

Sumitomo Metals' (Kokura)

Innovative Steelmaking Process

May 28, 2007



Forward-looking Statements

This presentation contains certain forward-looking statements. The Company has tried, whenever possible, to identify these forward-looking statements using words such as “anticipated,” “believes,” “estimates,” “expects,” “plans,” “intends,” “targets,” and similar expressions. Similarly, statements herein that describe the Company’s business strategy, outlook, objectives, plans, intentions or goals are also forward-looking statements. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which could cause the Company’s actual results, performance or achievements to differ from those expressed in, or implied by, such statements. These risks and uncertainties may include, but are not limited to: the Company’s ability to successfully implement its strategies to restructure the steel business and reinforce its financial structure; the effects of and changes in Japanese and worldwide general economic conditions and in the steel industry in particular, including the severity of any economic slowdown, technological and other changes affecting the manufacture of and demand for the Sumitomo Metals Group’s products, changes in Japan’s and other countries’ laws and regulations, including with regard to taxation, and other risks and uncertainties set forth in subsequent press releases and in the Sumitomo Metals Group’s public filings. These statements reflect the Company’s current beliefs and are based upon information currently available to it. Be advised that developments subsequent to this presentation are likely to cause these statements to become outdated with the passage of time. The Company disclaims any intent or obligation to update these forward-looking statements.

Specialty Steel: Definition and Classification

3

(Definition)

- High quality carbon steel with higher carbon content
- Steel with one or more alloying elements added

(Classification)

□ Structural steel

Carbon steel for machine structural use, alloy steel

□ Special purpose steel

Free cutting steel, bearing steel, spring steel, stainless steel, piano wire, high tensile strength steel, high manganese steel, heat-resistant steel,

□ Tool steel

Carbon tool steel, alloy tool steel, high speed tool steel

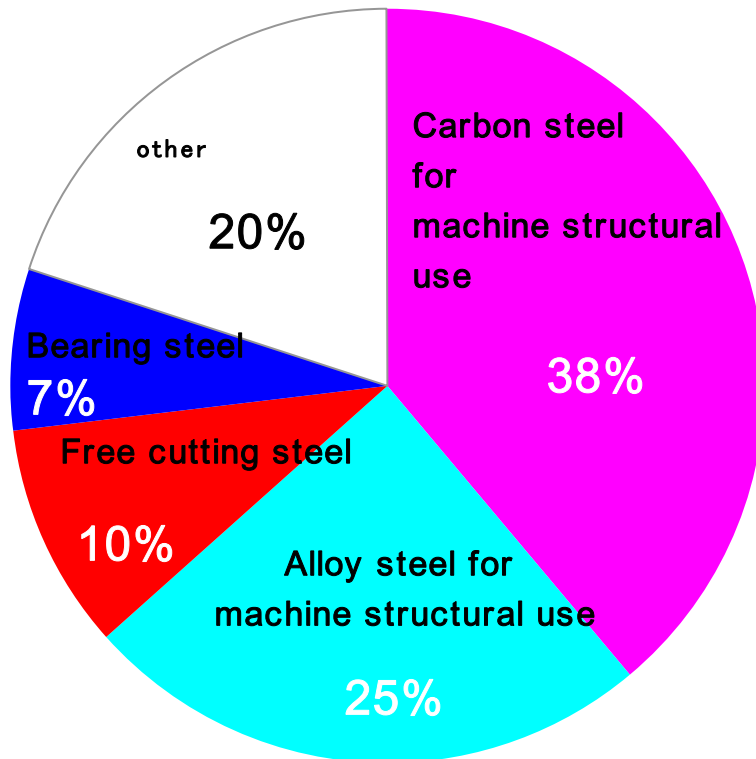
□ Products we supply

■ Products we will focus on (bars and wire rods)

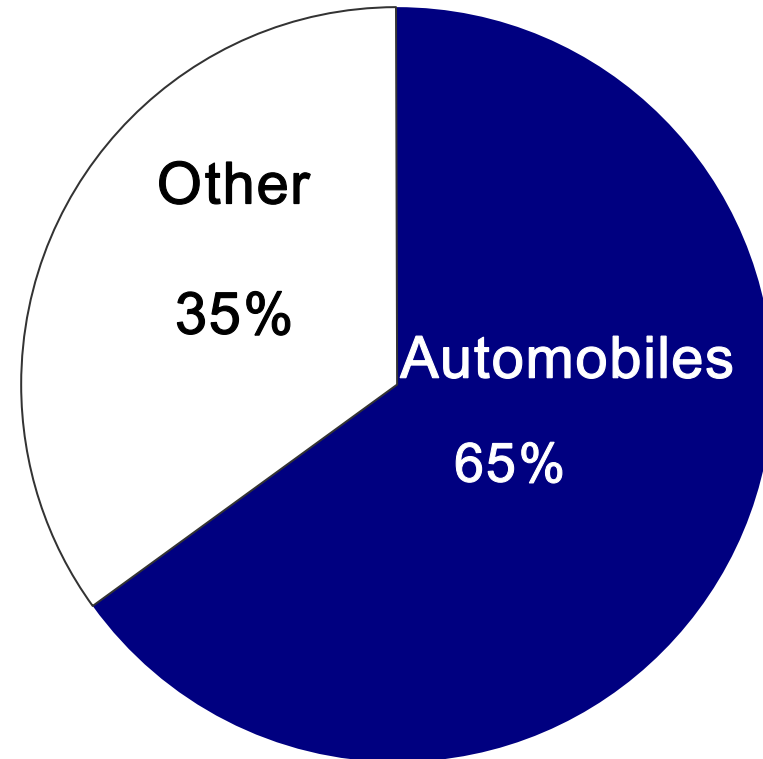
Specialty steel bars & wire rods: market breakdown⁴

Specialty Steel (bars & wire rods) production in Japan
10,710 thousand tons/year (2006)

Breakdown by category



Breakdown by usage



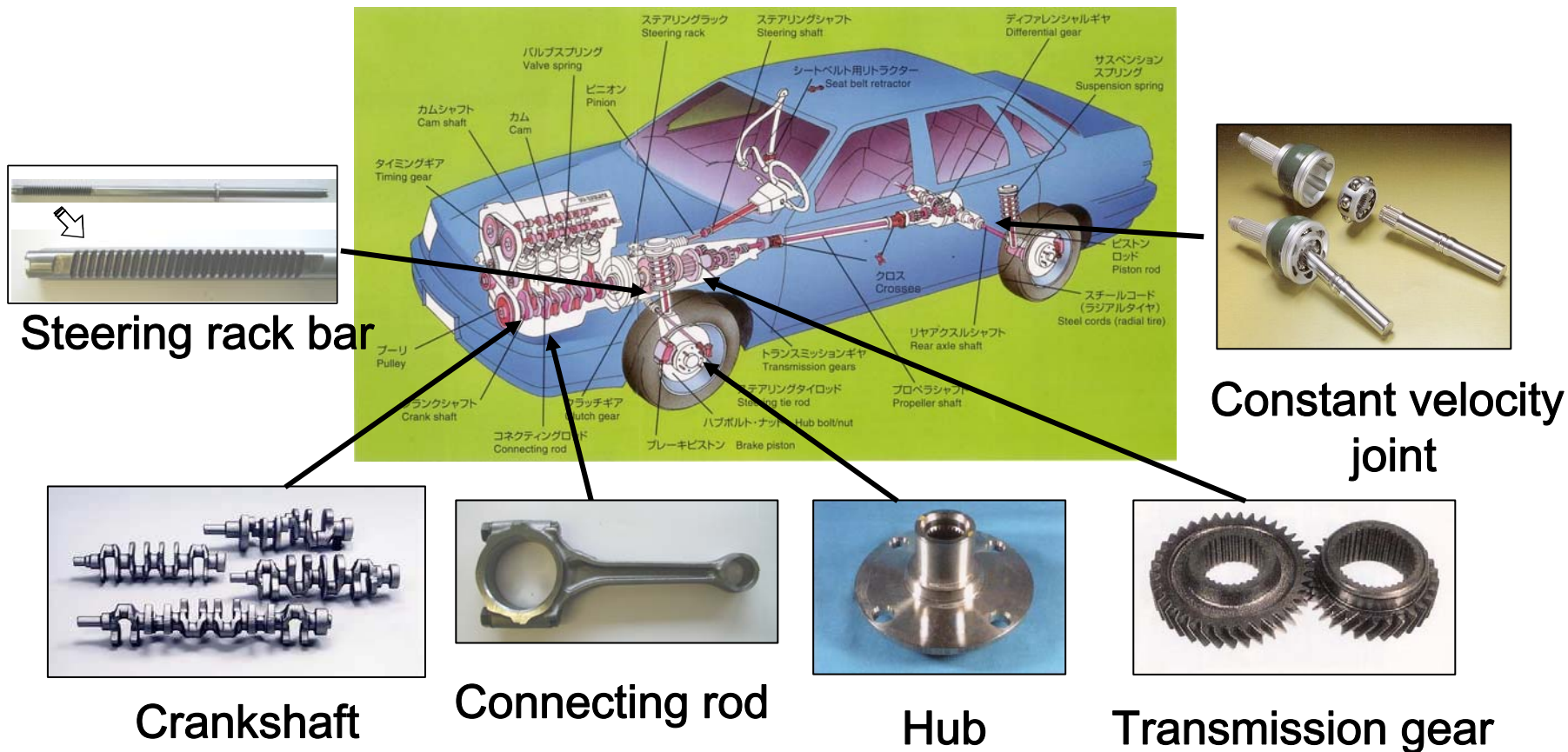
■ Four categories we focus on = 80%

■ 65% for automobiles

Specialty Steel Suppliers in Japan (bars & wire rods)⁵

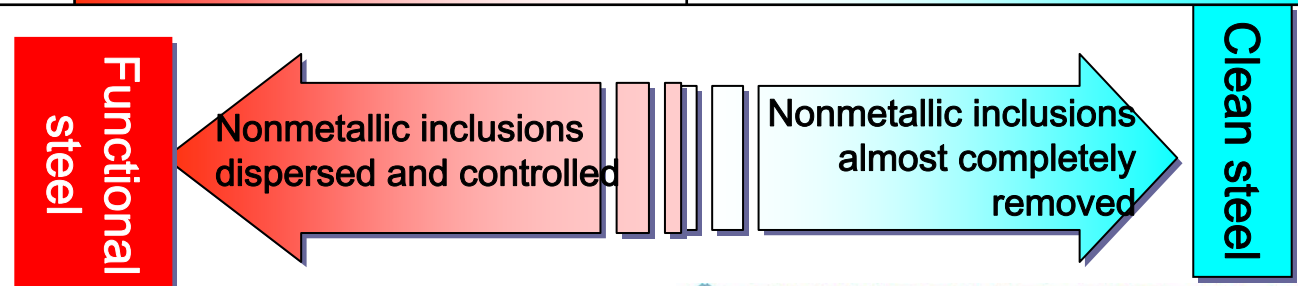
	<i>BF</i>	<i>EF</i>	<i>Ordinary steel</i>
<i>Sumitomo</i>	Kokura		
<i>NSC Keiretsu</i>	NSC	Daido Sanyo Mitsubishi	Godō Nakayama
<i>Toyota Keiretsu</i>		Aichi	
<i>Kobe</i>	Kobe		
<i>JFE Keiretsu</i>	JFE Steel		JFE Bars & Shapes

