

AM/NS INDIA

A joint venture between ArcelorMittal and
Nippon Steel Corporation

An aerial photograph of a massive industrial steel plant, showing various buildings, pipes, and infrastructure. A semi-transparent dark grey rounded rectangle is overlaid on the center of the image, containing the text 'AM/NS Overview' and 'Presentation for AMNS INDIA' in white.

AM/NS Overview Presentation for AMNS INDIA

ArcelorMittal Nippon Steel India

AM/NS INDIA

India

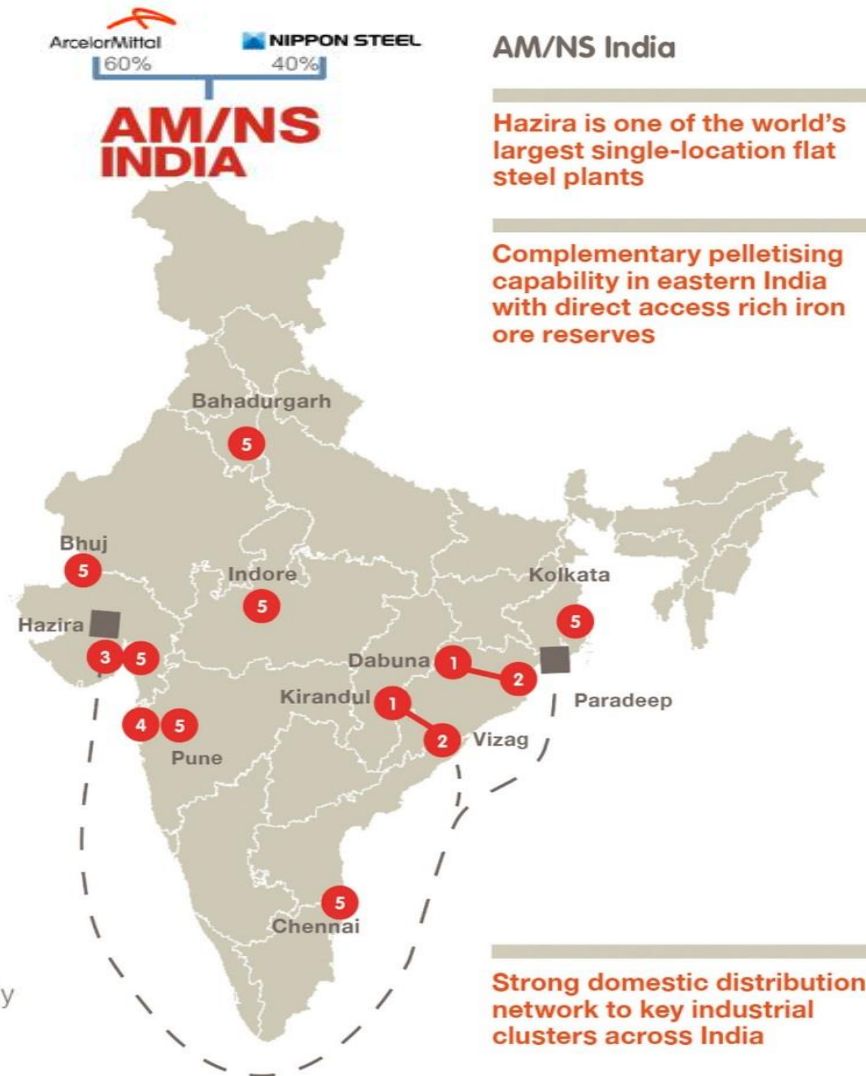
Fastest growing large economy; second-largest steel producer

India's per capita consumption of steel is about one-third of the global average

300m

India targeting three-fold increase in crude steel output to 300 million tonnes per annum by 2030

- 1** Beneficiation plant
- 2** Slurry pipeline
- 3** Hazira steel facility
- 4** Pune downstream facility
- 5** Service center



AM/NS India

Hazira is one of the world's largest single-location flat steel plants

Complementary pelletising capability in eastern India with direct access rich iron ore reserves

Strong domestic distribution network to key industrial clusters across India

Resources

- Mines - Sagasahi (6.0 MTPA) and Thakurani (5.5 MTPA)
- Vizag - 8 mtpa
- Paradeep - (6 mtpa + 6 mtpa commissioning under progress)
- 2 Slurry Pipelines of 250+kms each
- Pelletization capacity - 20 mtpa

Technology

- Blast Furnace - 1.75 mtpa
- DRI (6 mods) - 6.80 mtpa (65% of Iron making capacity is gas based)
- Corex (2 units) - 1.74 mtpa
- Iron making capacity - 10.29 mtpa
- EAF (4 units) - 4.6 mtpa
- Conarc (2 units) - 5.0 mtpa
- Steelmaking capacity - 9.6 mtpa

Products

- Hot rolled coils - 7.1 mtpa
- Plate - 1.5 mtpa
- Rolling capacity - 8.6 mtpa
- Cold rolled - 2.0 mtpa (Inland) + Indonesia - 0.4 mtpa
- BAF - 0.7 mtpa
- Galvanized - 1.0 mtpa (inland) + Indonesia - 0.2 mtpa
- Color coated - 0.4 mtpa
- Pipe - 0.6 mtpa

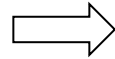
Distribution and Overseas Operations

- Distinct distribution model
 - OEM & export sales
 - 4.5 mtpa across 7 service centers (inland)+ 2 Service centers (Indonesia and ME)

