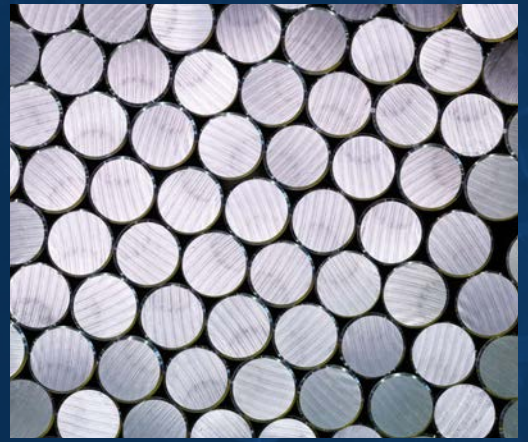




# GLOBAL STRENGTH IN SPECIALTY STEEL



# OUR COLLABORATION

The collaboration between Nippon Steel, Sanyo Special Steel and Ovako is focused on bringing out the best in each other to achieve one common goal: making our customers more successful than ever. We do this by combining our expertise, products and support in a leading global offering.

Our expanded offering gives customers the added convenience of choosing from the world's widest range of specialty steel products. Optimized global production and supply also gives them the reliable deliveries they need. And the joint strength of our R&D resources helps accelerate their innovation, boosting competitiveness. Finally, through our environmentally efficient production, strong industrial ownership, global supply and worldwide customer-support capacity, we ensure an unrivalled level of sustainability and availability.



## Convenience

The world's widest range of specialty steel products provides our customers with the exact solution they need for their specific industrial applications. Our experience in meeting demands for product quality means that we can be our customers' first choice, especially since we are certified to meet most quality and environmental standards, whether from ISO, JIS or IATF.