■ Specialty steel is used for **Safety-related Parts** in power trains and chassis **Quality**, therefore, is critically important



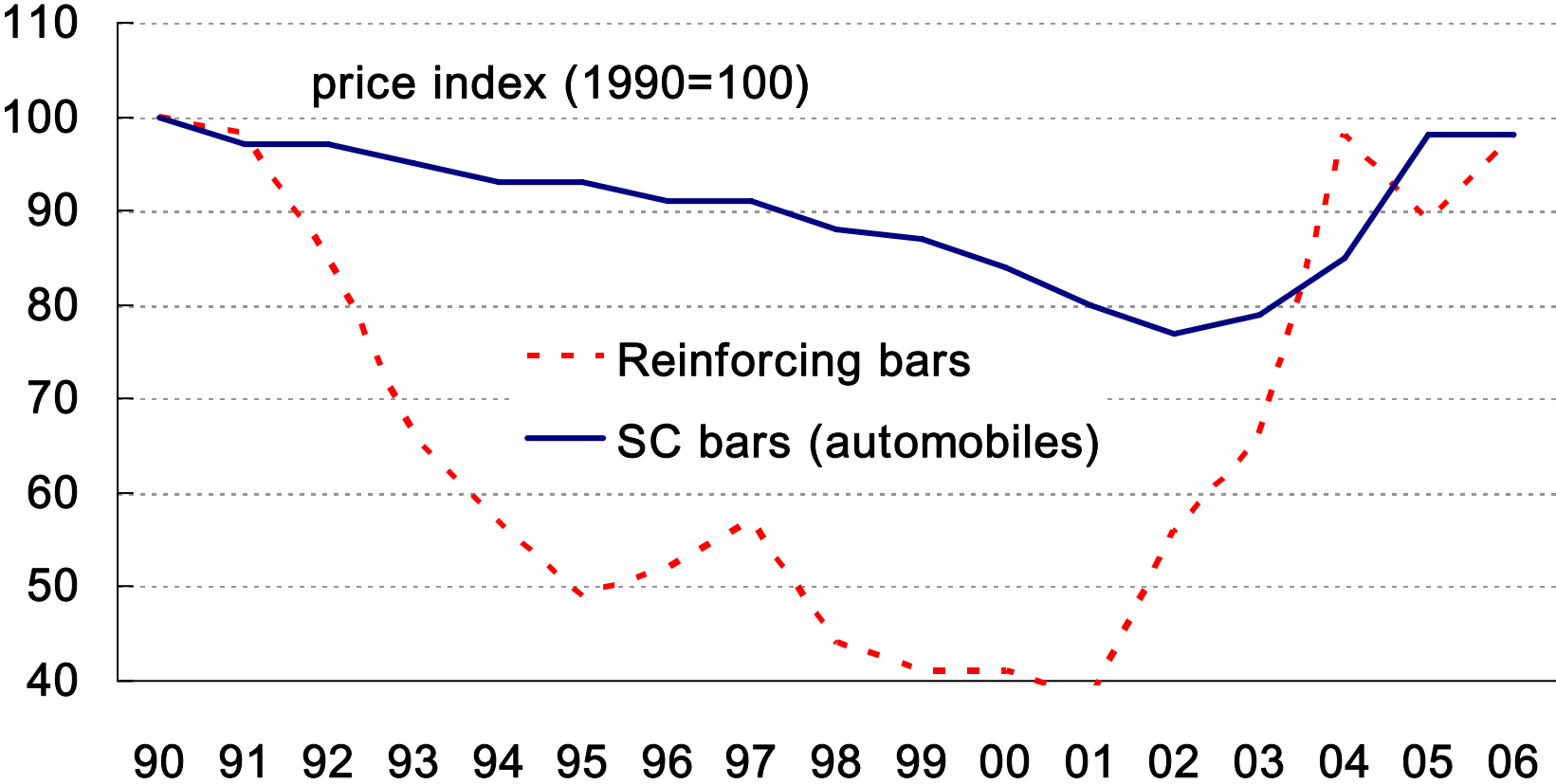
Automobile Components vs. Specialty Steel Products Category

Component category	Components	Free cutting steel	Carbon steel for machine structural use	Alloy steel	Bearing steel
Engines	Crankshafts Connecting rods Common rail systems	○ ○	○ ○	○	
Drive train	Transmission gears Differential gear units CVT			○ ○ ○	
Steering	Hubs Constant velocity joints Steering	○	○ ○ ○	○	
Electrical	Alternators		○		
Bearings	Bearings				○
Other	Bolts, nuts Hydraulic components	○	○	○	
Required performance		Functional		Cleanliness	

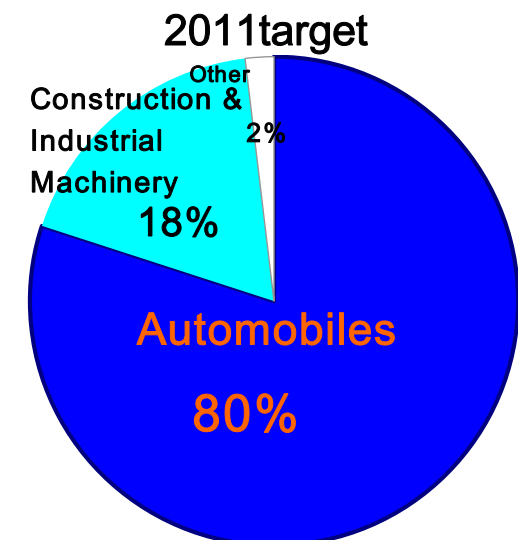
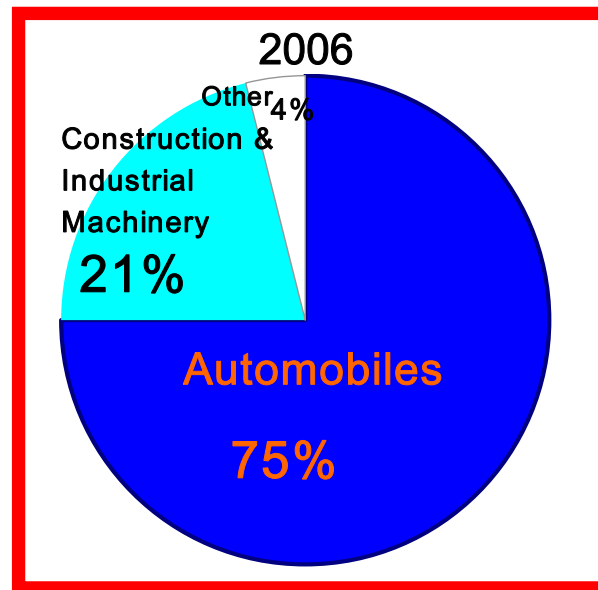
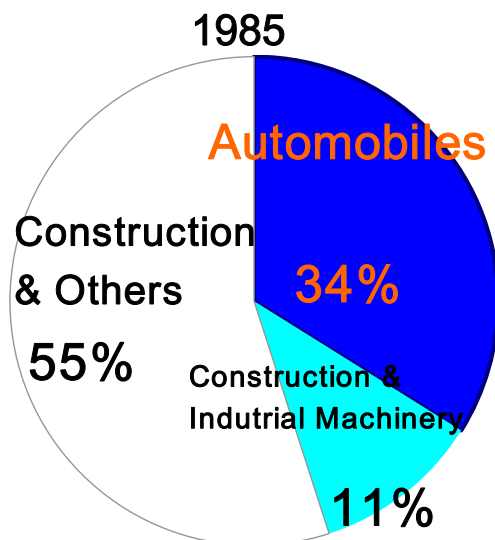
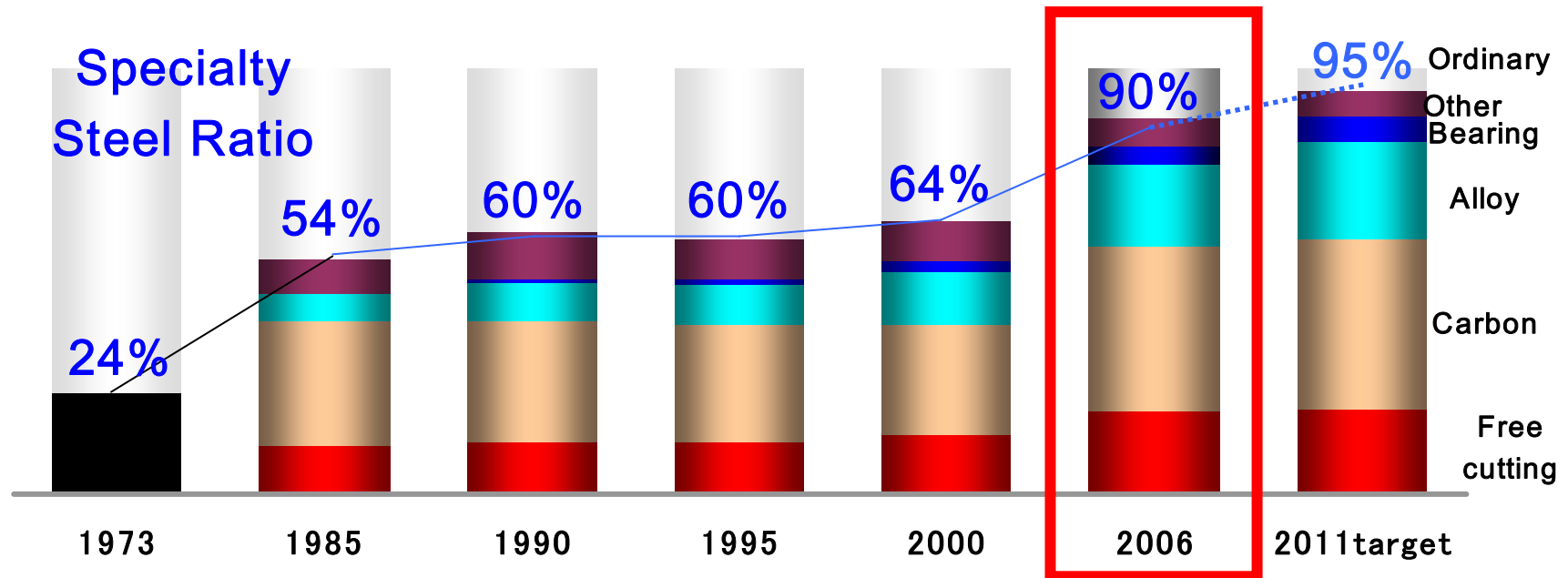


- **60 ~ 70%** of specialty steel (bars & wire rods) used for automobiles.
- Specialty steel is used for **Safety-related Parts** in power trains and chassis
Quality, therefore, is critically important.
- In bar business, specialty steel price is stable; ordinary steel price is volatile.
Cost competitiveness and product development are key to profitability.

