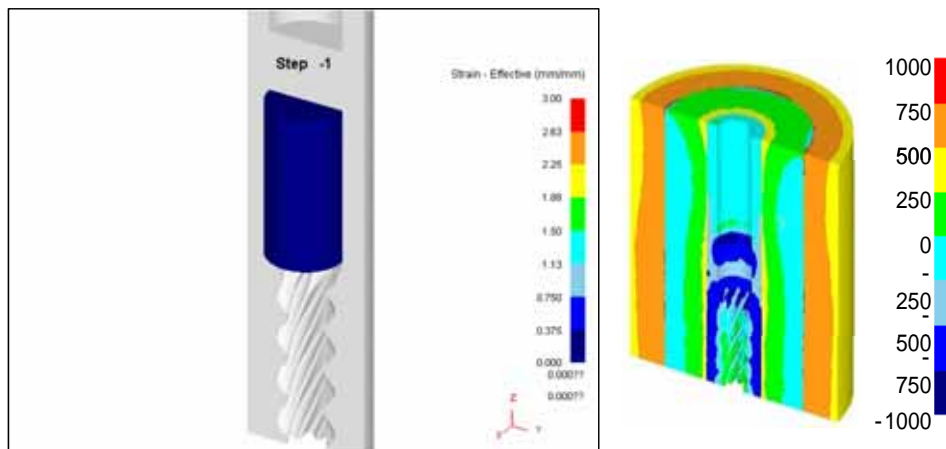
Customer processing methods

- Mutual coordination with customers
Collaboration for thermomechanical treatment, hot forging, cold forging, carburizing heat treatment, nitriding heat treatment, high-frequency induction hardening, solution technologies, etc.
- High-performance steel that proves its true value in secondary and tertiary processing

Three key elements of SteelLinC™

(1) SYNERGIA™ examples – *Cold forging technical solution* –

i. Analysis technology: FEM analysis of forging



We can calculate and analyze the maximum stress that is applied to material by forging.
 → We can propose material with machinability (deformability and cracking properties) that allows for industrial production within actual manufacturing processes, together with proposals for the most optimum forging methods.