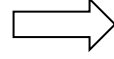
Integrated Value Chain



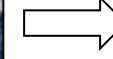
Beneficiation of Iron-ore



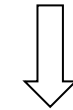
Pelletisation



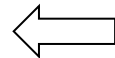
**Sea route
Transportation**



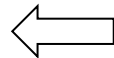
**Steel Mill Complex
- Hazira**



End Customer



**JIT Delivery
to Customers**



Service Centre

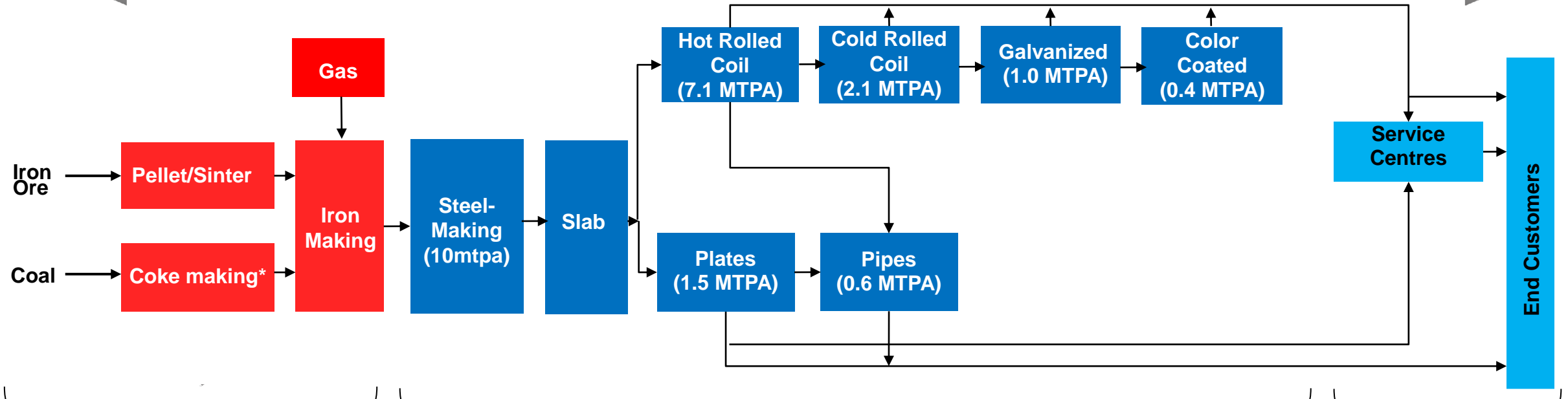


Multimodal Transport

Integrated Facilities

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End-to-End Vertical Integration



Iron Ore

Beneficiation and Pelletization

Captive pellet production at Vizag and Orissa pellet project
Captive iron ore mine in Odisha (recently won in auction)

Steel Production

Full range of flat rolled products, including value-added products such as CRC, galvanized and coated coils and sheets, HRPO, plate and pipe