Strategic Profile of Specialty Steel Market

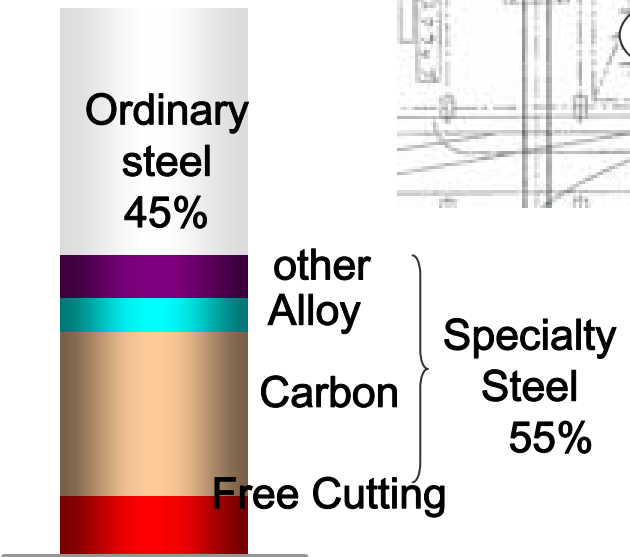
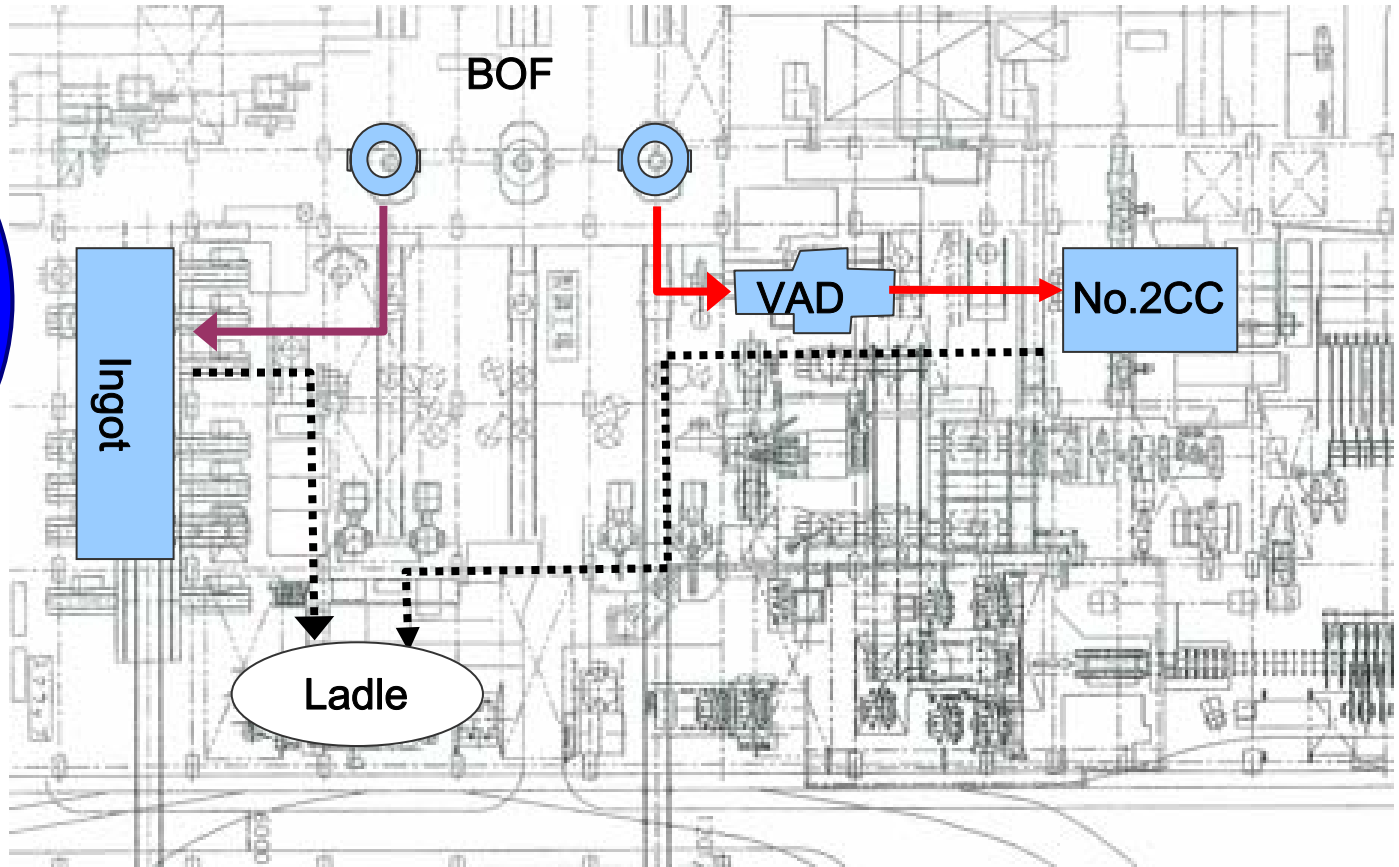
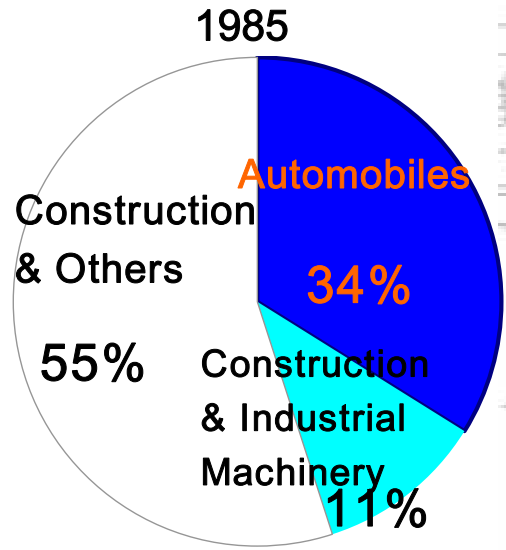


Specialty Steel Ratio & Customer Breakdown



Steelmaking Plant: History of Layout

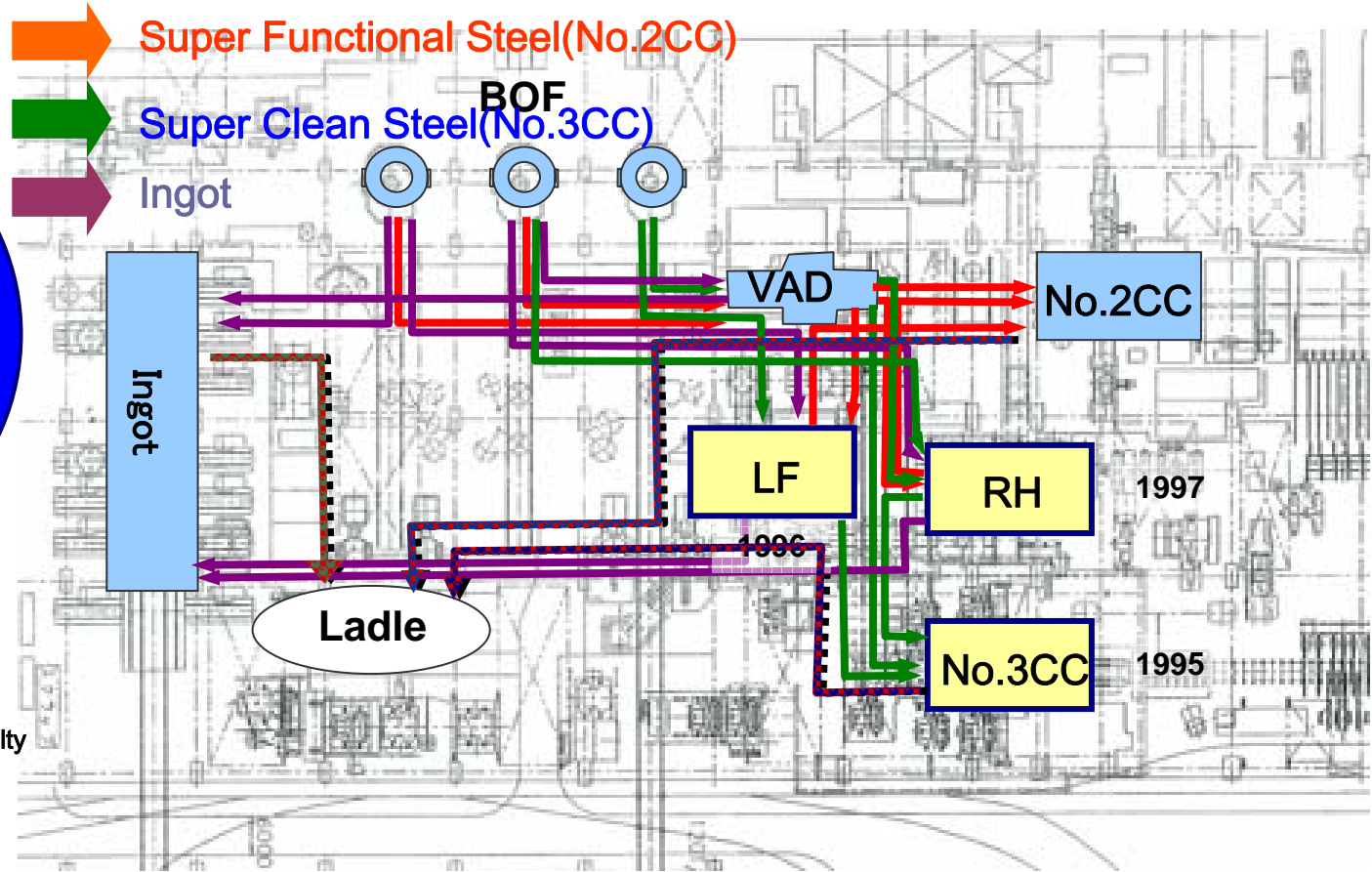
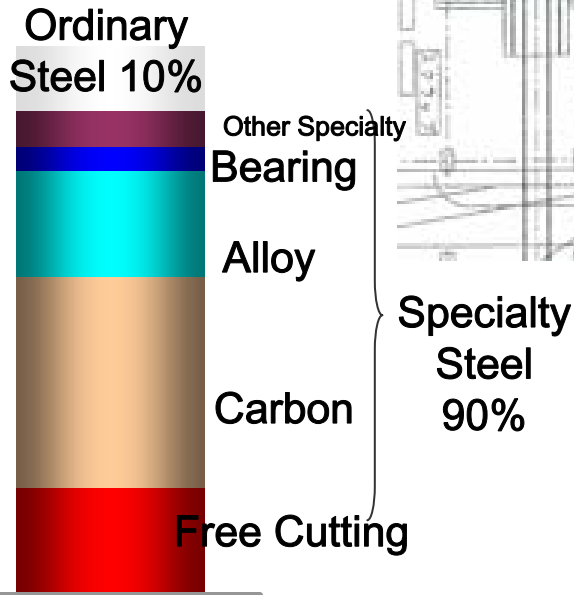
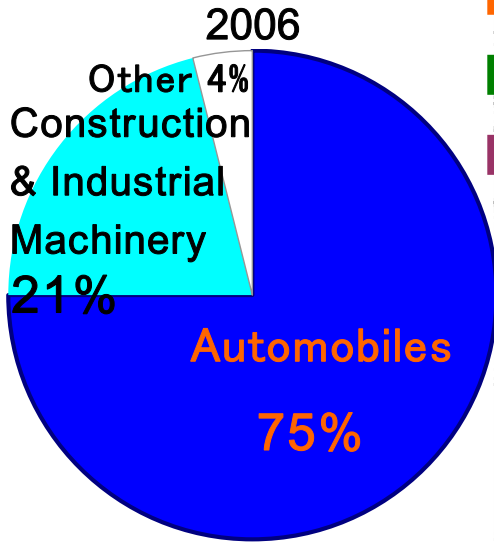
1982 ~ 1994