ii. Equipment: Forging prototyping

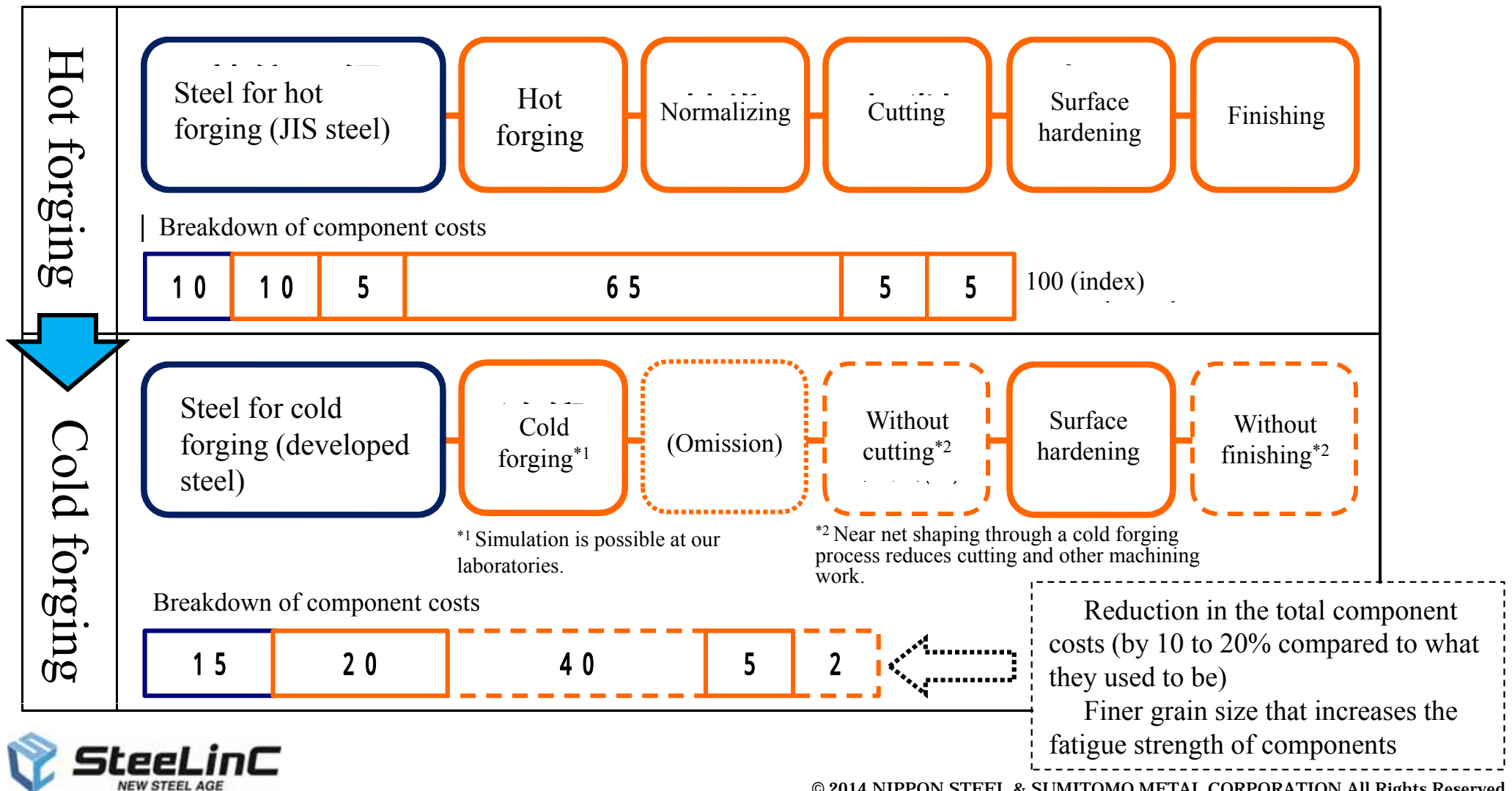


Forging prototyping is possible at our labo.
 → The loads, shapes, etc., of finished parts can be checked in advance, which contributes to shortening customer work periods during development.

Three key elements of SteelLinC™

(1) SYNERGIA™ examples – *Cold forging technical solution* –

Assistance in the omission of processing and in the total cost reduction



. Three key elements of SteeLinC™

(2) About XSTEELIA™

◆ High-end steel that enhances the values of end products



High-end products created through our pursuit of the "full potential of steel"

1. EXTREME PERFORMANCE

The ultimate form of steel created through our pursuit of steel's full potential

- Performance capable of withstanding severe processing and usage conditions

Striving to reach a new frontier

2. EXCELLENCE

Excellence that is achieved by making full use of the best technologies

- Ultra high strength, high purity, and uniformity
- Excellent environmental performance