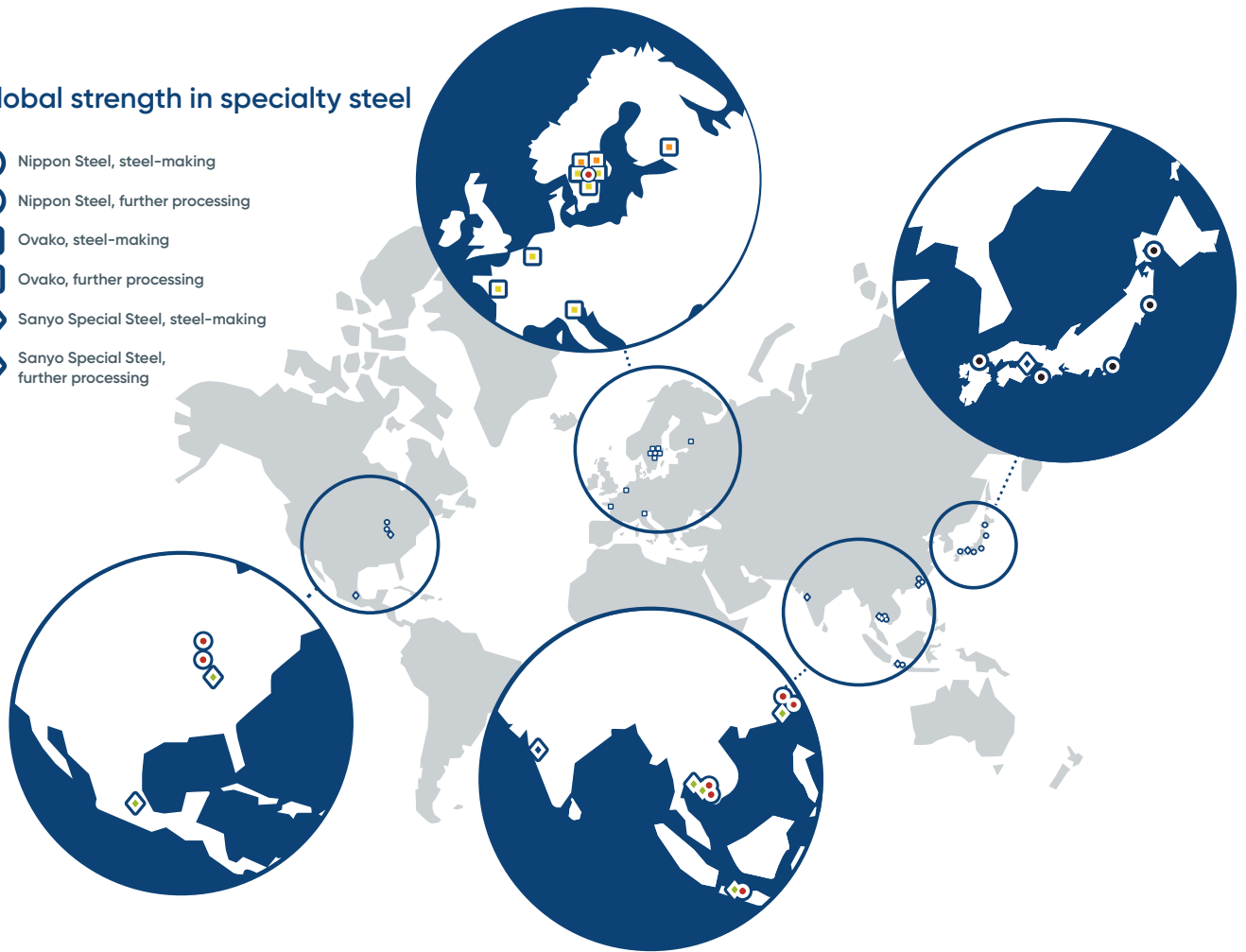
## Availability

The combination of global operations and sales channels means that we can provide even better customer service. Combined sales organizations across the world, in combination with well established trading channels and value-adding logistics, gives new advantages. It allows us to provide leading-edge technical support as well as tailored logistics for customers wherever they are.



## Global strength in specialty steel

-  Nippon Steel, steel-making
-  Nippon Steel, further processing
-  Ovako, steel-making
-  Ovako, further processing
-  Sanyo Special Steel, steel-making
-  Sanyo Special Steel, further processing



## Reliability

Nippon Steel Group is financially one of the strongest steel manufacturers in the world, renowned for long term cooperation in close partnership with customers. A broad portfolio of steel metallurgies, rolling mills, and many complementary downstream operations means that we can always find several alternative global supply routes for customers. This allows peace of mind, as our customers know they can rely on us.

## Innovation

At each of our R&D locations we have a proud history of having developed advanced products for many types of highly demanding applications. Now that we offer the combined experience of these centers of excellence, we are opening new doors for even better collaboration with customers who are seeking leadership in their specific markets.



## Sustainability

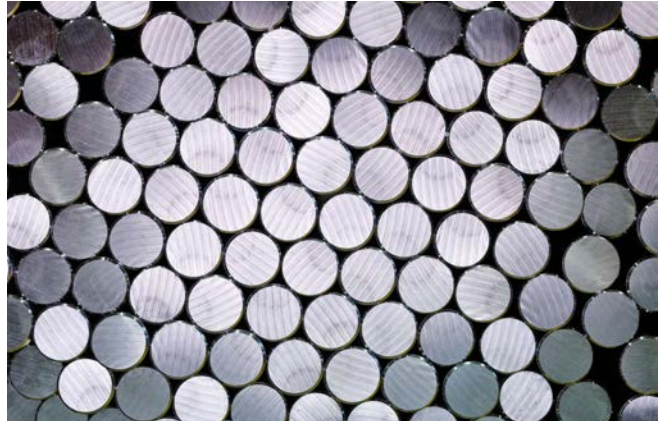
The collaboration that we now enjoy is based on strong industrial ownerships as well as environmentally efficient steel production, whether scrap, or ore-based. Our focus is long-term, and we are here to stay. This also means that we look at our customer relations from the long-term perspective. We want to build robust and sustainable supply chains, with the aim to develop steel solutions that build a better future.