Single-track, uncomplicated layout

Steelmaking Plant: History of Layout

1995 ~ present



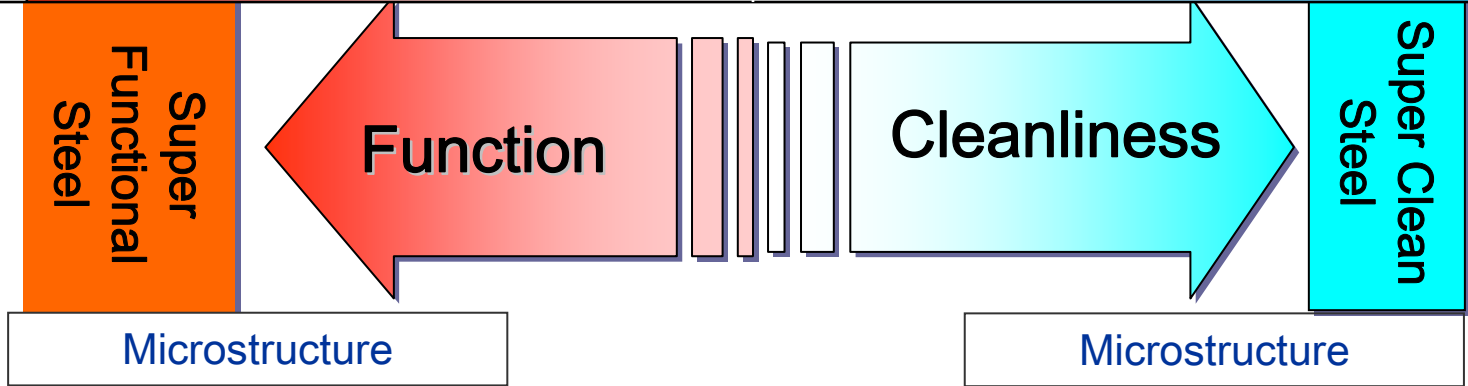
Facilities added one after another in response to New Product Categories & Customer Requirements

Complicated product flow
Contamination of ladles and refining vessels

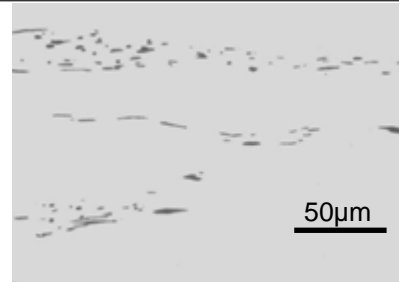
Required Performance of Specialty Steel Bars & Wire Rods

Kokura Focuses on Four Categories

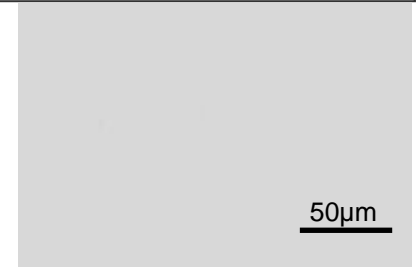
Categories	Free Cutting Steel	Carbon Steel for Machine Structural Use	Alloy Steel	Bearing Steel
Required Performance	Nonmetallic Inclusions Dispersed and Controlled		Nonmetallic Inclusions Almost Completely Removed	

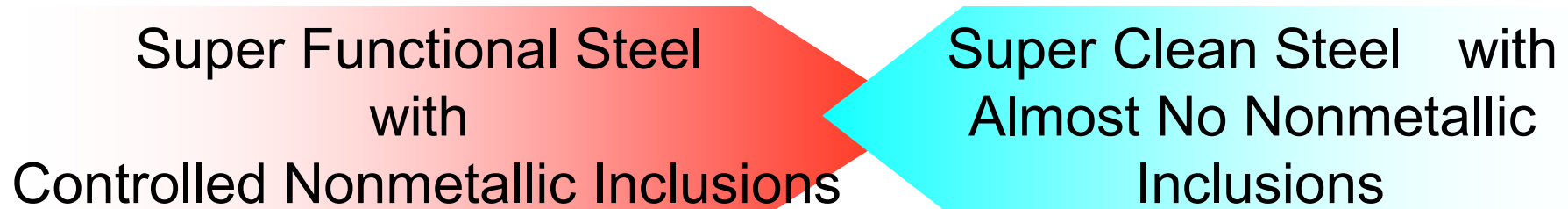


Non-lead free cutting steel



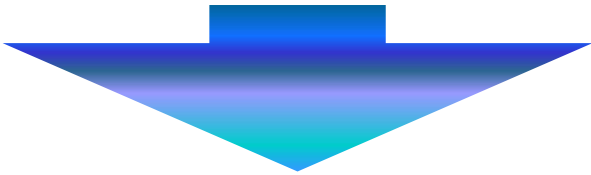
Bearing Steel





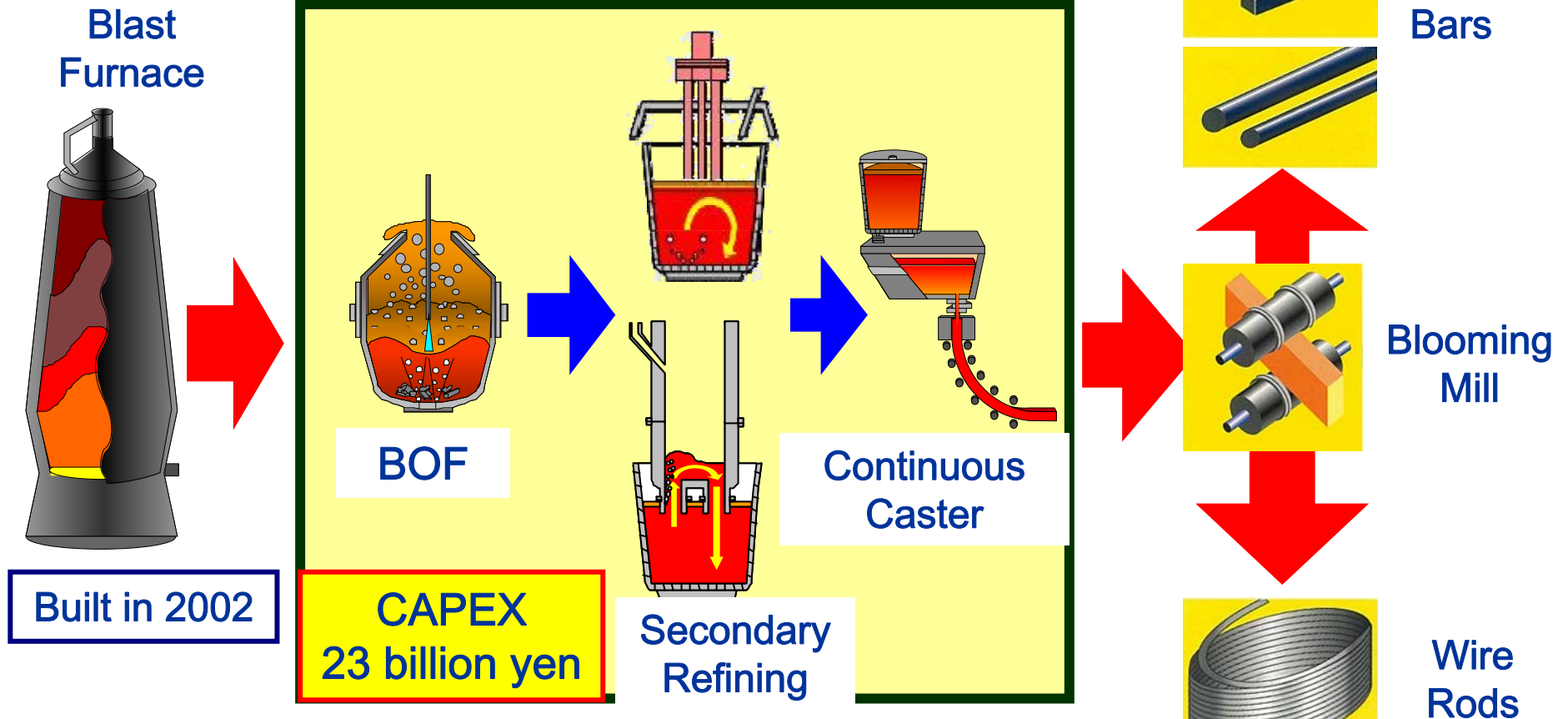
Stricter customer specifications
will eventually exceed
capabilities of our facilities

Demands Measures to Meet Stricter Customer Specifications : Quality & Reliability
(Zero Defects + Minimized Variation in Performance)



The Key to Quality & Reliability:
Innovative Steelmaking Process

Investment in Steelmaking



Critical Process

Vital to the Quality of Specialty Steel

New BOF

Dephosphorization Furnace (Removal of Phosphorous)