Unlimited possibilities

3. EXCEPTIONALITY

Quality management that brings our products to the realm of perfection

- Advanced quality management systems and seamless traceability

4. EXPERTISE

Dependability based on expertise and overall ability

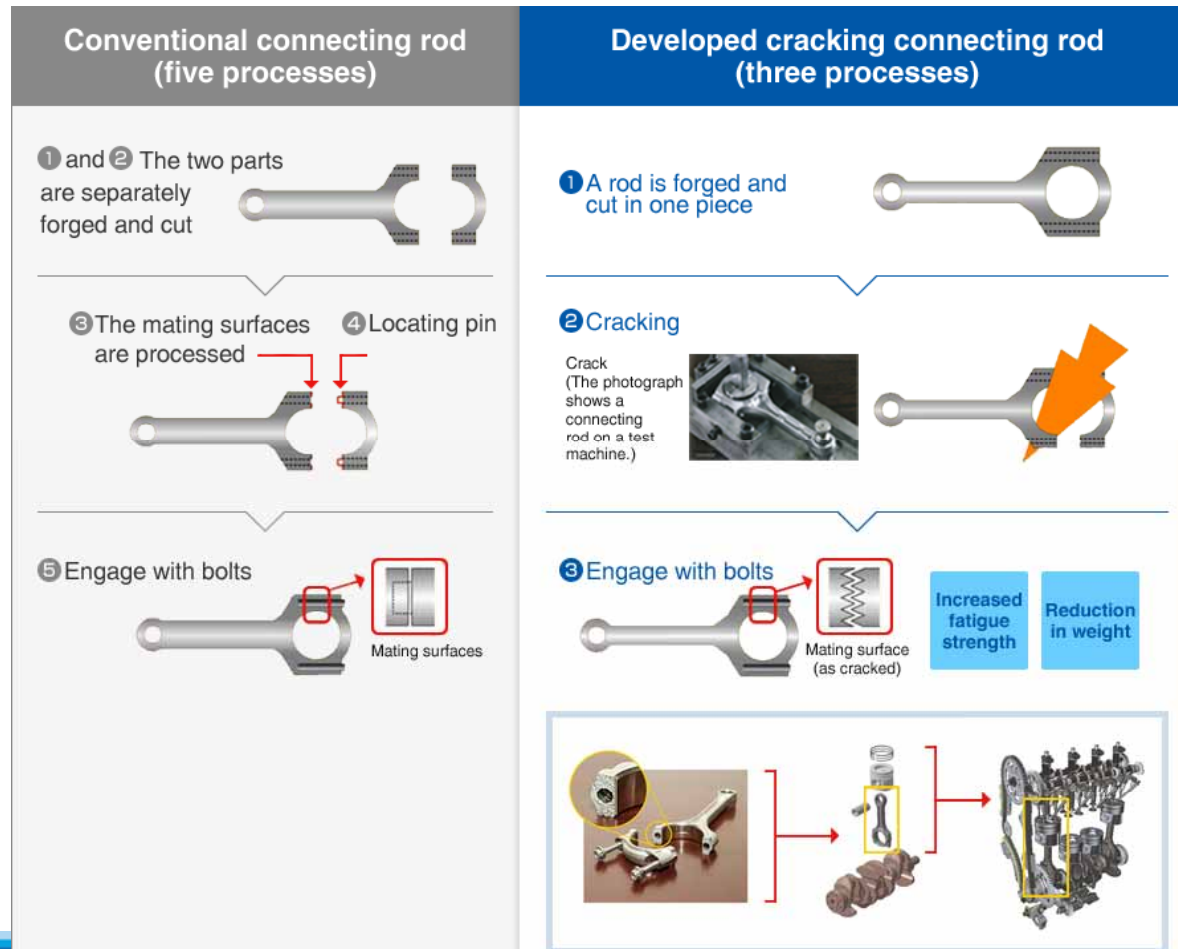
- Reliability, safety, and ability regarding improvement



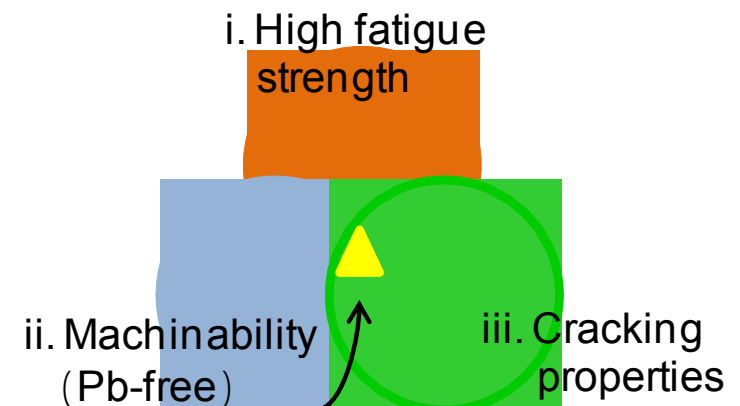
Three key elements of SteelLinC™

(2) XSTEELIA™ example – *Steel for cracking connecting rods* –

We have developed steel for cracking connecting rods, which was regarded as impossible → Satisfied all the properties of i. fatigue strength, ii. machinability, and iii. Cracking properties, which are mutually incompatible



