

High Alloy Steel & Ni-based Alloy

Features of JSW's Products

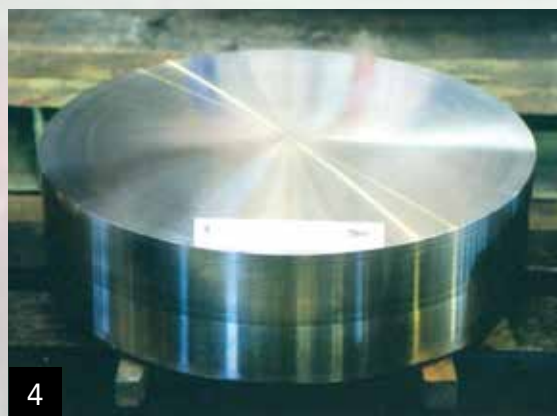
- High Quality Materials You Can Trust
- Flexibility to Your Various Demands

JSW has provided unique products based on our technological forging and heat treatment know-how accumulated through many manufacturing performance since foundation in 1907.

All of our products are build-to-order manufacturing, so that we can deal with many kind of customer's demands flexibly such as material shapes and non-standardized chemical composition.

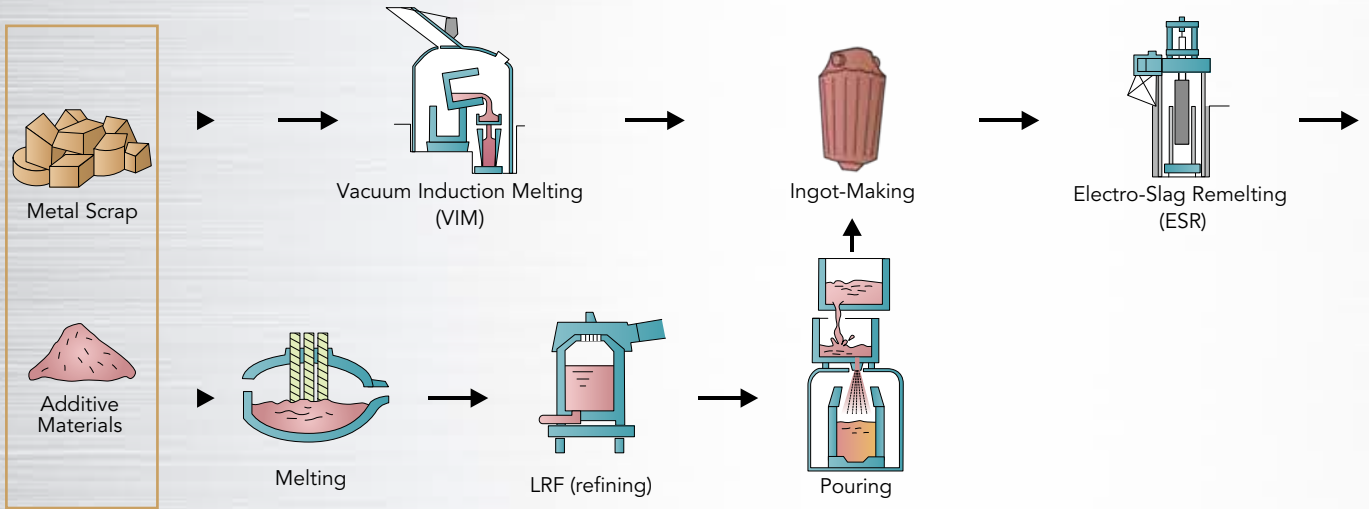
Large products made of high alloy steels, stainless steels and Ni-based superalloys are said to be difficult to produce due to segregation, transformation property and others, but we can provide you the reliable products with these compositions by the above high manufacturing technologies.