# OUR OFFERING

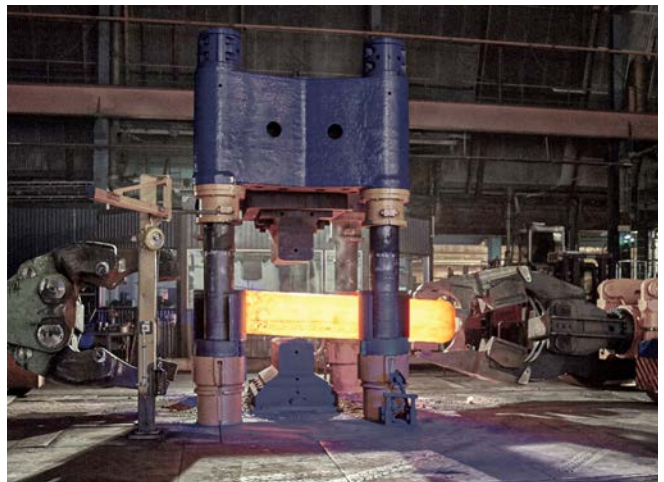
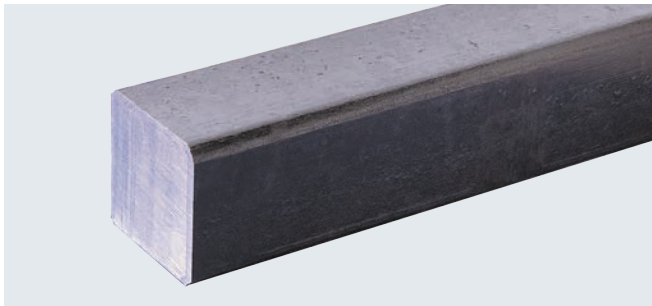
## Bar steel, rolled round 14–400 mm

We meet close dimensional tolerances for round bar, and our many rolling mills enable us to serve most customer requirements. We can also supply many types of bright bar, i.e. drawn, peeled or ground bars to provide a solution that optimizes total costs.



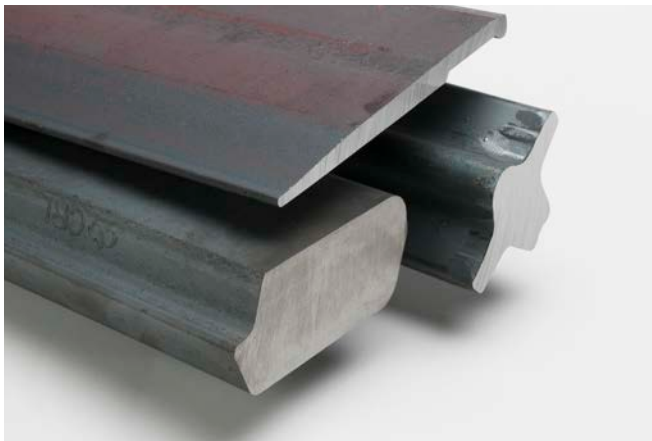
## Bar steel, rolled square 24–550 mm

Our round corner square bar has a uniform internal structure and very good surface quality – which is an absolute requirement when producing drop-forged parts.



## Bar steel, forged 150–880 mm

Forged bar is an alternative to rolled bar, especially for larger dimensions. Forged bar tends to have an improved center soundness and can offer an improved solution for low reduction ratios.



## Special profiles and flat bar

We have the ability to supply bar steel in flat shapes as well as in many hundred variants of profiles, helping customers reduce their machining operations and increase productivity. These bar products are characterized by excellent straightness and shape as well as good surfaces and low decarburization. Special profiles are rolled in widths ranging from 15 to 300 mm and thicknesses from 5 to 60 mm.

## Wire rod/Bar in coil 3.6–60 mm

Many bar sizes can be supplied in continuous lengths on coils. Some of our mills are designed to produce wire rod, while others offer bar on coils for larger dimensions. Wire is produced by our sister companies across the global Nippon Steel Group. Ovako offers a specialty wire, known as SR-100, which is a surface-removed and inspected wire.



## Seamless bearing and mechanical tube

Our tube products are characterized by uniform properties and close tolerances. Mechanical tubing is used for producing bearings, for general engineering and with special emphasis on machinability. It is also used for producing chassis components with high strength and close tolerances. Our wider tube and pipe portfolio includes many more products.

