

CONTENTS

INTRODUCTION	3
STEEL PIPE COATING PLANT	4
SPIRAL PIPE MILL	16
• CONVENTIONAL TYPE	
• TWO STEP TECHNOLOGY TYPE	
QUALITY CONTROL	57
PATENT RIGHTS AND CERTIFICATES	
PRODUCT LINE	58

Starting everyday always as like first time, for the best innovative technology and global competition over the world.

INITECH designs and supplies individual machines and complete plants for the steel pipe 3 layer PE coating. We are also dealing in the plant for spiral pipe production with both conventional type and two step technology type. INITECH is extending the market based on 3 key technologies as follows.

- The first priority of design is the safety of machine operation
- Development of innovative process for customer's productivity
- Continuous R&D and quality control

INITECH, in collaboration with customers and suppliers is continually seeking new ideas, applications and processes and extending the reach of its machine technologies for spiral pipe forming, Steel Pipe Coating and Extrusion Laminating, Aluminum Composite Panel Manufacturing and Rubber Tube manufacturing.



STEEL PIPE COATING PLANT



INITECH Machinery Co., Ltd is an extrusion line manufacturer offering innovative solutions to plastic process industry enabling people to lead better, safer and richer life.

- 3-LAYER PE/PP COATING
- EXTERNAL EPOXY COATING – FBE & DFBE
- T-DIE EXTERNAL 3 LPE COATING LINE
- O-DIE EXTERNAL 3 LPE COATING LINE
- INTERNAL LIQUID EPOXY COATING



STEEL PIPE COATING PLANT

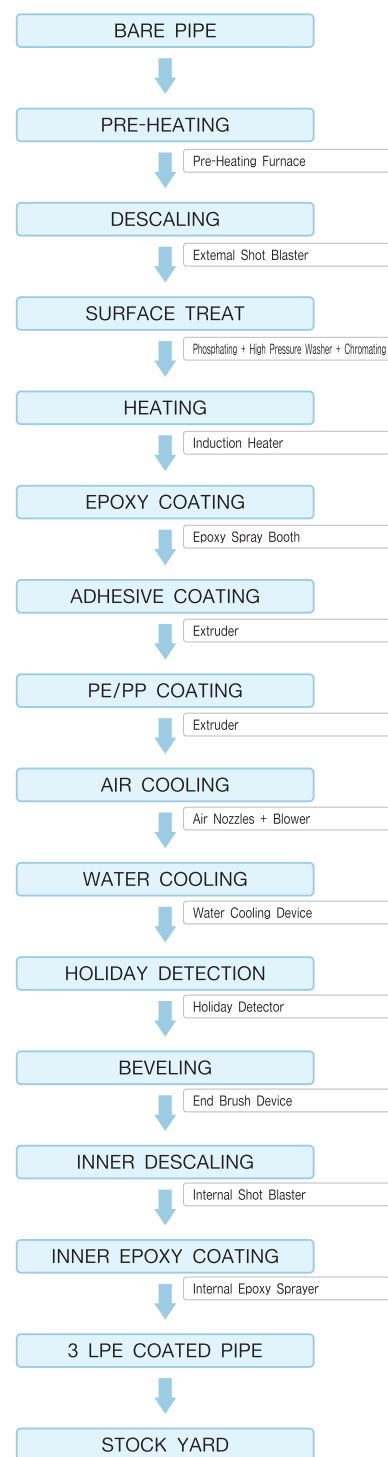
Extrusion Line for Innovation



Pipe Coating Plant

Steel pipelines are widely used for transport of natural gas, crude oil, petrochemicals and water at high pressure over long distances. These pipelines need to be protected against corrosion and resistant to impact and cathodic disbondment by external coating systems. Three layer PE/PP coating provides an excellent protection thanks to its properties of resistance to aging and impact.

Initech provides complete system for steel pipe coating as well as individual line as follows for customer's needs.