Application Examples



1. Rotor Shaft Material for A-USC Plant (N07706 mod.) O.D.877×L2,154mm, 10,500kg
2. Retaining Ring (S28200) O.D.2,040×I.D.1,850×L775mm, 3,600kg
3. Hollow Shaft (9%Ni) O.D.1,300×L17,000, 40,000kg
4. Gas Turbine Disk (N07718) O.D.746×Thk.211mm, 758kg
5. Turbine Rotor Shaft (S66286) O.D.892×L6,044mm, 7,540kg
6. Shaft Material for Coil Mounting (12Cr-12Ni-10Mn-5Mo) O.D.616×I.D.200×L760mm, 1,297kg

Manufacturing Flow



VIM (max.6ton)



ESR (Left: 150ton, Right: 30ton)



ESR ingot

150ton-
Available max. size of
ESR ingot



**Forging Press
(14,000ton)**



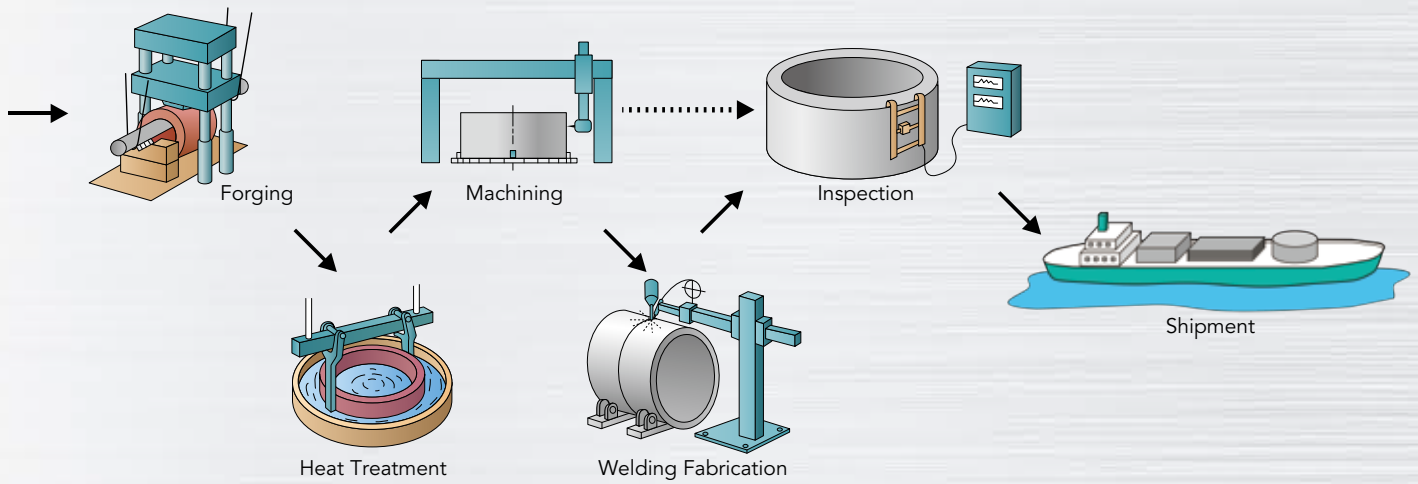
Heat Treatment Furnace



4-high Plate Mill



**Pipe Forming Press
(12,000ton)**



Large-size NC Vertical Lathe



Large-size Lathe (400ton)



Pressure Vessel Welding Fabrication Line

Typical Size Availability (ESR)

Grade or Trade Name	Standard		Typical Composition	Max. Size of ESR Ingot	
	UNS	JIS		Diameter (mm)	Weight (ton)
Tool Steel	T28200	SKD11	1.5C-12Cr-1Mo-V	850	14
High Ni Steel	K81340	SL9N	9Ni	1250	54
	K93600	-	36Ni	1250	54
Austenitic Stainless Steel (Non-magnetic steel)	S31600	SUS316	17Cr-12Ni-2.5Mo-low C	2150	150
	-	-	18Mn-18Cr-N	1050	30
Duplex Stainless Steel	S32900	SUS329J1	25Cr-4.5Ni-2Mo	2150	150
Ferritic Stainless Steel	-	SUS410L	13Cr-low C	2150	150
Martensitic Stainless Steel	S42000	SUS420J	13Cr-high C(-Ni)	850	14
Heat Resistant Stainless Steel	-	-	10Cr-Mo-V-Nb	2150	150
	-	-	12Cr-Mo-V-Nb-N	2150	150
PH Stainless Steel 15-5PH ¹	S15500	-	15Cr-5Ni-3.5Cu-Nb	1050	30
PH Stainless Steel A-286	S66286	SUH660	15Cr-25Ni-1.5Mo-2Ti-Al-V-B	1050	30
Ni based Alloy INCONEL ² alloy 625	N06625	NCF625	21Cr-9Mo-3.5Nb-2.5Fe-Ti-Al	650	5
Ni based Alloy INCONEL ² alloy 706	N07706	-	37Fe-16Cr-3Nb-2Ti-Al-B	850	14
Ni based Alloy INCONEL ² alloy 718	N07718	NCF718	19Cr-19Fe-3Mo-5Nb-Ti-Al-B	500	5