New LF

Heating and Secondary Refining

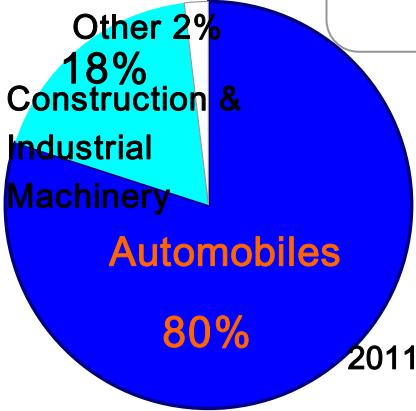
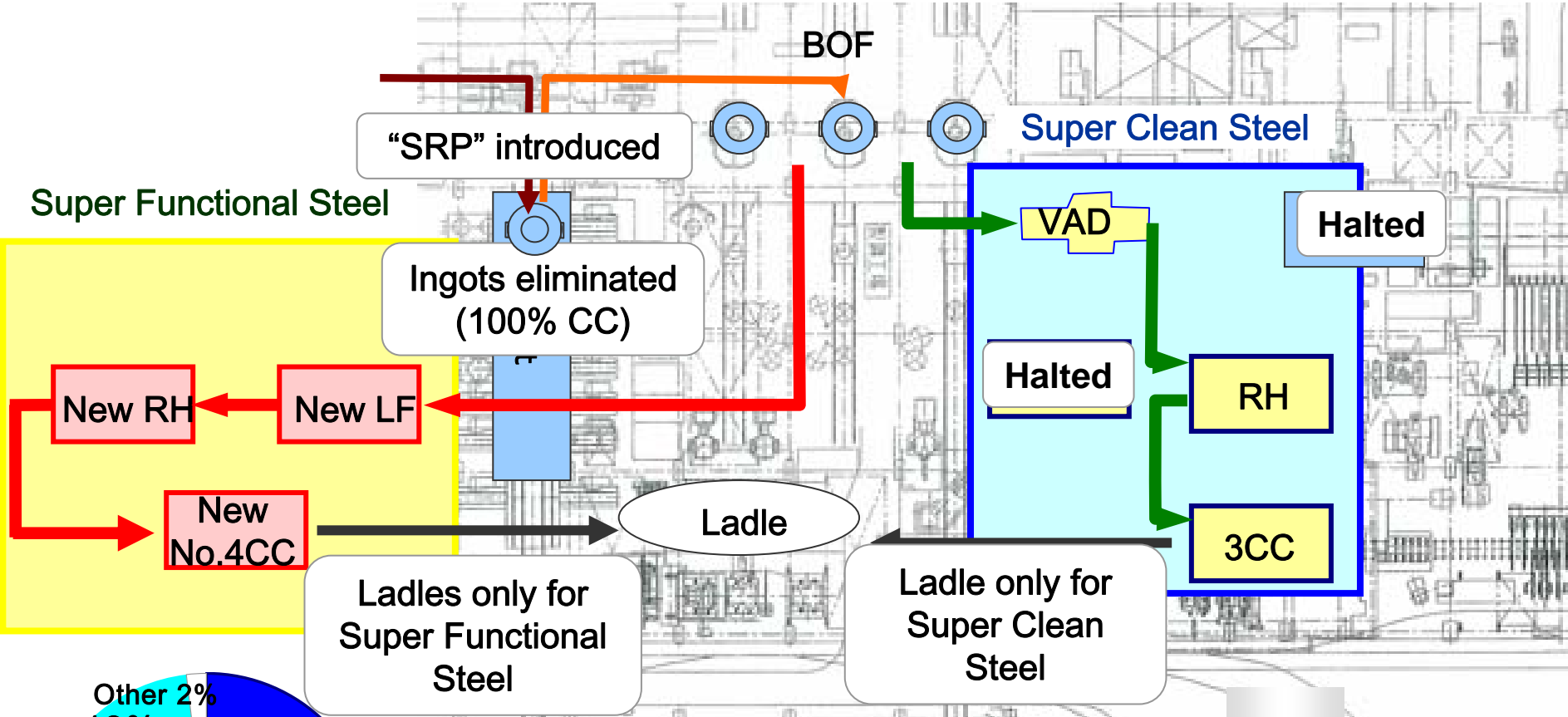
New RH

Secondary Refining in Vacuum Vessel

New No.4 CC

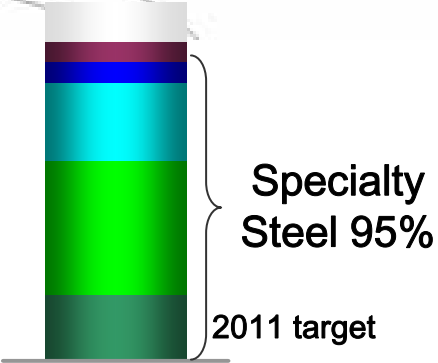
Curved Type + Segregation Control

CAPEX 23 billion yen



2011 target

Completely separate processes for different products:
Super Clean Steel and Super Functional Steel

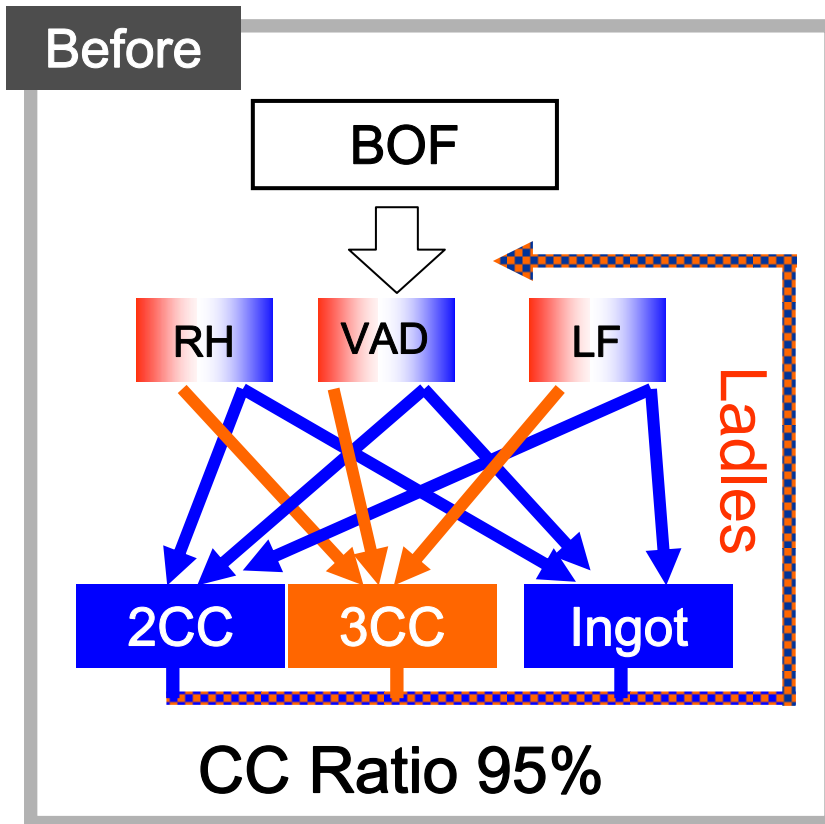


Separate processes: super clean steel and super functional steel

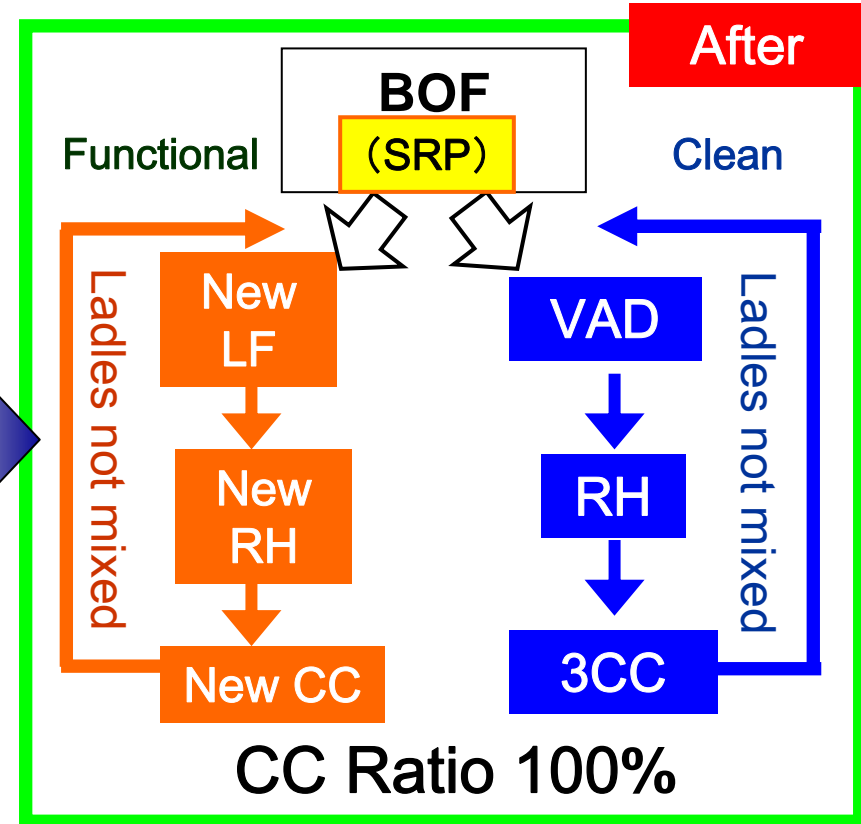
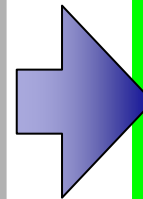


Super Functional Steel → Non-metallic Inclusions dispersed and controlled

Super Clean Steel → Non-metallic Inclusions almost completely removed



Complicated product flow
Contamination of refining vessels and ladles



Exclusive facilities
for each product category
→ High efficiency and high quality

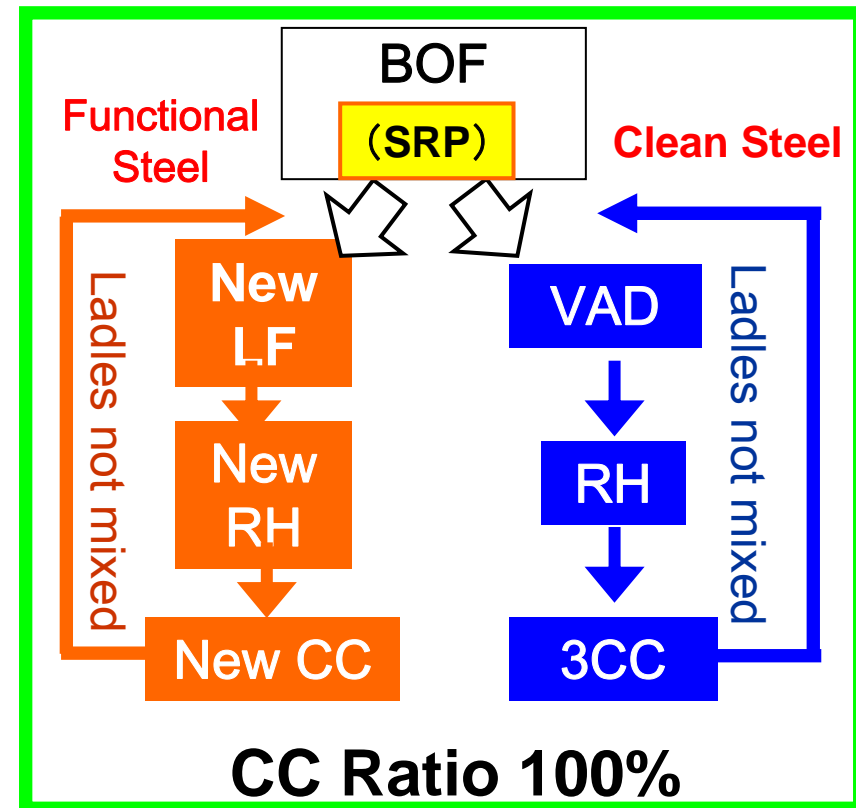
Steelmaking Technology: Evolution of Process Used at Wakayama