Distribution

Distinct distribution model featuring service centers and distribution centres

Operations span full value chain from raw materials to product distribution

* Coke oven - Project Stage

Product Mix Capability

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Cold Rolled



2 MTPA

Thickness
0.4 -3.2mm

Width
200-1525mm

Hot Rolled



7.1 MTPA

Thickness
0.8-20mm

Width
800-2000mm

HDGI



1 MTPA

Thickness
0.18-3mm

Width
200-1340mm

Color Coated



0.4 MTPA

Thickness
0.25-1.2 mm

Width
300-1310mm

Plates



1.5 MTPA

Thickness
5-150mm

Width
1100-4950mm

Pipes



0.6 MTPA

Diameter
406-1524/ 2510mm

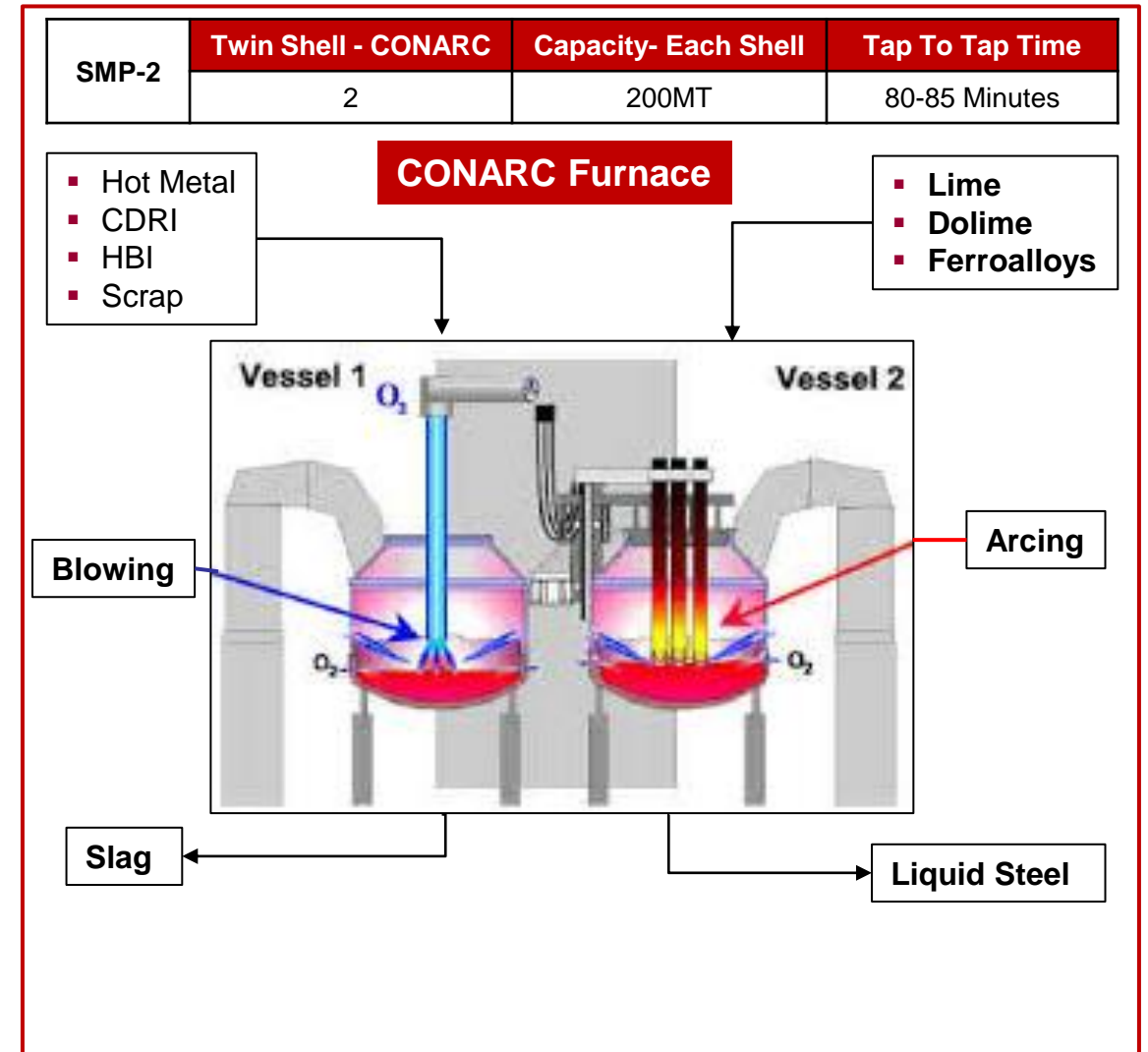
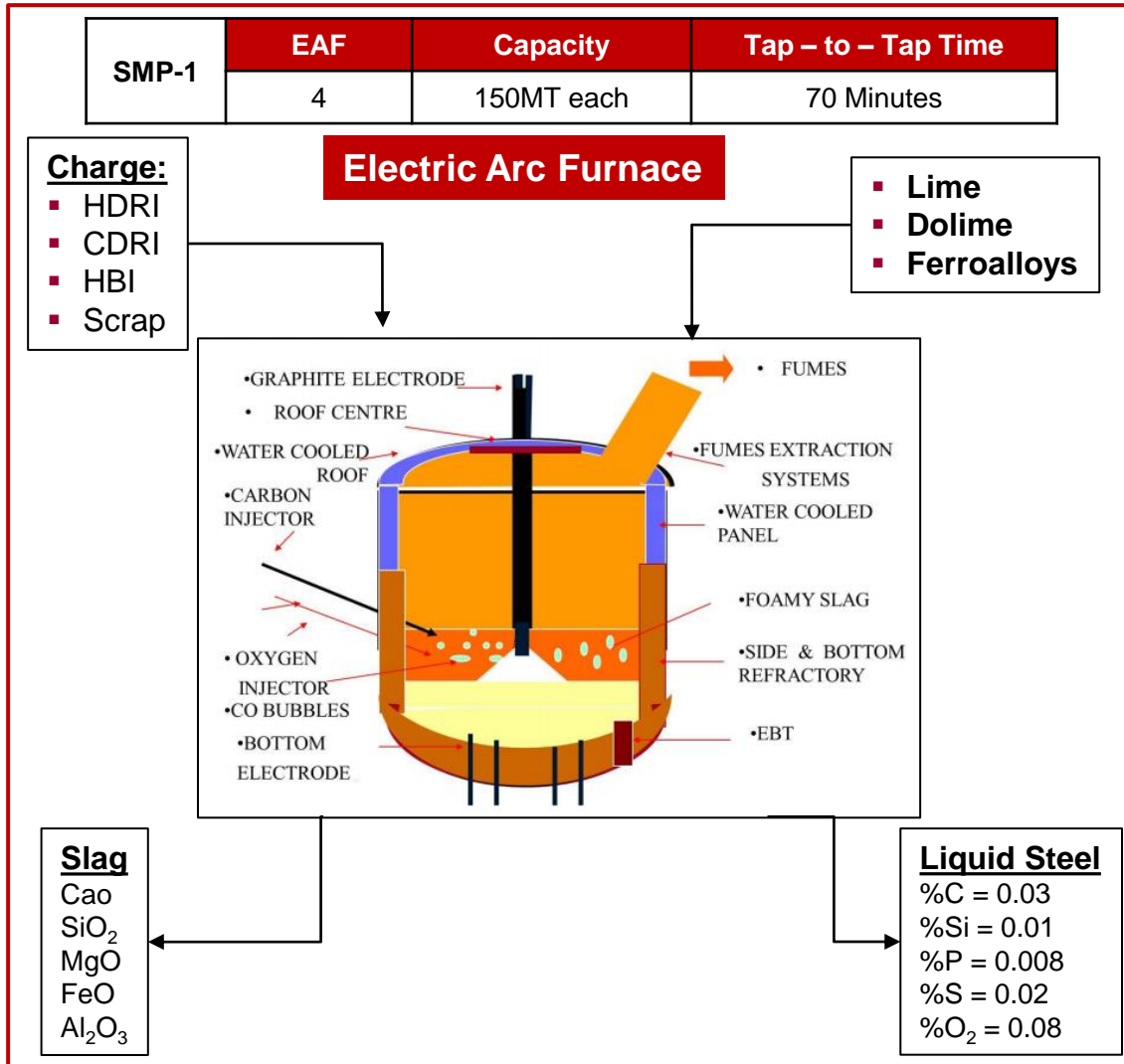
Thickness-
6-65 mm/25.4 mm

Application Segments :

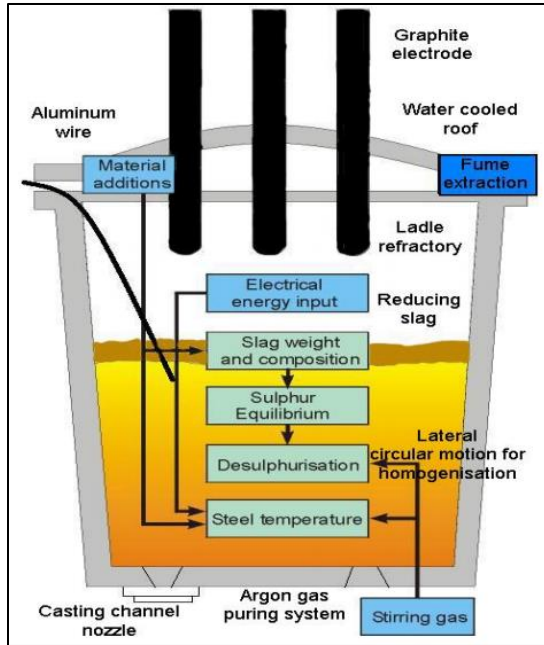
Auto, Construction, General Engineering, White Goods, Line Pipes, Ship Building, Agriculture, Boilers & Pressure Vessels, Electrical Steel etc.