Grade Availability ~High Alloy Steel~

Grade or Trade Name	Standard		Typical Composition	Characteristic	Typical Application
	UNS	JIS			

High Mn Non-magnetic Steel

JSW289V	-	-	18Mn-5Cr-V-N	High hardenability and toughness	Retaining ring, Non-magnetic die
-	S28200	-	18Mn-18Cr-N	High abrasion resist.	Retaining ring
JSW 32Mn-7Cr	-	-	32Mn-7Cr-N	High toughness in cryogenic environment	Non-magnetic die, Structural parts of super conducting magnet

Tool Steel

-	T30402	SKD11	1.5C-12Cr-1Mo-V	High strength and abrasion resist.	Die
-	T12015	SKH10	1.5C-4Cr-12W-5V-5Co		Roll sleeve, Bearing
-	T20813	SKD61	0.4C-5Cr-1Mo-1V		Die, Tool at high temperature
Alloy 422 mod.	S42200 mod.	-	1.6C-11Cr-Mo-V-W		Tool at high temperature
JSW LS3	-	-	1.7C-12Cr-1.5Mo-2Co-1.5W-V	High strength in high temp. and abrasion resist.	Screw, Roll, Die

High Ni Steel

-	K81340	SL9N	9Ni	High toughness in cryogenic environment and strength	Structural parts of LNG tank
JSW 9Ni	-	-	9Ni-Mo		Disk and shaft of wind tunnel, Super conducting shaft
-	K93600	-	36Ni	Low thermal expansion coefficient	Lends tube, Lithography

Maraging Steel

-	K92890	-	20Cr-8Ni-Ti-Al	High strength, Abrasion and corrosion resistance	Die
-	-	-	18Ni-10Co-4Mo-Ti-Al		Parts of armament

Fe-Ni based Alloy

HAYNES ³ No.20 mod.	N08320	-	25Ni-20Cr-5Mo-Ti	Excellent corrosion resist. to oxidation	Hydrofluoric acid processing and caustic alkali processing equipment
Alloy 904L	N08904	-	25Ni-20Cr-5Mo-1.5Cu		
CARPENTER ⁴ 20Cb3	N08020	-	35Ni-20Cr-2.5Mo-3Cu-Nb	Excellent resist. to oxidation, IGSCC and seawater	Process piping, Chemical plant for flue gas desulphurization
INCOLOY ² 800H	N08810	NCF800H	33Ni-21Cr-Ti-Al	Excellent strength in high temp. and resist. to oxidation	Calciners dryers or recuperators in soda ash, Ore processing plant
INCOLOY ² 825	N08825	NCF825	42Ni-21Cr-3Mo-2Cu-Ti	Excellent resist. to oxidation and strength in high temp.	Hydrofluoric acid processing equipments for the production of sulfuric and phosphoric acid solutions
SANICRO ⁵ 28	N08028	-	31Ni-27Cr-3.5Mo-1Cu	Excellent resist. to phosphoric acid	

Grade Availability ~Stainless Steel~

Grade or Trade Name	Standard		Typical Composition	Characteristic	Typical Application
	UNS	JIS			