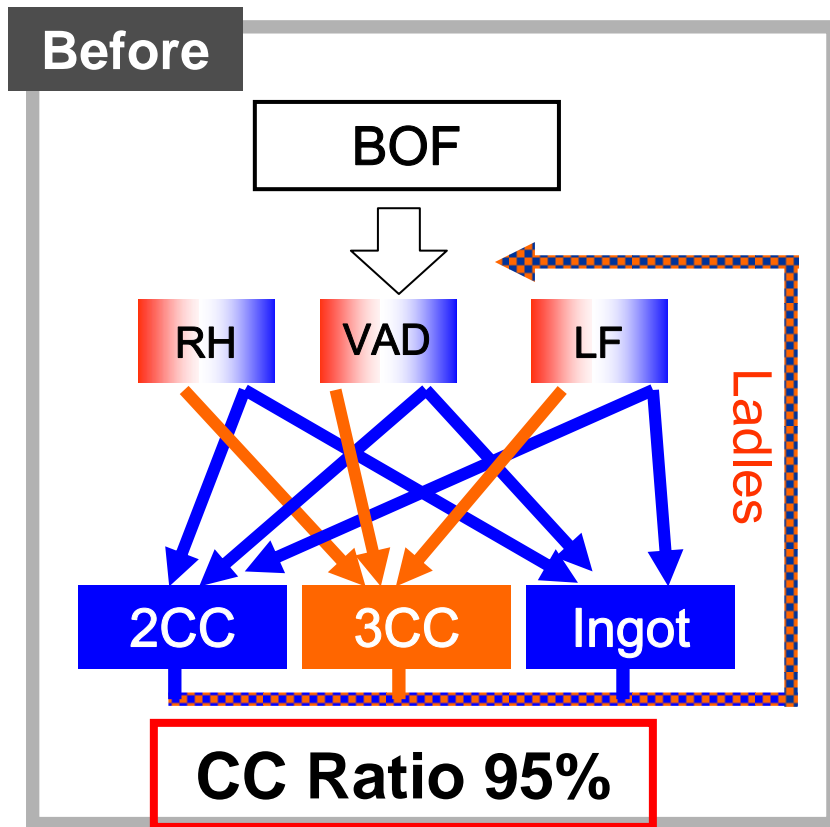
Technology Developed at Wakayama

(Awarded Okochi Prize)

Evolved into Innovative Steelmaking Process

at Kokura





Use of ingots essential for some products
in previous process

New No.4CC

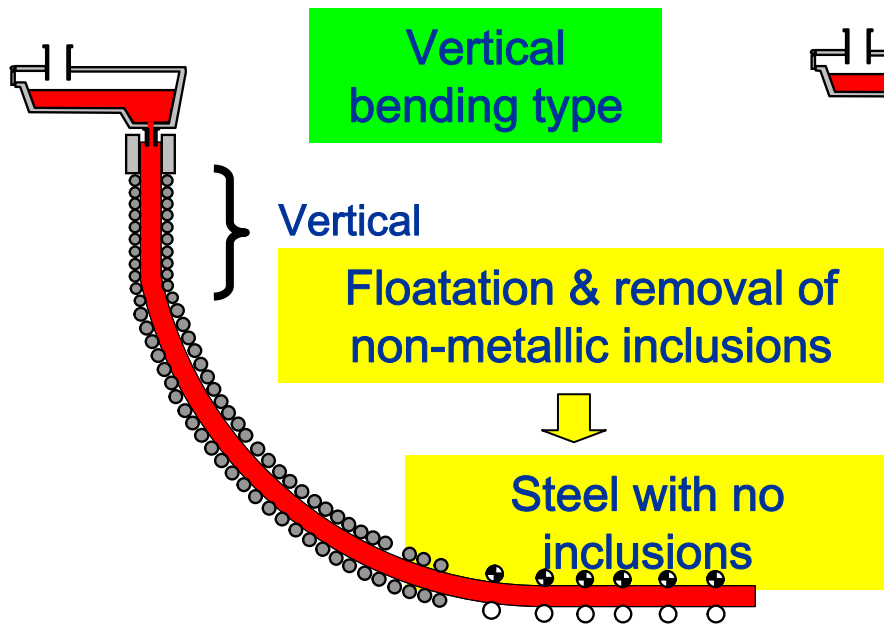
Curved Type + Segregation Control

CC Ratio 100%

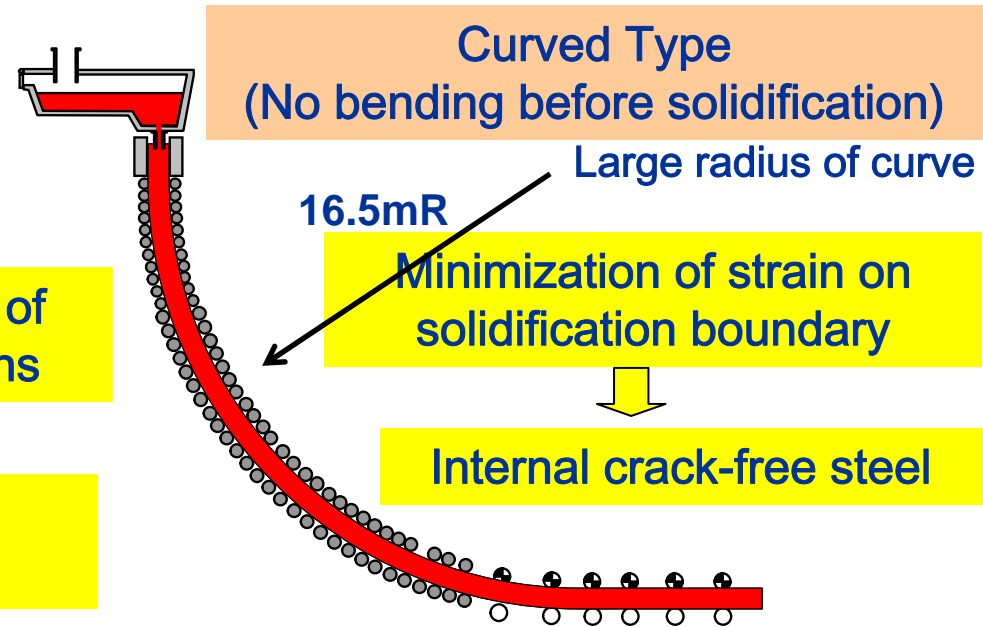
Even with new process, some products still require ingots
Plan to reduce sales of those products (small volume, low margins)

Two CCs: Clean Steel Only / Functional Steel Only²¹

No.3CC: Clean Steel Only

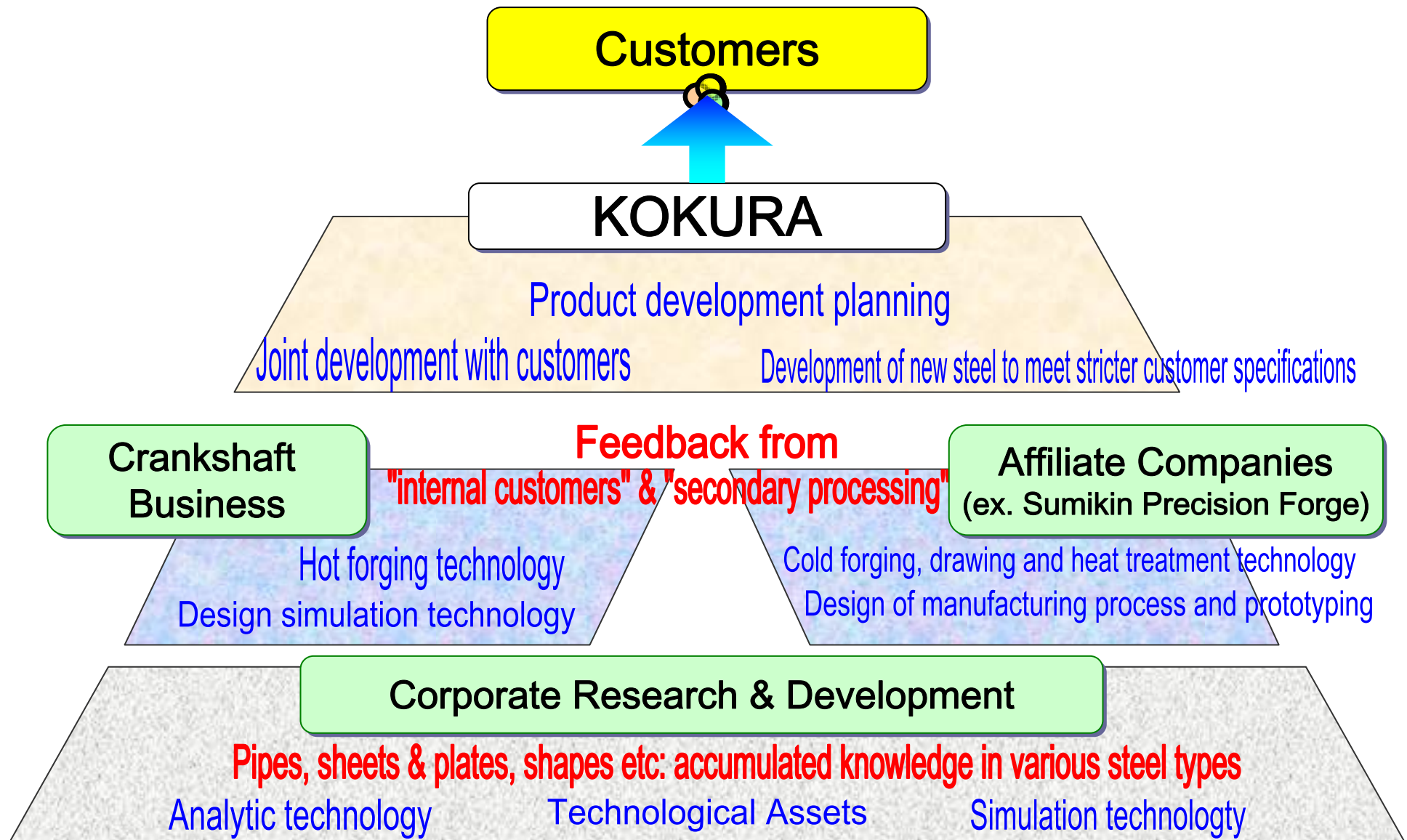


New No.4CC Functional Steel Only



	No.3CC VB type (clean steel)	New No.4CC Curved type (functional steel)
Floatation of non-metallic inclusions	◎	○
Internal crack	△	◎

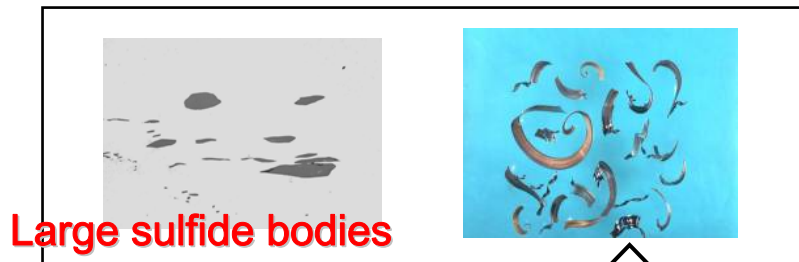
Organization for Development: Cooperation Within Sumitomo Metals Group