Steel Making

Primary Steel Making



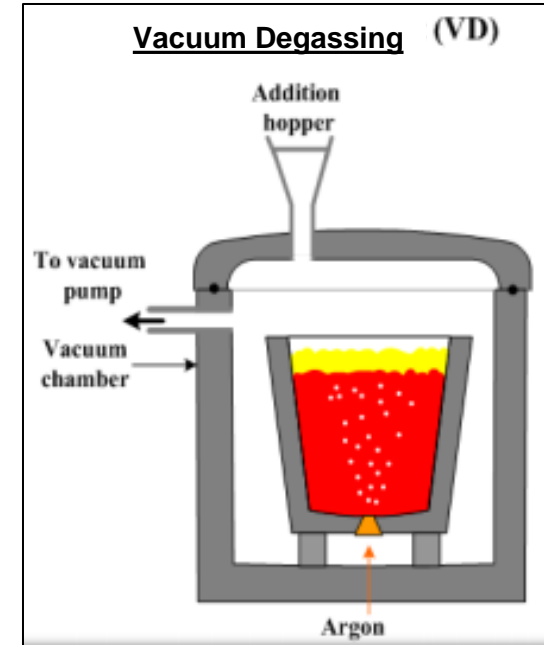
Secondary Steel Making



Ladle Furnace

- Homogenization of Chemistry and Temp.
- Desulphurization
- Addition of Micro Alloys
- Removal of Non-Metallic Inclusions.

	LF	Capacity
SMP-1	4 Nos.	150 MT
SMP-2	3 Twin Shell	200 MT



VD – Tank Degassing

- Decarburization
- Degassing
- Alloying/Fine Tuning
- Desulphurization
- Slag Management
- Inclusion Shape Control

	VD	Capacity
SMP-1	1	135 MT
	RHTOB	Capacity
SMP-2	1	200 MT

Typical Steel Chemistry	
% Carbon	0.005 – 0.6
% Silicon	0.01 – 1.0
% Phosphorus	0.008 – 0.015
% Sulphur	0.0012 – 0.015

Steel Cleanliness is achieved in secondary steel making:

- Phosphorus < 60 PPM
- Sulphur < 6PPM

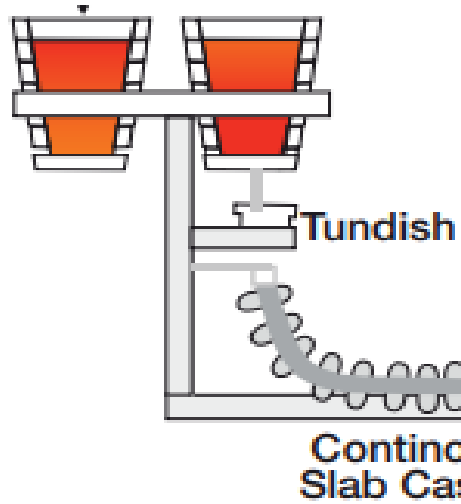
10 PPM = 0.001%



Effects of improper refining of steel

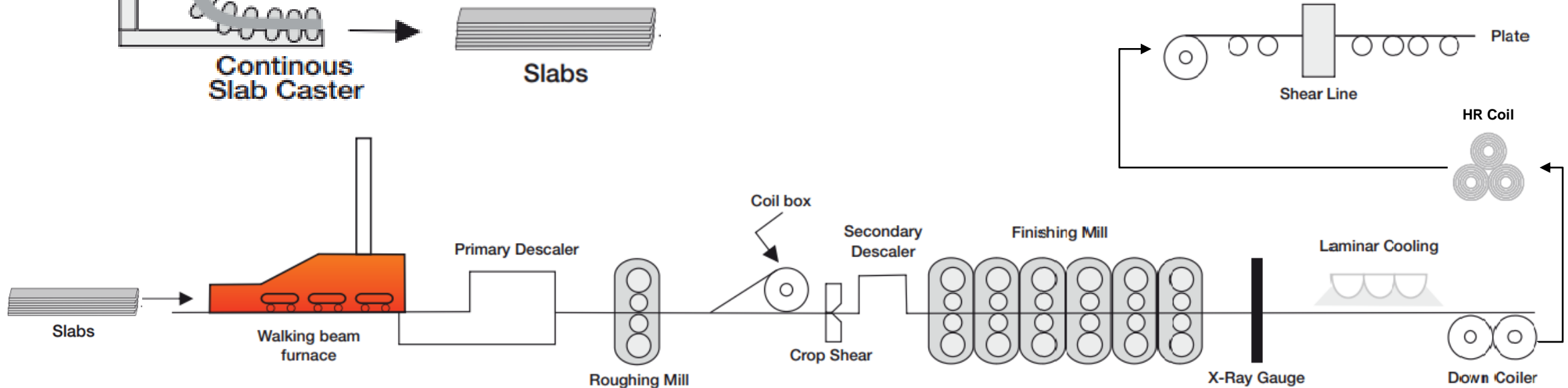
Hot Rolling

Process flow – HSM



Capacity	3.6 MTPA
Product Thickness	1.6 mm – 20 mm
Product Width	760 mm – 2000 mm
Input Slab Thick.	220 mm & 260 mm

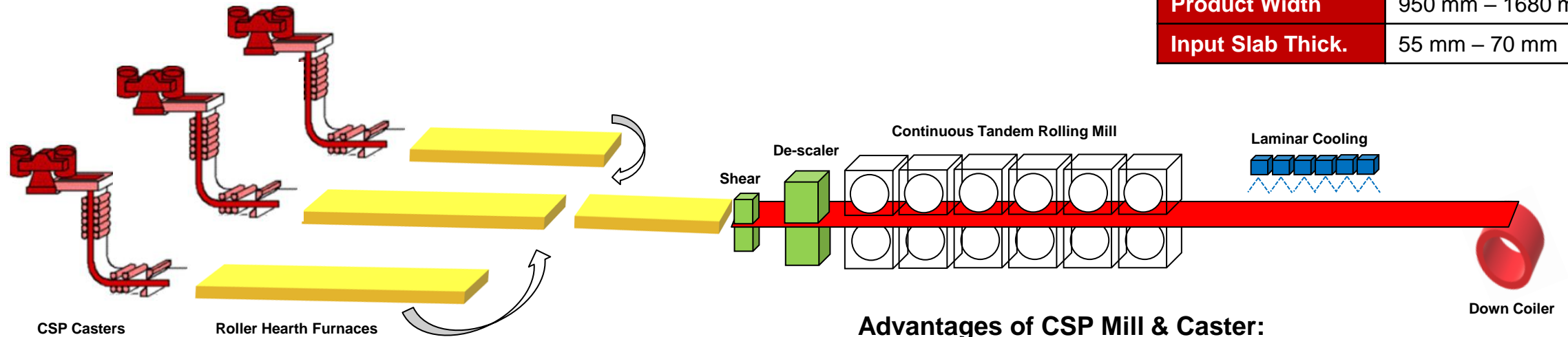
Walking Beam Furnace	Phase homogenization
Primary Descaler	Removes oxide scales from slab
Roughing Mill	Width Control & Major Thickness Reduction
Coil Box	Temperature homogenization of coil
Finishing Mill	Final product thickness achievement
Laminar Cooling	Achieve desired Coiling Temp.