– Properties required for steel –



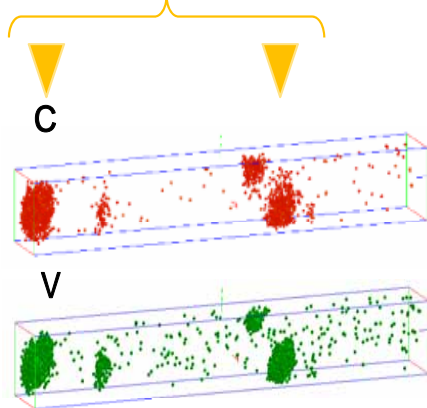
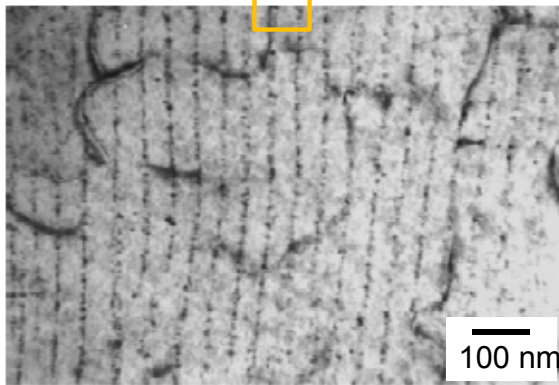
New materials that satisfy the requirements and that are mutually incompatible are needed to put new connecting rods to practical use.

Three key elements of SteelLinC™

(2) XSTEELIA™ example – *Steel for cracking connecting rods* –

We have succeeded in controlling steel organization at the nanometer level by making full use of the latest technologies. → Developed new material that satisfies all customer needs and puts them to actual use

With the full use of the latest technologies at the nanometer level, we have developed new material that is strengthened with nanometer-sized precipitates of vanadium and other elements, putting such materials to practical use.



Both high fatigue strength and machinability are realized using lead-free components.

Recognition history:

Award of Appreciation in Excellence in Quality from Honda Motor Co., Ltd. in 2006

Japan Institute of Metals and Materials Technical Development Award in 2007

Monodzukuri Nippon Grand Award in 2009

. Three key elements of SteeLinC™

(3) About MAESTRIA™

◆ A brand standing for the manufacturing ability that represents our advanced technologies and on-site competence



Strength in advanced technologies and on-site competence
(i.e., strength in basic quality)

NSSMC Group's on-site competence and craftsmanship

Expertise, expert skills, and craftsmanship

Seamless quality management for reliability and safety

Devotion to manufacturing better products

Innovation that gives birth to new value throughout the world

■ Strength in basic quality

- Chemical components, hardenability, surface defects, decarbonization, nonmetallic inclusions, center segregation, accuracy of dimensions, etc.