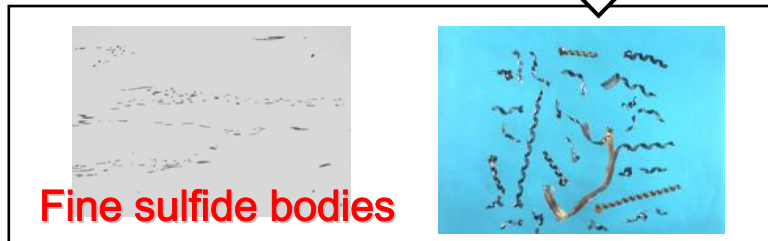
Development of Non-leaded Free Cutting Steel - Environmentally Friendly “Sumigreen” Series -

- Non-leaded
- Machinability
- Dramatic improvement of machinability by controlling sulfide morphology

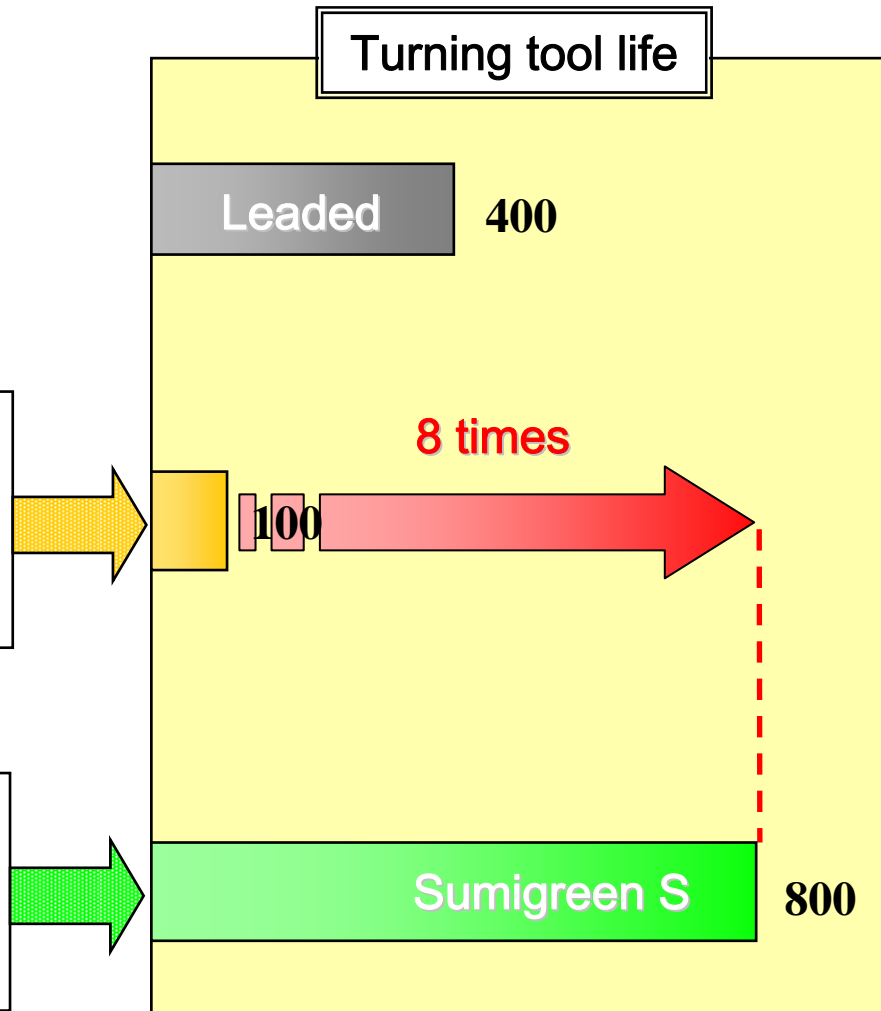
Previous Products



Sumigreen S

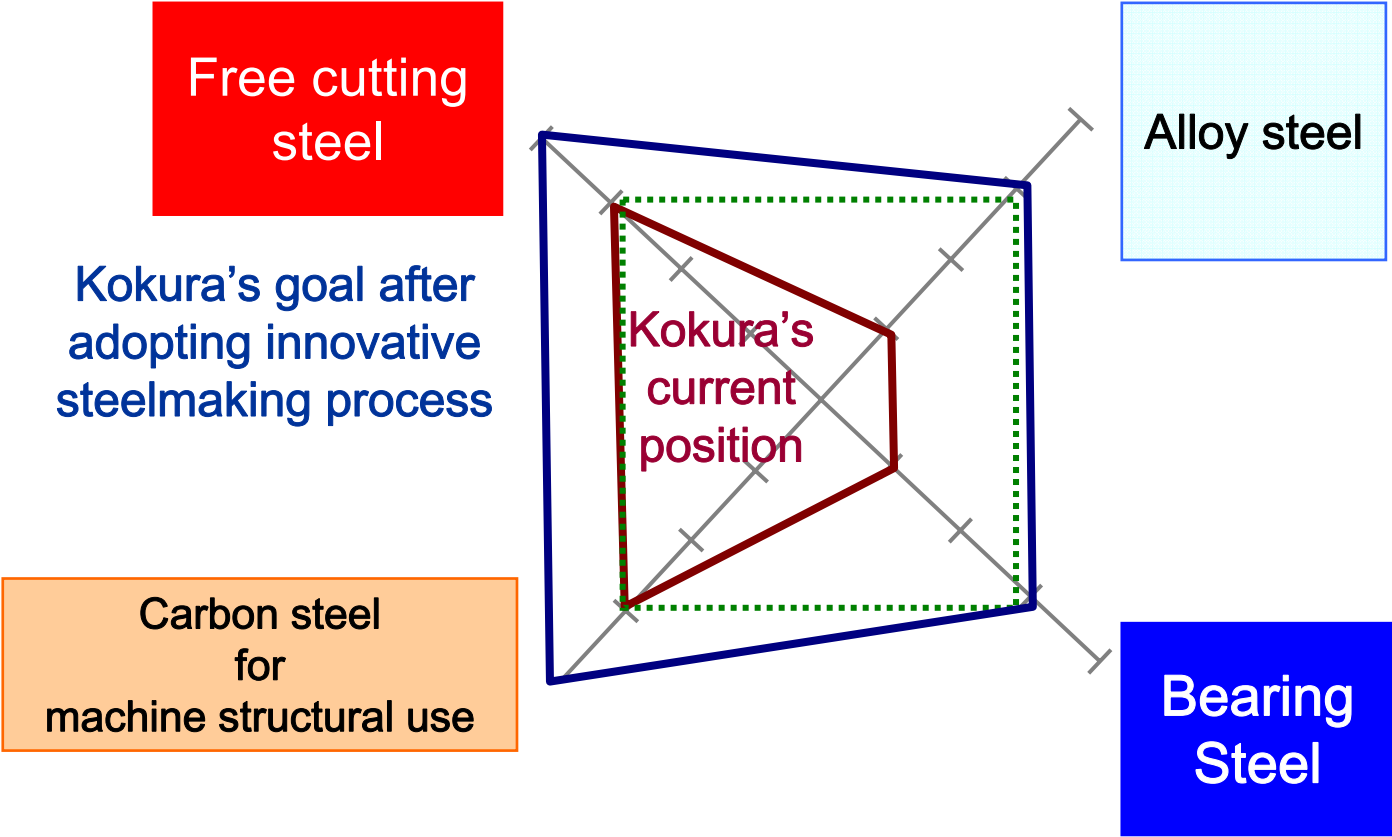
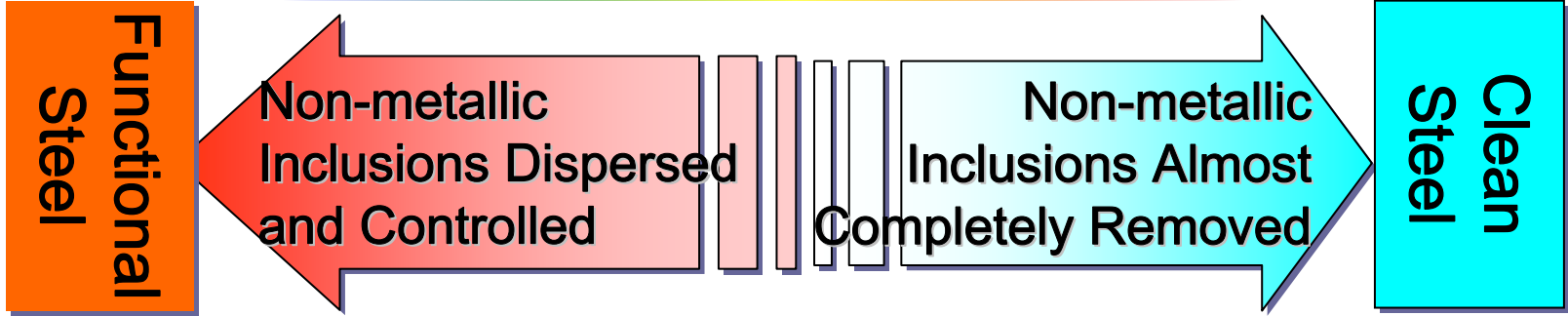


cutoffs





- Awarded: “Supplier Award” from Honda Motor (2002)
(Used in crankshafts for “Jazz”, “Accord” and “Acura RL”)

Kokura's goal after adopting innovative steelmaking process²⁴



Innovative Steelmaking Process (construction schedule)

	07				08				09				10
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	
Full separation of Functional Steel & Clean Steel													
SRP introduction													

CAPEX 23.0 billion yen

contribution ratio

Cost improvement using SRP

22%

Higher yield due to
CC100% + Quality improvement

58%

Improved product flow
(reduction of heat loss)

11%

Maintenance cost ↘
Labor productivity ↗

9%



Cost reduction: 4 billion yen/year

No.1 for Quality

Completely separate processes for different products: super clean steel and super functional steel

New Steelmaking Plant

No.1 for Cost

New Blast Furnace +
100%CC +
“SRP” Process

No.1 for Product Development

Focus on Four Categories
+ Collaboration with
Crankshaft Business

- SRP (Simple Refining Process): The steelmaking process applied for the first time at Sumitomo Metal's Wakayama Steel Works. Awarded Okochi Grand Production Prize in 2006.

Sumitomo Metals applied a top and bottom blown basic oxygen furnace for preliminary phosphorous removal, thereby dividing phosphorous and carbon removal processes between two different furnaces. By setting optimal conditions for each stage of refining, Sumitomo Metals achieved three goals simultaneously: higher quality (phosphorous less than 100 ppm), greater efficiency (9 minutes refining time) and lower environmental impact (significantly reduced emissions of slag and CO₂.)