Hot Strip Mill Process Flow

Process flow – CSP Mill

Capacity	3.5 MTPA
Product Thickness	0.8 mm – 16 mm
Product Width	950 mm – 1680 mm
Input Slab Thick.	55 mm – 70 mm



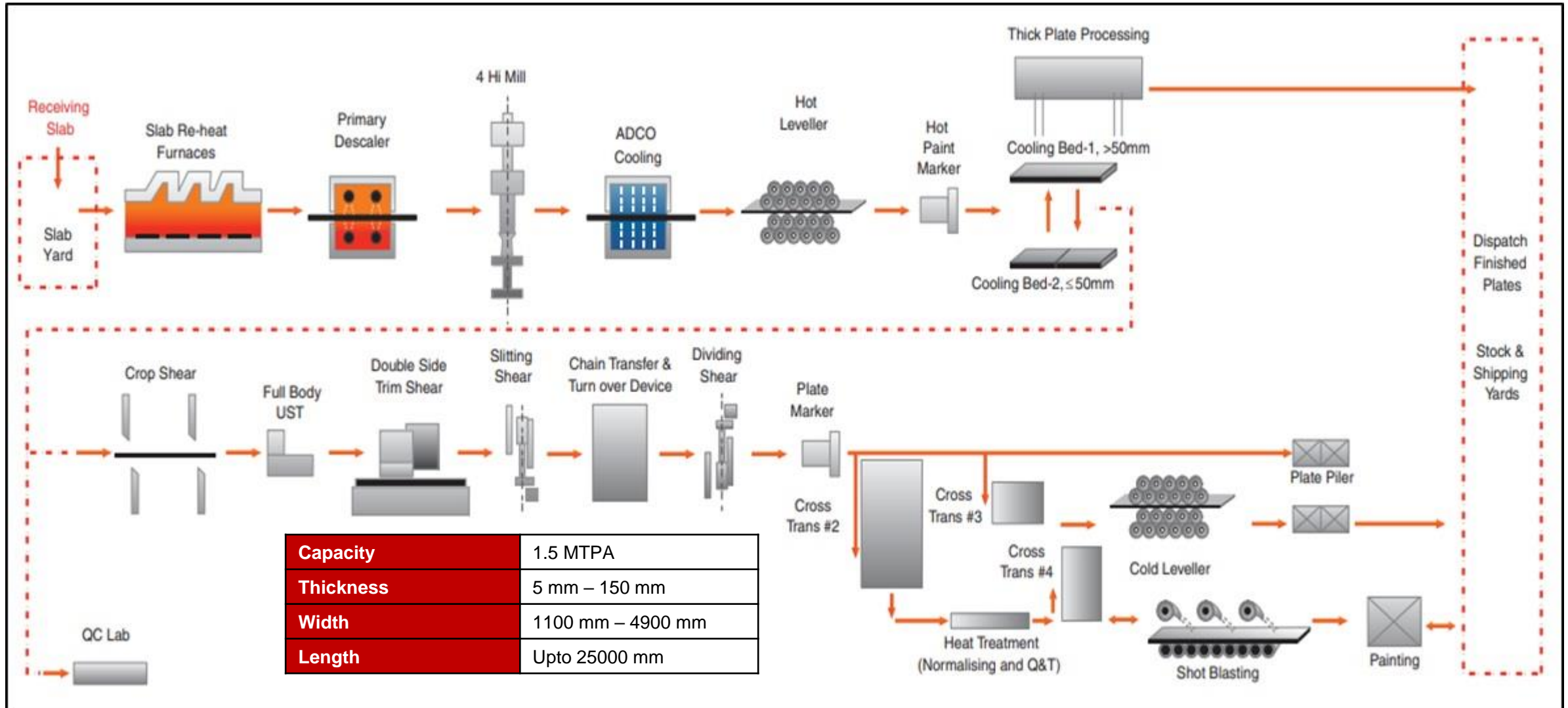
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Tunnel Furnaces	3 Nos.
Slab Inlet Temp.	915 – 1065 °C
Slab Outlet Temp.	1050 – 1170 °C
Fuel	Corex and NG

Advantages of CSP Mill & Caster:

- Higher casting speeds
- Lesser down time after breakdowns
- Online width and thickness change
- Less number of segments to maintain
- Lesser time from liquid steel to finished product
- Lesser power consumption
- No re-heating losses
- Lesser heat input and hot slab is charged into the tunnel furnace Lesser equipment (No roughing mill)

Process flow – Plate Mill



Capacity	1.5 MTPA
Thickness	5 mm – 150 mm
Width	1100 mm – 4900 mm
Length	Upto 25000 mm

Features – Plate Mill

Features	Capacity	Technology partner	Advantages
High-power reversible rolling Mill	RSF-10,000 T	SIEMENS-VAI	<ul style="list-style-type: none"> • High shape factor rolling for better properties and lower internal discontinuities for ultra high strength-high toughness plates.
ADCO (Accelerated Direct cooling) with Direct quenching facility	11,000 m ³ /hr	SIEMENS-VAI	<ul style="list-style-type: none"> • Controlled cooling with edge masking facility • Direct quenching facility for producing ultra high-strength/high toughness/abrasion resistance steel plates.
Hot leveler	4000 T	SIEMENS-VAI	<ul style="list-style-type: none"> * High plastification ratio * Low residual stresses * Excellent flatness
Ultra-sonic testing		NDT	<ul style="list-style-type: none"> * Online ultra sonic testing up to 50 mm thick plates.
Heat treatment facilities	Normalizing furnace Quenching and tempering furnace	LOI Germany	<ul style="list-style-type: none"> * Excellent mechanical properties * Wide range of heat treatment facilities • Inert atmosphere in furnace ensures less scale formation • Ultra-high strength/toughness/abrasion and wear resistant plates.
Cold leveling	3000 T	SIEMENS-VAI	<ul style="list-style-type: none"> * Excellent flatness
Finishing facilities	Shearing up to 50mm	SIEMENS-VAI	<ul style="list-style-type: none"> • Edge trimming with excellent dimensional tolerances * Squared edges

