Characteristics

1 Superior Material
NIPPON STEEL production system begins with advanced metallurgy and clean BOF steelmaking practices. After continuous casting, at hot-rolling process, hot-rolled strip of optimum quality for pipe making is produced.

2 High Dimensional Accuracy
High uniform wall thickness and smooth finish free from nonmetallic inclusions and surface defects provide Linepipe with a superior level of quality and excellent dimensional accuracy as well as high performance properties.

3 Variety of Products
- High strength linepipe
- High toughness linepipe
- Anti–Sour linepipe
- OCTG pipe

4 High Reliability of Weld
The unique welding condition control and monitoring system ensures quality of the weld along its entire length.

5 Excellent Quality
From steelmaking to pipe manufacture, quality is strictly controlled through every production step to ensure pipe products. Testing and inspection include body lamination UST, highly sensitive UST for weld seam, hydrostatic testing and numerous mechanical tests.
24-inch Mill Manufacturing Process

- Blast Furnace
- Basic Oxygen Furnace
- Degassing
- Continuous Casting
- Slab
- Hot Strip Mill
- Uncouling, Leveling, Shearing
- Edge Milling
- Coil Edge UST
- Forming
- PWP HF-Weilder
- Outside and Inside Weld Bead Removing
- Seam Heat Treatment
- Sizing
- Pipe Body UST
- Cutting
- Facing
- Flattening Test
- Hydrostatic Test
- Seam UST
- Final Inspection
- Marking
- Drift Test and Inspection
- Threading and Beveling
- Coupling Power Tightening
- Products
- Products
16-inch Mill Manufacturing Process

Blast Furnace

Basic Oxygen Furnace

Degassing

Continuous Casting

Hot Strip Mill

Slitting

Uncooling Leveling

Shearing and Welding

Looper

Edge Milling

Coil Edge UST

X-Ray Gauge

Forming

PWP

HF-Welder

Outside and Inside Weld Bead Removing

Seam Heat Treatment

Cooling

Sizing

Straightening

Cutting

Hydrostatic Test

Straightness Inspection

Pipe End UST and Wall Thickness Inspection

Outside Diameter and Roundness Inspection

Pipe Body UST

Seam UST

Facing

Flattening

Test

Inspection

Weighing

Length Measuring

Marking

UV Coating

Threading

Coupling Screw-on and Power Tightening

Hydrostatic Test and Drill Test

Products

Products
### Principal Processes

#### Steelmaking
Degasging and desulphurizing during steelmaking process supply clean steel with low non-metallic inclusions.

#### PWP HF–Welder
Perfect Welding Process, developed by NIPPON STEEL, produces high-quality weld. A welded seam is inspected by ultrasonic tester.

#### Hot Rolling
Advanced hot rolling supplies hot coils with fine grain structure and high dimensional accuracy.

#### Welded Seam Heat Treatment
Seam heat treatment homogenizes microstructure and physical properties at welded zone as same as those of base metal. Exact seam position is indicated by fluorescent marker for weld seam tracking.

### HF–ERW Weld Heat Input Control

1. **Welding Phenomena**
Varying combinations of welding heat input, welding speed, pipe wall thickness, etc. produce different weld results.

   - **Low Heat Input**
   - **Optimum Heat Input**
   - **High Heat Input**

   ![Classification of Welding Phenomena](image)

2. **Weld Heat Input Control**
Welding conditions are monitored and controlled within the optimum range by using our unique weld heat input system to minimize oxides included in the weld seam.
**Reliable NDT System**

**1 Coil Edge UST**
After coil edge preparation, both edges of the coil are inspected for laminar imperfection with coil edge UST. (If required)

**2 Full Body UST**
Full body is inspected by a rotary UST unit along full length of welded pipe. (If required)

**3 Weld Seam UST**
Each pipe is inspected for weld seam imperfection with advanced automated UST for entire wall thickness.

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**Size Range of ERW Pipe**

NIPPON STEEL’s ERW pipe mills produce pipe with outside diameters from 4-1/2 inches (114.3 mm) to 24 inches (609.6 mm). The equipment to produce such pipes reflects NIPPON STEEL’s intent to meet the great demand for larger and heavier steel pipe.

**Wall Thickness**
To produce pipe with wall thickness up to 0.866 inches (22 mm) NIPPON STEEL has installed large scale forming & welding equipment.

**Length**
NIPPON STEEL’s ERW mills can produce pipes with length up to 60 feet (18.3 m). These long pipes reduce the number of weld joints and inspections necessary at the site, thus leading to faster construction and lower costs.
FACILITIES AND LOCATIONS

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