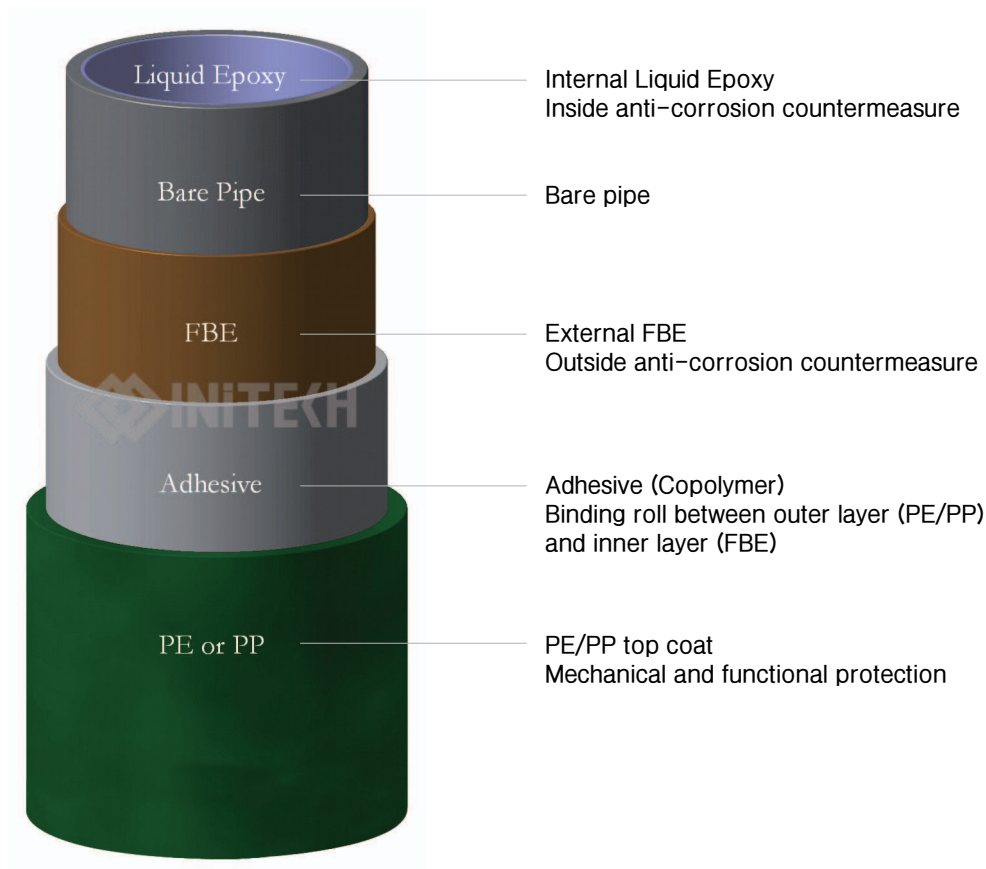


Standard Process of 3 Layer PE coating

● 3 Layer PE/PP Coating

3-Layer coating pipeline has become industry standard in the most demanding pipeline projects. The coating systems combine the function of epoxy like, anti-corrosion with the mechanical protection of polyolefin, polyethylene or polypropylene.

They have excellent adhesion properties and provide protection from corrosion, impact and aging offering thermal insulation and high level of mechanical protection. Their optimum stability over many years and the combination with adequate cathodic protection are guaranteed to prolong the life of the pipeline.