Products – Plate Mill

Product mix	Supply conditions	Application Segments
<ul style="list-style-type: none"> • Thickness- 5-150mm. • Width As rolled-1200-4950mm Trimmed-1100-4850mm • Length- up to 25000 mm 	<ul style="list-style-type: none"> • As rolled. • Normalized rolled • Thermo-mechanical controlled rolled • Furnace Normalized • Quench and tempered 	<ul style="list-style-type: none"> • Wind Mill • Yellow goods • Mining equipments • Boilers and pressure vessels • General fabrication & engineering • Defence • Line Pipe • Railways • Shipyards • Construction



Pipe Mill Capability

The AM/NS India Steel pipe mill is one of India's finest pipe mills with a capacity of 0.6 MTPA and the only one with an integrated raw material source. AM/NS India Steel's API-certified pipes find wide acceptance and approval from international oil and gas majors.



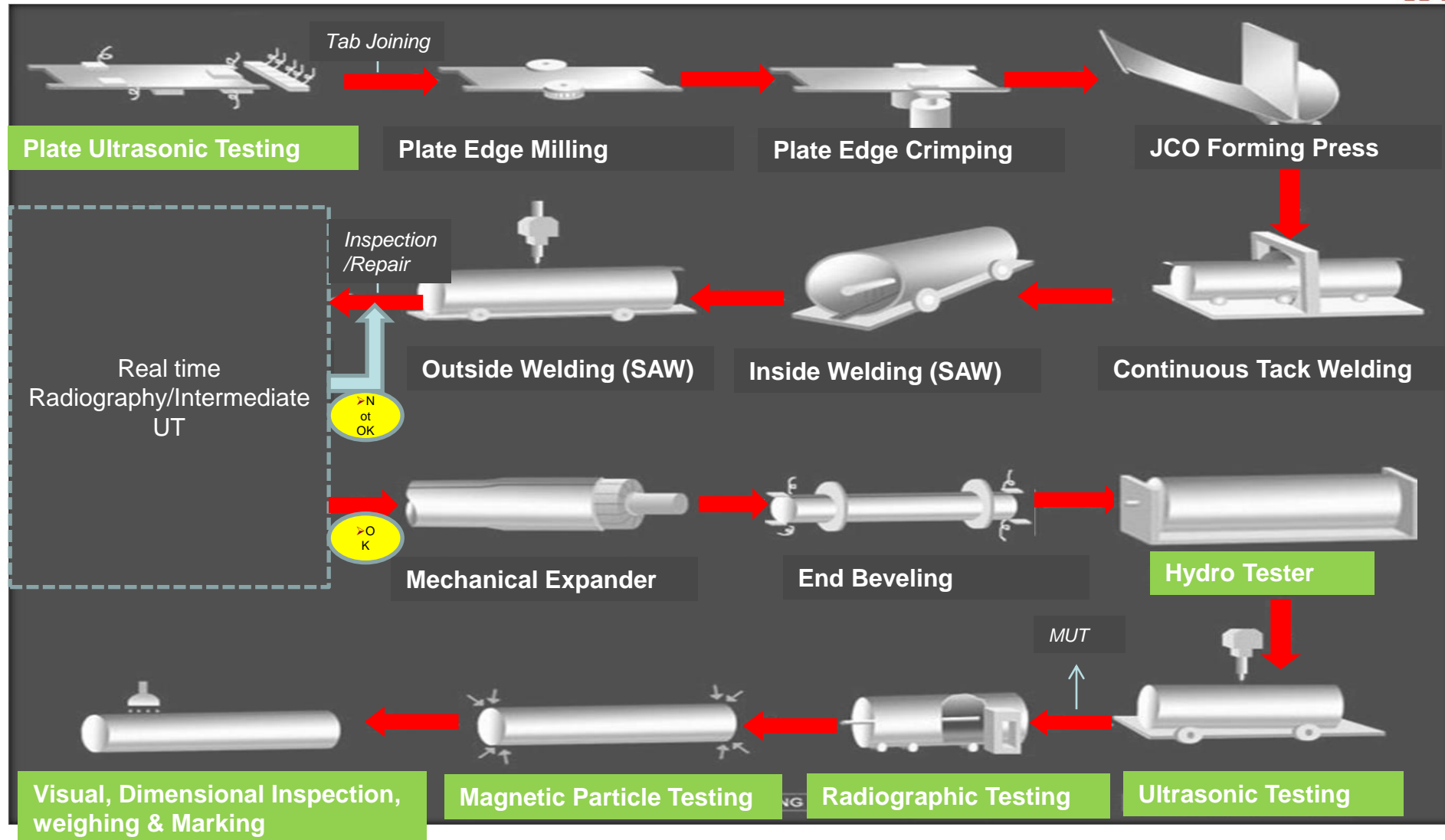
	HSAW	LSAW
Diameter	406 – 3035 mm	406 – 1524 mm
Grade	Up to API 5L X 80, IS 10748 Grade I & II	Up to API 5L X-80, IS 10748 grade I & II, ASTM C112/13/22/32
Thickness	6 – 25.4 mm	6 – 65 mm
Capacity	275,000 TPA	325,000 TPA

Annual Coating Capacity	
External Coating Capacity	3 Million Square Meter
Internal Coating Capacity	2 Million Square Meter