Austenitic Stainless

-	S30100	SUS301	17Cr-7Ni, C ≤ 0.15	High strength and ductility	In the field of nuclear, petrochemical and food industries, Structural part for high and low temp. service, Piping, etc.	
-	S30200	SUS302	18Cr-9Ni, C ≤ 0.15	Improvement of corrosion resist. for 301		
-	S30400	SUS304	19Cr-9Ni, C ≤ 0.08	Good corrosion resist. and weldability		
-	S30403	SUS304L	19Cr-11Ni-lowC (C ≤ 0.03)	High IGSCC resist.		
-	S30451	SUS304N1	19Cr-9Ni-N	Higher strength than 304 and 304L		
-	S31008	SUS310S	25Cr-20Ni	Good oxidation resist.		
-	S31600	SUS316	17Cr-12Ni-2.5Mo C ≤ 0.08	Pitting corrosion resist.		
-	S31603	SUS316L	17Cr-13Ni-2.5Mo-lowC	Higher IGSCC resist. than 316		
-	S31653	SUS316LN	17Cr-12Ni-2.5Mo-N-lowC	Higher strength than 316, 316L		
-	S31700	SUS317	19Cr-13Ni-3.5Mo	Improvement of corrosion pitting resist. and creep properties for 316		
-	S31703	SUS317L	19Cr-13Ni-3.5Mo-lowC	Higher IGSCC resist. than 317		
-	S32100	SUS321	18Cr-11Ni-Ti	High IGSCC resist. and creep properties		
-	S34700	SUS347	18Cr-11Ni-Nb			
-	S38100	SUSXM15J1	17Cr-13Ni-4Si	High SCC resist.		Flue gas desulphurization
NITRONIC ¹ 50	S20910	-	22Cr-12Ni-5Mn-2Mo-Nb-V-N	High corrosion resist. and strength		Spent fuel cask
-	S21400	-	15Mn-17Cr-N	High corrosion resist.	Coil case for nuclear fusion reactor	
-	S28200	-	18Mn-18Cr-N	High abrasion resist.	Retaining ring	
JJ1	-	-	12Cr-12Ni-10Mn-5Mo-N	High strength and toughness in cryogenic environment	Structural parts of super conducting magnet	
-	J92600	SCS13A	19Cr-9Ni	Casting of 304	Pump casing runner, Tie plate	
-	J92900	SCS14A	19Cr-11Ni-2.5Mo	Casting of 316	USC casing	

Duplex Stainless

-	S32900	SUS 329J1	25Cr-4.5Ni-2Mo	High pitting resist., oxidation resist. and high strength	Chemical handling equipment for the production of phosphoric, sulfuric, acetic acid solutions and for urea plant
-	-	SUS 329J2L	25Cr-6Ni-3.5Mo-N	Excellent resist. to seawater, high strength	
-	S31803	-	22Cr-5.5Ni-3Mo-N	Improvement of corrosion resist. for 329	

Grade Availability ~Stainless Steel~

Grade or Trade Name	Standard		Typical Composition	Characteristic	Typical Application
	UNS	JIS			

Ferritic Stainless

-	S40500	SUS405	13Cr-Al(Ni)	Improvement of weldability for 410	Parts for nitric acid industries
-	-	SUS410L	13Cr-lowC	High oxidation resist. at high temp.	Petrochemical plant
-	S42900	SUS429	15Cr(-Ni)	Improvement of weldability for 430	Parts for nitric acid equipment
-	S43000	SUS430	17Cr(-Ni)	High corrosion resist.	
-	S44400	SUS444	19Cr-2Mo-Nb-Ti-Zr-N	High resist. to SCC	Food processing equipment, Medical equipment, Equipment for the production of acetic acid solution and caustic soda
-	S44770	SUS447J1	29Cr-4Mo-Cu-N-lowC	High resist. to pitting and SCC	

Martensitic Stainless

-	S41000	SUS410	13Cr(-Ni)	High corrosion resist. and strength	Tube, Petrochemical plant, Pump shaft
-	S42400	-	13Cr-0.5Mo(-Ni)	High corrosion resist., strength and toughness	Piping, Cask, Screw
-	S42000	SUS420J	13Cr-highC(-Ni)	High corrosion resist. and abrasion resist.	Die, Support plate for bridge
-	S43100	SUS431	16Cr-2Ni		Tower-rinkpin, Sleeve and support for bridge
-	S44000	SUS440	17Cr-highC(-Ni)	High corrosion resist. and hardenability	Cutlery
JSW 17Cr-5Ni	-	-	17Cr-5Ni-1Mo	High corrosion and corrosion fatigue resist.	Runner, Parts for food equipment