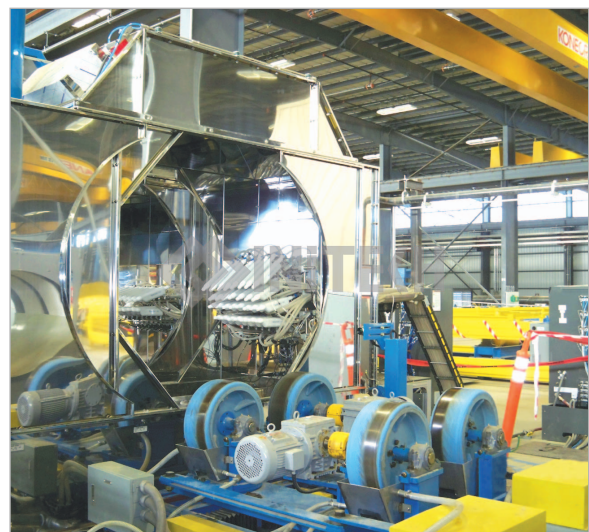
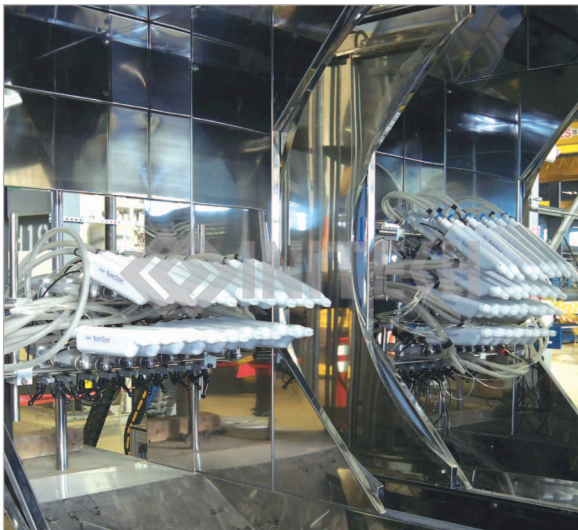


STEEL PIPE COATING PLANT

Extrusion Line for Innovation

● External Epoxy Coating - FBE & DFBE

FBE(Fusion-Bonded Epoxy) coatings are well known for their anti-corrosion properties over a wide temperature range. Their high resistance to cathodic disbondment, long-term adhesion to steel and ability to be stored in all climatic conditions make these thermosetting coatings an environmentally safe industry standard. DFBE (Dual FBE) which base + protection FBE coating with newly developed technology is available technology.

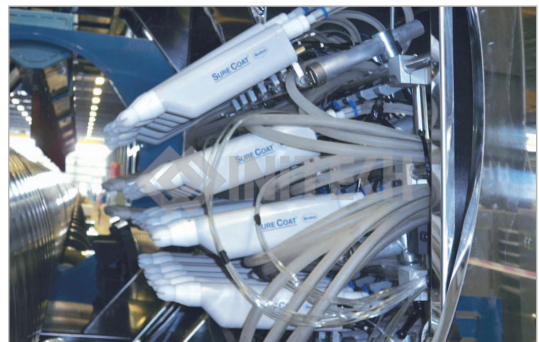


STEEL PIPE COATING PLANT

● T- DIE EXTERNAL 3 LPE COATING LINE



- Pre-heating device
- External shot blaster
- Phosphoric acid cleaning device
- High pressure washer
- Chromate application device
- Induction heater
- Epoxy spray booth
- Extruders & T-die
- Cooling device
- Holiday detector
- Tooling + Brushing device and so forth...



STEEL PIPE COATING PLANT

Extrusion Line for Innovation

● O - DIE EXTERNAL 3 LPE COATING LINE



- Pre-heating device
- External shot blaster
- Phosphoric acid cleaning device
- High pressure washer
- Chromate application device
- Induction heater
- Epoxy spray booth
- Extruders & O-die
- Cooling device
- Holiday detector
- Tooling + Brushing device and so forth...



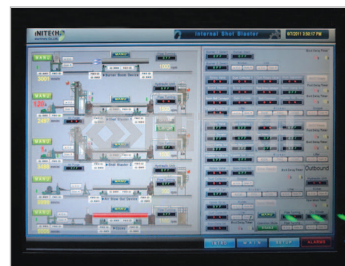
STEEL PIPE COATING PLANT

● Internal Liquid Epoxy Coating

In gas transmission, the use of epoxies brings substantial advantages. It protects against corrosion prior to installation and during production, which extends the life of the pipeline. Also the reduced surface roughness improves flow efficiency. The blasting and epoxy spray equipments are the central parts of the process.