Pipe Manufacturing Facility - Configuration

Plant	Configuration		Achievement	Year Installation
L-SAW	Diameter	16" to 60"	14 inch-60 inch	Jul-10
	Grade	X80	UP TO API X-70; ASTM CL12/13/22/32	
	Thickness	6.0mm to 65mm	6mm-40mm	
	Capacity	325000 TPA	~ 2.5 Lakh API supply in last 3 years. X-70 grade: supply size (max 56"x31,75mm; min 16"x21mm); Astm: 20"x38mm;	
H-SAW - 1	Diameter	16" to 120"	16"-134"	Aug-08
	Grade	X80	UP TO X70; IS-3589/IS-5504	
	Thickness	6.0mm to 25.4mm	5mm-25.4mm	
	Capacity	120000 TPA	~ 1.5 Lakh tonne in 100" and above	
H-SAW -2	Diameter	16" to 120"	16"-120"	Oct-09
	Grade	X80	UP TO X70; IS-3589/IS-5504	
	Thickness	6.0mm to 25.4mm	5mm-25.4mm	
	Capacity	150000 TPA	APL X-70 SUPPLY APPROX 30KT in last 1.5 years	
Coating 1	Diameter-External Coating	4" to 120 "	14"-120"	Jun-09
	Diameter-Internal Coating	8" to 120 "	14"-120"	
	Pipe Weight	15 MT (max.)	15 MT	
	3-LPE	2 Mn sq. mtr	sizes from 16"-120" in 3LPE/3LPP/FBE/DFBE	
	Liquid Epoxy	1 Mn sq. mtr	food grade epoxy (406micron)+liquid epoxy (70-110 micron)	
Coating 2	Diameter-External Coating	8" to 60 "	up to 20"	Internal - Apr-18 External – Jul'18
	Diameter-Internal Coating	8" to 60 "	up to 20"	
	Pipe Weight	06 MT (max.)		
	3-LPE	1 Mn sq. mtr	3LPP coating in size 16"-20" successfully executed	