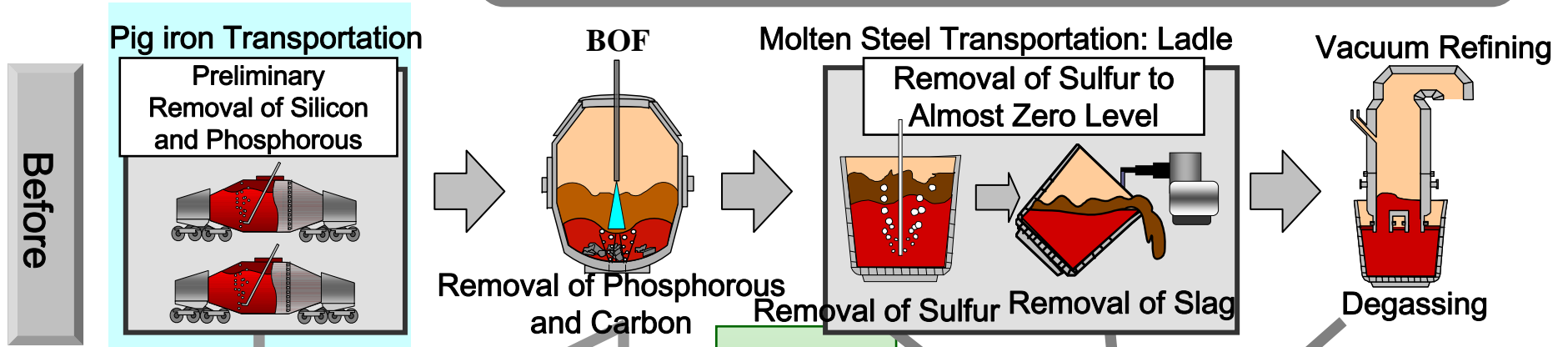
- Secondary refining: The steel refining process is divided into two categories: primary refining, to remove carbon from pig iron; and other processes, collectively called secondary refining. Secondary refining usually takes place in the ladle, which is a transportation vessel for molten steel. Secondary refining is, by removing impurities and adjusting elements, very important for the production of high-grade steel. Examples include RH, LF, VAD.

SRP (Simple Refining Process)

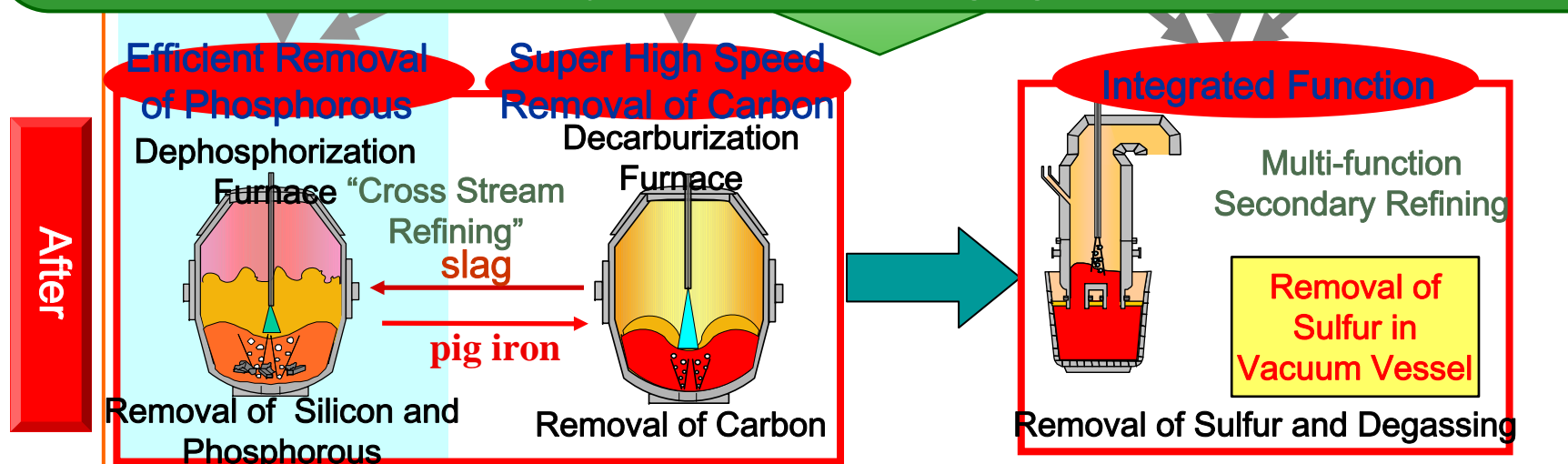
High-grade Steel

Complicated process and increased impact on environment

Unable to meet customer requirements



Simple Process with BOF & Vacuum Refining Furnace
Capability to Manufacture High-grade Steel

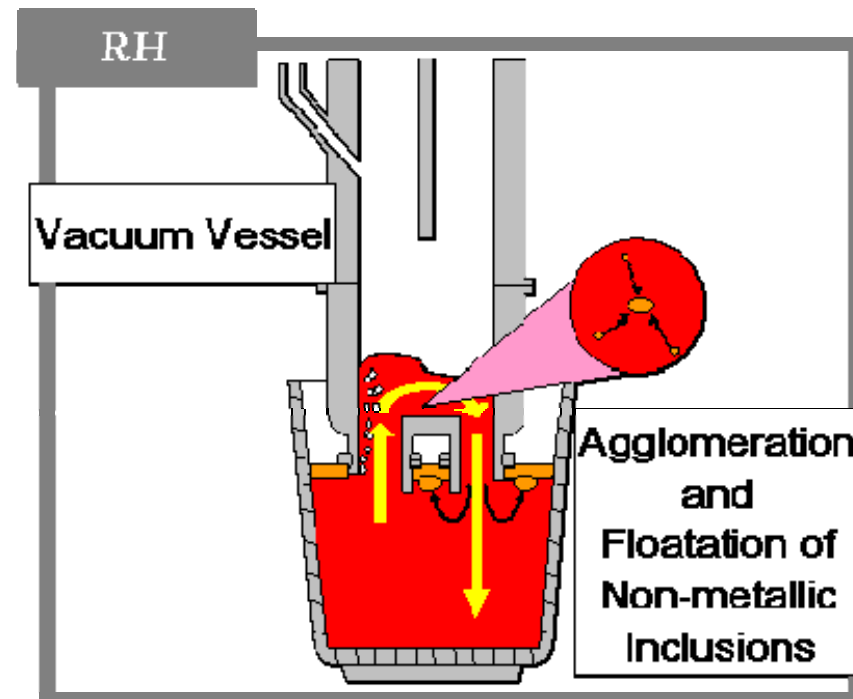


Development of Simple Refining Process

- RH (Ruhrstahl-Heraeus):

The RH process is composed of a vacuum vessel and two tubes (suction tubes) immersed in molten steel in a ladle. Molten steel is sucked into the vacuum vessel through one suction tube at which point argon gas is injected. The molten steel then flows out back to the ladle through the other suction tube.

During the RH refining process, degassing and intensive stirring take place in the vacuum vessel. This facilitates agglomeration of non-metallic inclusions, which then float to the surface. This process is therefore effective for reducing non-metallic inclusions.



- LF (Ladle Furnace):

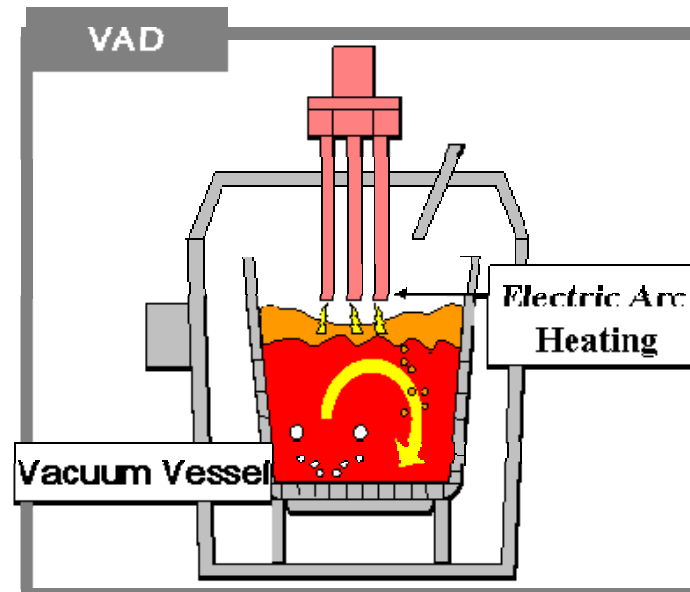
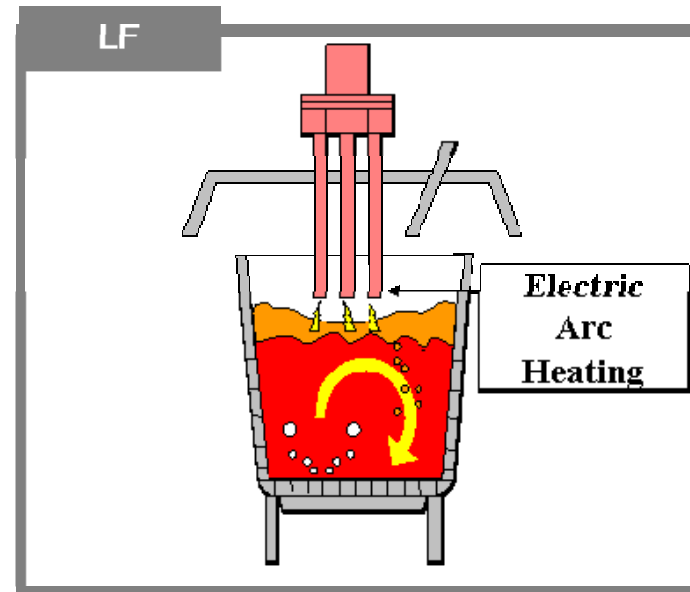
A secondary refining process whereby molten steel is heated in ladles using an electric arc. Electric furnaces employ the same heating mechanism.

The LF process is effective in reducing and controlling sulfur and controlling non-metallic inclusions in molten steel.

- VAD (Vacuum Arc Degasser):

Similar to the LF process but with a vacuum degassing vessel.

The most harmful non-metallic inclusions are oxides, and this process is more effective for reducing oxide inclusions than LF.



- **Non-metallic inclusions:** Chemical compounds which are present in steel and alloys such as impurities that arise through the refining process. They include oxides, sulphides and nitrides. Oxides are the most harmful for fatigue strength of bearing steel etc.
- **Forging:** One method of forming metal. Shaping metal by plastic deformation (non-reversible change of shape) through pressing or hammering etc. Die-forging, which uses a die in the shape of the product, is widely used for mass production of automobile parts. Forging also improves the strength of the metal by refining its microstructure. Hammering by a blacksmith is an example of forging. Hot forging, whereby the metal is heated, is commonly used, while cold forging is becoming increasingly popular.
- **Machinability:** Indicates how easy it is to process steel material with machine tools such as lathes. Generally illustrated by the durability of machine tool heads.