## Rolled and forged rings

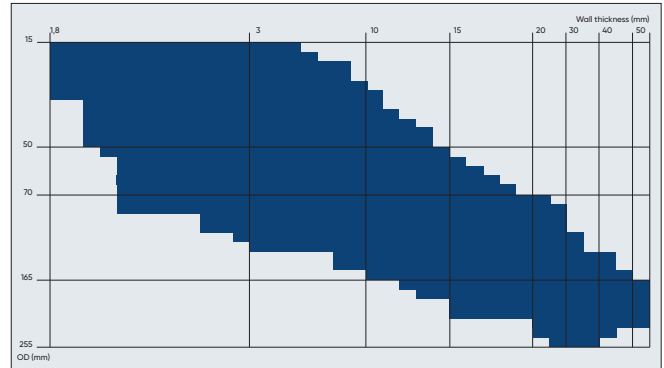
Our ring portfolio includes rolled and forged rings, covering a wide range of dimensions. Few ring producers can match our commitment to consistent quality and our abilities for rolling profiled rings. We produce rolled rings from 0.5 to 5000 kg in weight, in outer diameters from 70 to 4000 mm and a ring height from 20 to 950 mm. We can also produce forged rings from 0.45 to 3400 kg in weight, in outer diameters from 40 to 2200 mm and a ring height from 25 to 1400 mm. Lower heights may be achieved by parting off the rolled or forged height.



## Pre-components

Near net shape products are supplied by profiling bar or rings.

We can also supply many variants of cut tube or bar to allow our customers to focus their core production steps. This typically makes the complete production chain more efficient. Cut tube is an alternative route for ring products. Machined flat and round bar components can be produced large scale and in-line with our other production. We can also supply machined rings.



## Hard-chrome plated bar & tube 20–95 mm

Ovako Cromax is a pioneering technology leader in its field. A unique combination of in-house production from steel mill to plating ensures unmatched quality and consistency of base materials and surfaces.



## Other forged and fabricated parts

We can supply many types of formed and fabricated value-added parts used widely as semi-processed products for bearings and automotive components. These value-added operations are provided globally as an integral part of the supply chain for our key customers. They form an important element of our extensively integrated production processes.

### Steel grades

- Carbon steel
- Boron steel
- Spring steel
- Free-machining steel
- Quench & tempering steel
- Case-hardening steel
- Micro-alloyed steel
- Bearing steel
- Stainless steel
- Precipitation-hardening steel
- Tool steel
- High-speed steel
- Nickel-based alloys

### Other product forms from the Nippon Steel Group

#### Pipe and Tube

- Seamless
- Butt-welded
- Electric-resistance welded
- Electric-arc welded
- Cold-drawn
- Coated pipes and tubes