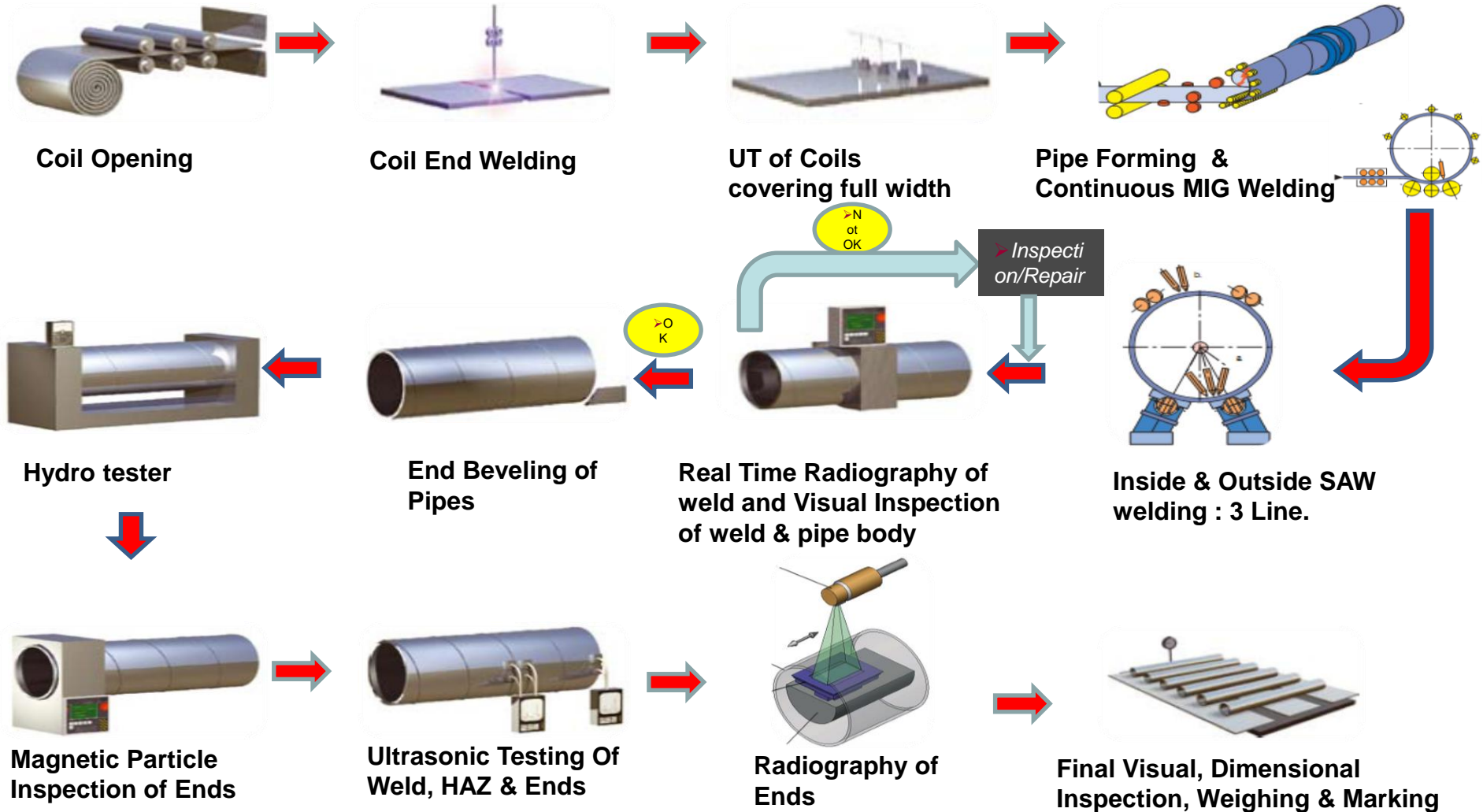
LSAW PROCESS



LSAW - JCO Forming



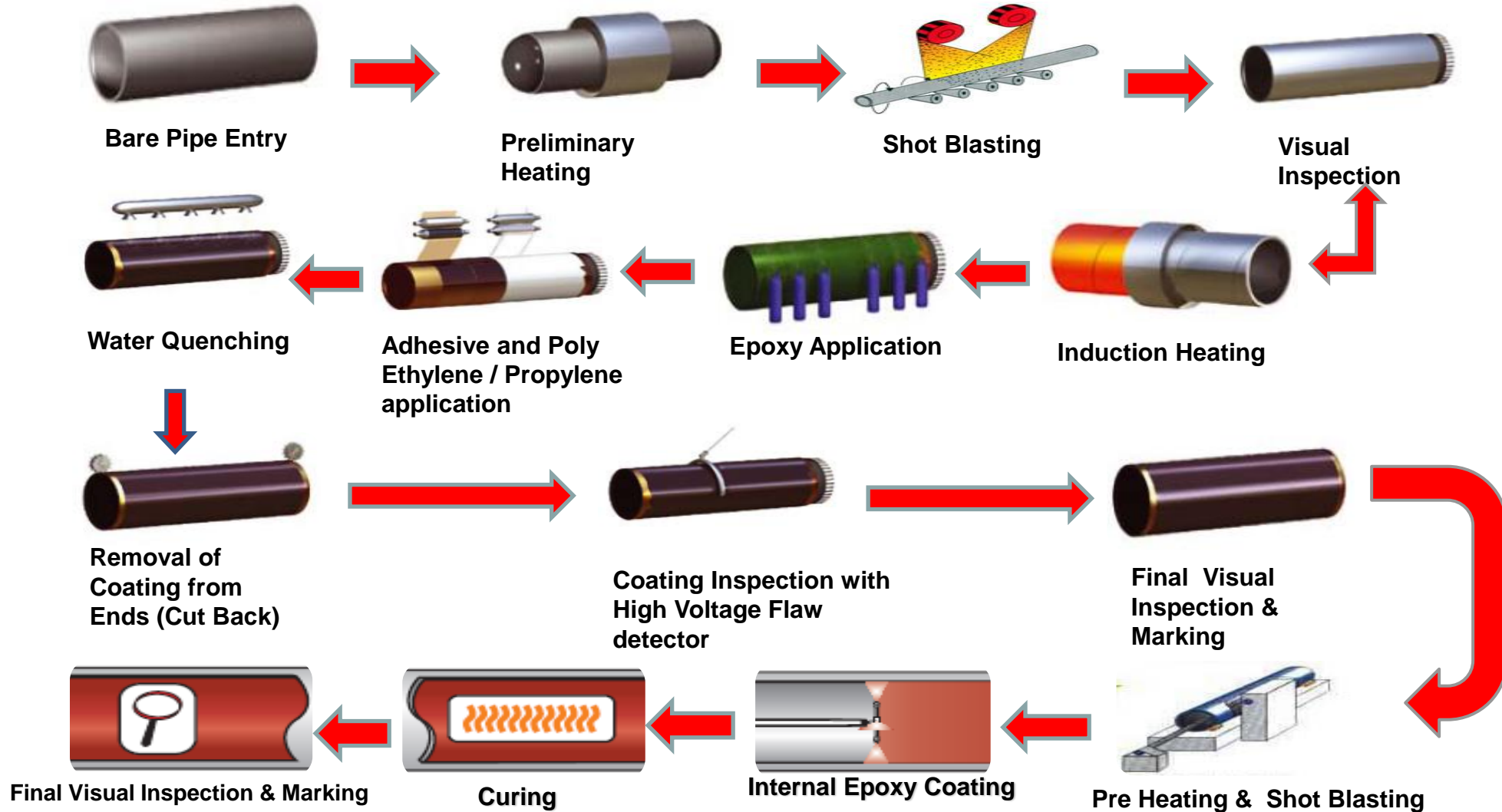
HSAW PROCESS



Spiral Pipe Forming



EXTERNAL & INTERNAL COATING PROCESS



MAJOR ACCREDITATIONS

Sl no	Approvals	Authority
1	API 5L M,N,and Q delivery condition	American Petroleum Institute
2	API 2B	American Petroleum Institute
3	ISO:9001-2015 /14001-2015/ISO 45001:2018 certification for manufacture and supply of Pipes	DET NORVSKE VERITAS AS
4	License for Manufacturing of steel pipes for water and Sewage.	Bureau of Indian Standards
5	Indian Boiler Regulation for ASTM Grade Pipes for up to 50mm thickness in grade CB 60, CC 60 in class of 12/13/23/22	IBR
6	ISO 17025 for Mechanical, Chemical and NACE testing Laboratory	National Accreditation Board for Testing and Calibration Laboratories (NABL)



MAJOR PIPE LINE PROJECT EXECUTED

Route	Project Name	CUSTOMER	Qty (Km)	Size (Diameter in inches)
LSAW	BU HASA PIPELINE, UAE - SOUR GAS	ADNOC	84	16"-24"
HSAW	MUMBAI-NAGPUR-JHARSUGADA PIPELINE	GAIL	325	24"
HSAW	DHOBI-DURGAPUR PIPELINE	GAIL	92.2	30"
LSAW	ANGUL-DHAMRA PIPELINE	GAIL	52.4	36"
LSAW	VIJAYPUR-AURAIYA PIPELINE	GAIL	82.5	36"
HSAW	DURGAPUR-HALDIA PIPELINE	GAIL	160	24"
HSAW	BARAUNI-GUWAHATI PIPELINE	GAIL	168	24"
HSAW	SRIKAKULAM-ANGUL PIPELINE	GAIL	90	24"
LSAW	KOCHI-KOTTAMBAD-MANGALORE PIPELINE	GAIL	60	24"
LSAW	PHULPUR HALDIA PIPELINE	GAIL	102	18"
LSAW	Replacement of Condensate Pipeline-SOUR GAS	GASCO	110	24"
LSAW	YAS-MINA ZAYED SOUR GAS PIPELINE	GASCO	52	16"-24"
LSAW	BARMER-PALI PIPELINE	GIGL	185	18"
LSAW	PALANPUR-PALI PIPELINE	GIGL	15	30"
LSAW	JALANDHAR AMRITSAR PIPELINE	GIGL	85	16"/18"
LSAW	ANJAR-MUNDRA PIPELINE	GSPL	70	36"
LSAW	MEHSANA-BHATINDA PIPELINE	GSPL/GIGL	260	30"
HSAW/LSAW	MALAVARAM-BHOPAL-BHILWARA-VIJAYPUR PIPELINE	GSPL/GITL	330	18"
LSAW	KANDLA-GORAKHPUR PIPELINE	IOCL	288	18"/20"
LSAW	REWARI-BEWARI PIPELINE - SOUR GAS	IOCL	70	22"
HSAW	HPCL RAJASTHAN REFINERY PIPELINE	MEIL	210	52"
LSAW	Kandla Gorakhpur Pipeline Project	IHB	288	18"-20"
HSAW	WATER SECTOR PROJECTS	LNT/MEIL/GVPR/EPIL	2000	ASSORTED SIZE (UPTO 120")

Thank You