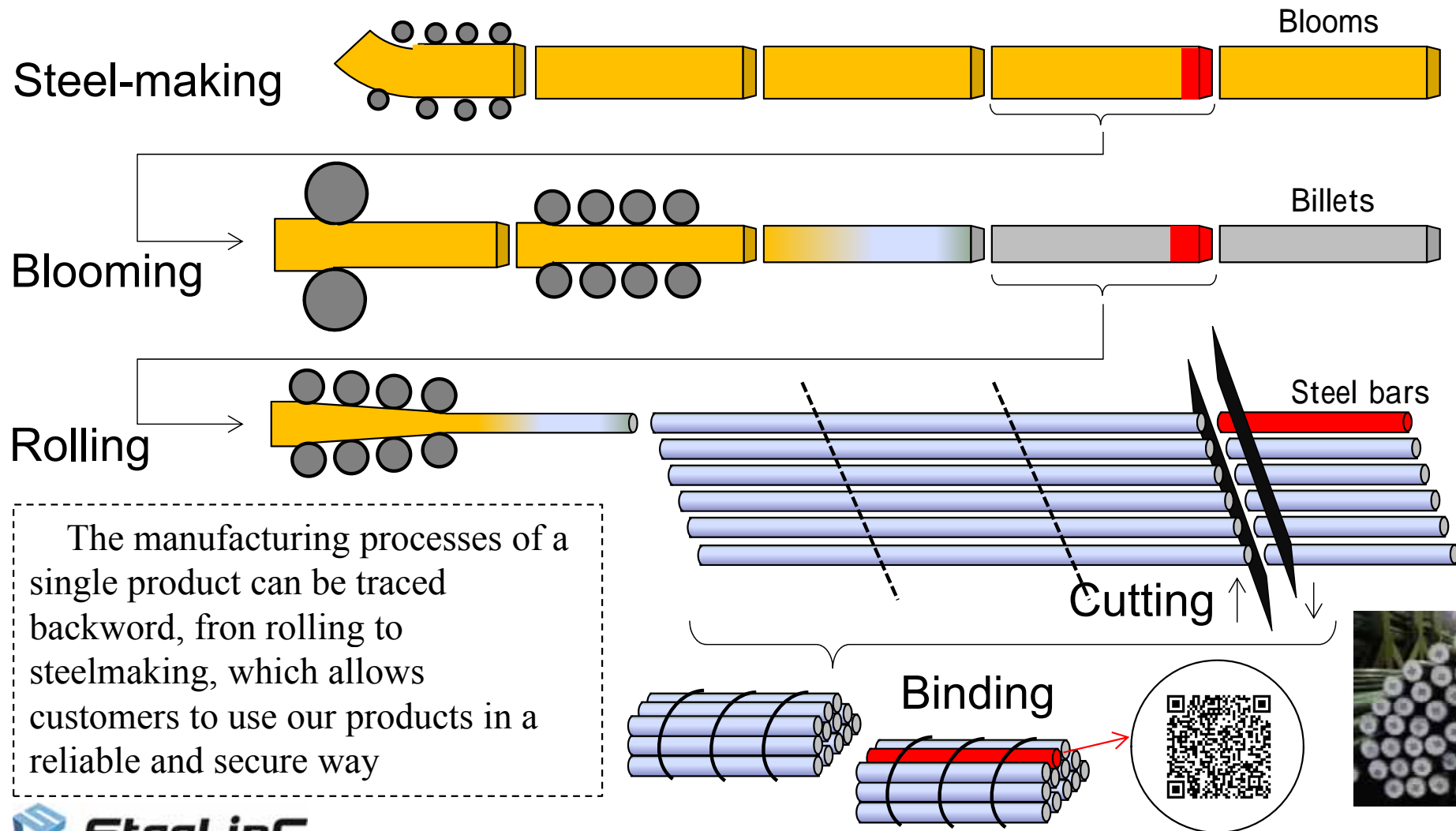
■ Quality management systems

- Thorough manufacturing process management and traceability throughout various processes, from steelmaking to final products
- Quality assurance utilizing cutting-edge & advanced inspection machines and the excellent quality of our logistics supporting integrated manufacturing and sales, etc.

Three key elements of SteelLinC™

(3) MAESTRIA™ example – *Single bar management* –

We can conduct a trace back to the casting section for even a single bar



Summary

Launch of new brand

As we announce the SteeLinC™ brand, we will further promote the above-discussed three concepts as follows.

MAESTRIA™: Strengthening our manufacturing ability

XSTEELIA™: Development and application of high-end products

SYNERGIA™: Development of solutions including processing methods

Our principles as represented by those brands will be conveyed through our supply chain.

Reference

◆ SteeLinC™'s website : <http://www.nssmc.com/en/steelinc/>



SteelLinCTM
NEW STEEL AGE