Precipitation Hardened Stainless

17-4PH ¹	S17400	SUS630	17Cr-4Ni-4Cu-Nb	High strength, hardenability and corrosion resist.	Valve, Seal ring for autoclave
15-5PH ¹	S15500	-	15Cr-5Ni-3.5Cu-Nb		Parts of armament
JSW155	-	-	15Cr-5Ni-1.5Cu-1.5Mo-Ti or Nb		
PH13-8Mo ¹	S13800	-	14Cr-8Ni-2Mo-1Al		
A-286	S66286	SUH660	25Ni-15Cr-1.5Mo-2Ti -Al-V-B	High strength at high temp., non-magnetic, high toughness at cryogenic environment, high corrosion resist.	USC rotor, Parts of super conducting generator, Gas turbine parts

Heat Resistant Stainless

-	-	-	10Cr-Mo-V-Nb	High creep strength	Rotor, Casing
-	-	-	10Cr-1.5Mo-Mn-V-N-B		Casing, Valve, Flange
-	-	SUH600	12Cr-Mo-V-Nb-N	High hardenability and creep strength	Valve, Turbine blade, Rotor
-	-	-	12Cr-3Ni-2Mo-V	High creep strength	Gas turbine disk

Grade Availability ~Ni-based Alloy~

Grade or Trade Name	Standard		Typical Composition	Characteristic	Typical Application
	UNS	JIS			

Ni-based Alloy

INCONEL ^{*2} alloy 600	N06600	NCF600	15Cr-8Fe	Excellent resist. to corrosion and oxidation	Medical equipment, Equipment for the production of caustic soda
INCONEL ^{*2} alloy 625	N06625	NCF625	21Cr-9Mo-3.5Nb-2.5Fe-Ti-Al	Resist. to corrosion, oxidation, fatigue strength	Ducts and dampers, Heat exchanger
INCONEL ^{*2} alloy 706	N07706	-	37Fe-16Cr-3Nb-2Ti-Al-B	High strength at high temp., excellent resist. to oxidation, toughness in cryogenic environment	Gas turbine disk, Parts of super conducting generator
INCONEL ^{*2} alloy 718	N07718	NCF718	19Cr-19Fe-3Mo-5Nb-Ti-Al-B		Gas turbine disk, Generating rotating shaft, Parts of super conducting generator
HASTELLOY ^{*3} B-2	N10665	-	28Mo-2Fe-Co-Cr	Excellent resist. to hydrochloric acid	Tube sheet
HASTELLOY ^{*3} C-276	N10276	-	16Cr-16Mo-5.5Fe-4W	Excellent corrosion resist.	Chemical processing, Pollution control pulp and paper equipment
HASTELLOY ^{*3} C-4	N06455	-	16Cr-16Mo-Ti	High strength at high temp.	Hydrofluoric acid processing
HASTELLOY ^{*3} C-22	-	-	21Cr-13Mo-3W	Good corrosion resist.	Flue gas desulphurization
MONEL ^{*2} 400	N04400	NW4400	30Cu-Fe-Mn		Petrochemical plant
Nickel 200	N02200	NW2200	Ni		Equipment for the production of caustic soda
Ni-Fe	-	-	80Ni-20Fe	Purity, magnetic characteristic	Sputtering target of magnetic thin film

Please contact us for grades not provided.

*1 : NITRONIC, 17-4PH, 15-5PH and PH13-8Mo are trademarks of AK Steel Corporation.

*2 : INCONEL, INCOLOY and MONEL are trademarks of Special Metals Corporation.

*3 : HAYNES and HASTELLOY are trademarks of Haynes International, Inc.

*4 : CARPENTER is trademark of Carpenter Technology Corporation.

*5 : SANICRO is trademark of Sandvik Intellectual Property AB.

Network

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First of all, please contact us about our products and others from our website.

Outline of the Company



Panoramic views of Murooran Plant

Founded : November 1, 1907
Incorporated : December 11, 1950
Capital : 19,694,230,000JPY
Employees : 2,165 (840 at Murooran Plant)
Area of Site : 1,111,023m²

Quality System Approvals

ISO 9001	DNV GL
ASME	KR
TUV	CR
API	BV
NK	ABS
LR	KGS



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