#### Powder metallurgy

- Metal powder
- Powder metallurgy products
- Sputtering targets

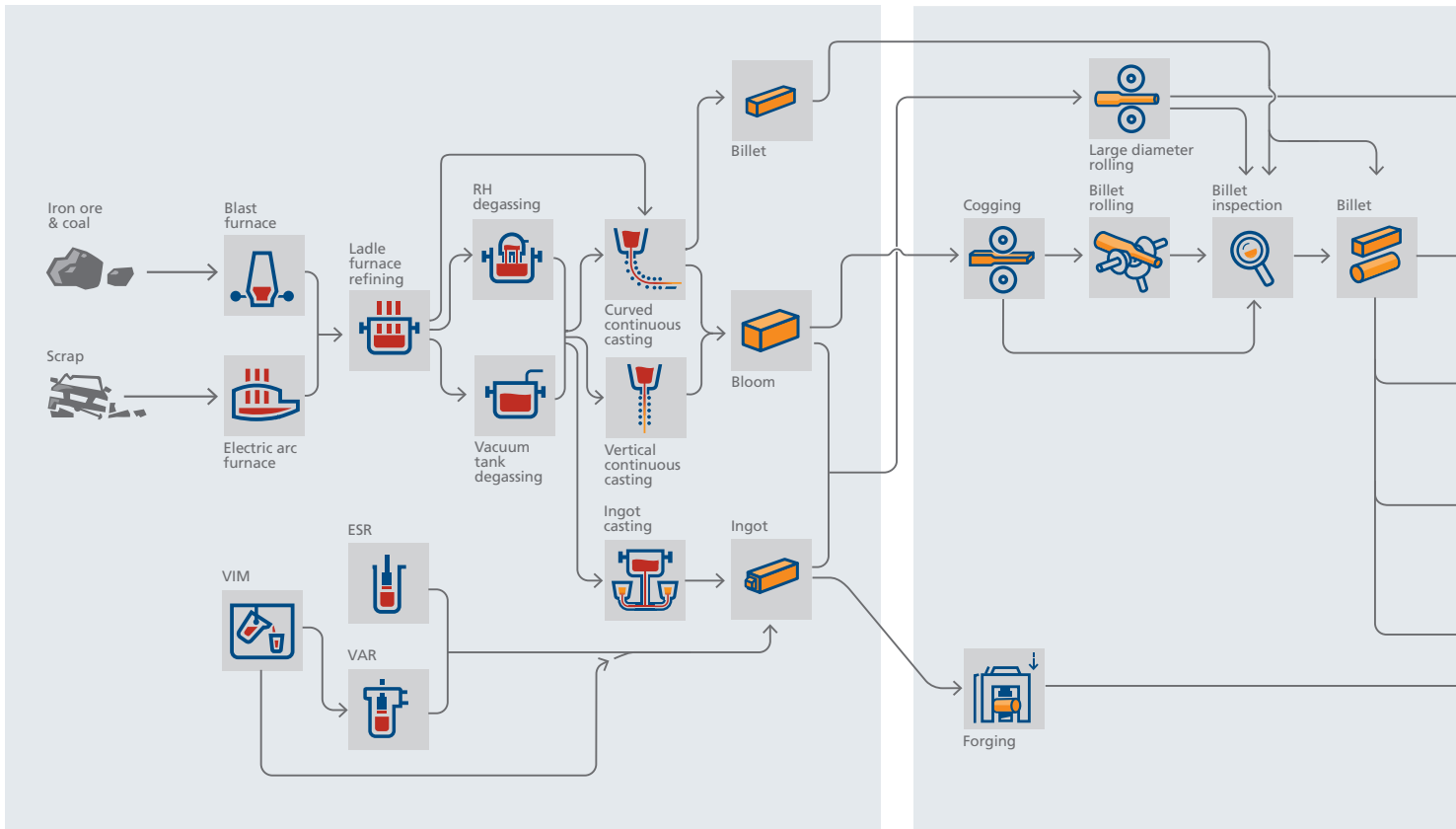
#### Sheet and Plate

- Heavy plate
- Medium plate
- Hot-rolled sheet
- Cold-rolled sheet
- Tin-free steel
- Hot-dipped galvanized sheet
- Other metallic coated sheet
- Pre-coated sheet
- Cold-rolled electrical sheet
- Rolled titanium products

# OUR PRODUCTION

## MELTING/REFINING/CASTING

## HOT WORKING



### SWEDEN

The collaboration between Nippon Steel, Ovako and Sanyo Special Steel includes specialty steel melting at nine global locations, enabling a world-leading range of products for many applications.



**Hofors/Hällefors**  
100t EAF. Ingot casting of higher alloyed and high-quality clean steel. Bar, tube, rings.



**Smedjebacken/Boxholm**  
125t EAF. Billet-sized continuous casting. Specializes in flat/profiled bar.

### FINLAND



**Imatra**  
75t EAF. Bloom-sized continuous casting. Specializes in clean steel and several bar formats.

### INDIA



**Khopoli**  
50t EAF. Ingot and continuous casting process. Specializes in clean steel, bar and rings.

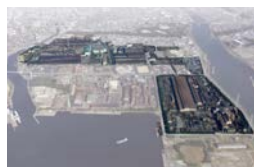
### JAPAN



**Kyushu**  
BOF. New 350t continuous casting. Wide range of bar and wire. In-house secondary processing facilities.



**Kansai**  
BOF. Continuous casting. Produces large diameter bar as well as seamless pipe and tube.



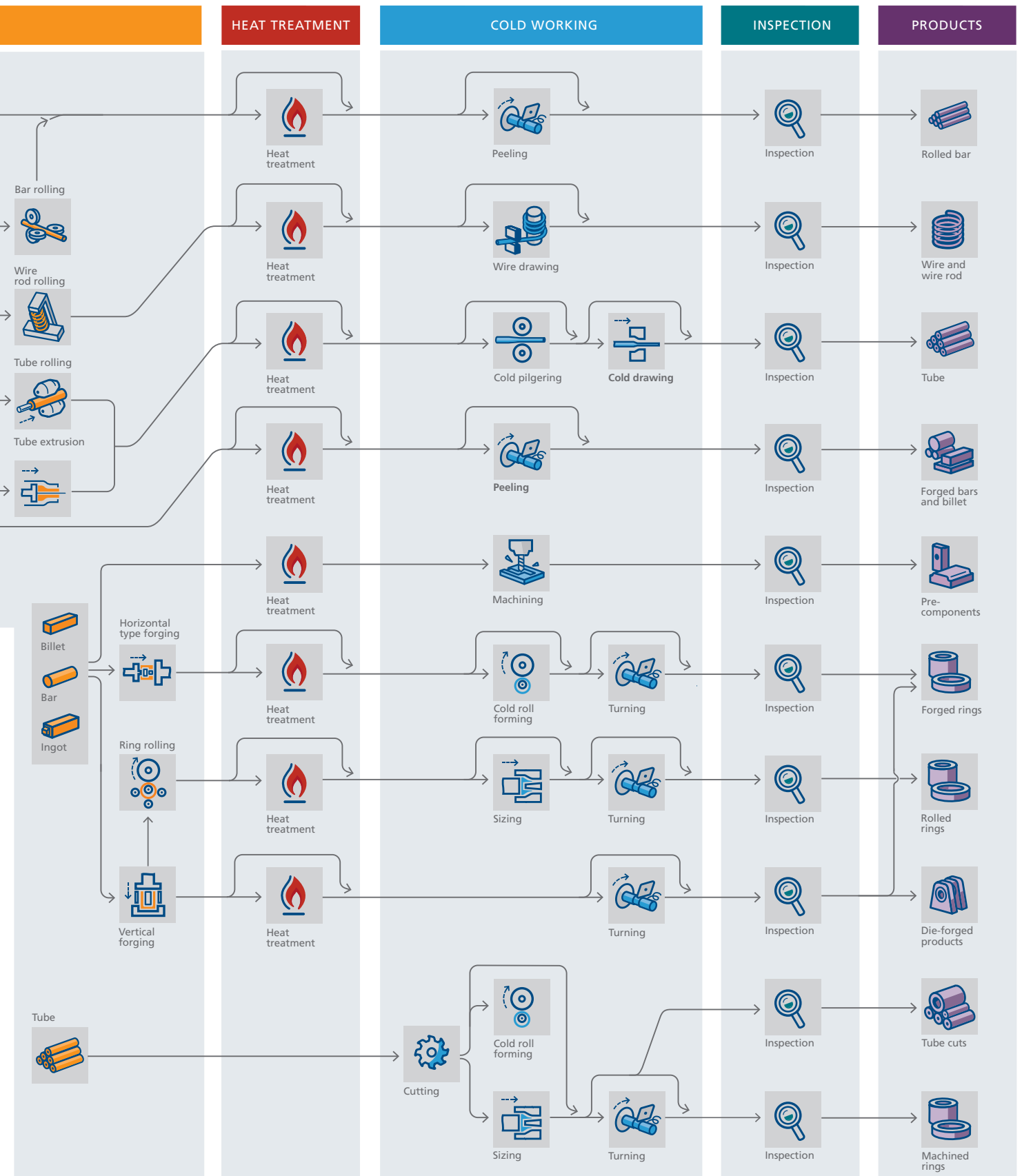
**Himeji**  
150/60t EAF. Vertical continuous casting. Bearing/alloy/stainless/tool steel. Bar, tube, rings.



**East Nippon**  
BOF. Continuous casting. Specializes in high carbon wire, specialty steel wire for cold heading.



**North Nippon**  
BOF. Continuous casting. Wide range of bar and wire. In-house secondary processing facilities.



We also produce a world-leading range of hard-chromed bar and tube. Metal powder with a consistent round shape formed by spraying gas into metal melted in vacuum is another speciality. This also allows us to manufacture all kinds of powder metallurgy products and sputtering targets.

# CREATING CUSTOMER VALUE THROUGH COLLABORATION