● OPERATION PANEL



Monitor Control system

● Feature

- Flexible in set-up and configurations
- Variable option for customers' needs
- Short Lead time
- Uniform Coating Thickness & Quality
- High Capacity

● Application of steel pipe coating solution & product

Epoxy or 3LPE coated pipes are used in a wide variety of applications, such as

- Water pipelines for drinking, industrial or waste water
- Gas, Petroleum, Chemical products pipelines
- Structural pipe, like Pile and Casing for the construction industry



● Standard Specification

Coating Standard

- External 3 Layer PE/PP coating : DIN 30670
- External FBE & DFBE Coating : CSA Z245.20-98
- Internal Liquid Epoxy Coating : API RP5L2

Steel Pipe Dimensions & Conditions

- Outside Diameter: 25A-3,000A
- Wall Thickness: 4mm-40mm
- Length: 6m-24m
- Standard: API5L
- Type: Spiral Welded Pipe / Longitudinally Submerged Arc Welded Pipe(SAW)
Electric Resistance Welded Pipe(ERW) / Seamless Pipe

Coating Thickness

- External 3 Layer PE/PP coating
 - FBE : above 50 μ m
 - Adhesive (Co-polymer): above 150 μ m
 - PE/PP: 2mm-4mm
- Internal Liquid Epoxy Coating
- Liquid Epoxy: above DFT. 50 μ m
- External FBE Single/Dual coating
- FBE: 400 μ m ~ 1,200 μ m
- Adjustable to customer's requirements

Coating method

- T-Die coating
- O-die coating

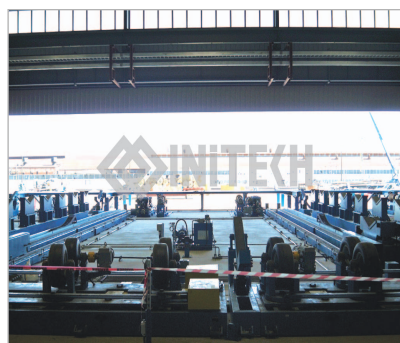
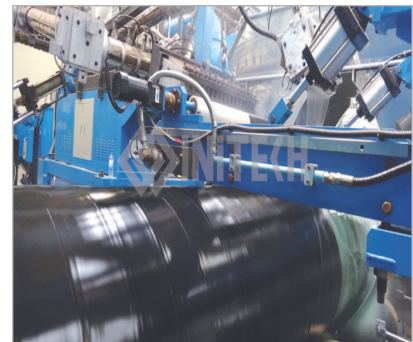
Production Capacity of External 3 Layer PE/PP coating

- Capacity of Adhesive Extruder 150Kg/hr ~ 450Kg/hr
- Capacity of Polyethylene Extruder standard: 1,000Kg/hr ~ 1,500Kg/hr
optional : max 3,000Kg/hr (dual type)
- Production Capacity : max 600m³/hr
(in case of standard thickness of PE/PP 3mm)

STEEL PIPE COATING PLANT

Extrusion Line for Innovation

● Performance



STEEL PIPE COATING PLANT

Extrusion Line for Innovation

● Performance



STEEL PIPE COATING PLANT

Extrusion Line for Innovation

● Customer's Inspection



SPIRAL PIPE MILL

Two Step Technology



Forming



Offline Welding



End Beveling

- SPIRAL PIPE MILL
- OFF-LINE WELDING STAND
- HYDROSTATIC TESTING MACHINE
- COIL PREPARATION STAND
- PIPE END BEVELING MACHINE
- ULTRASONIC OFFLINE
WELD SEAM TESTING / REP
- FLUOROSCOPY STATION



1. Spiral Pipe Mill

Mechanical System
Hydraulic System
Pneumatic System
Flux Recovery System
Cooling Water System
Plasma Cutting System
Welding System
Electrical Equipment
PLC Control



SPIRAL PIPE MILL

Two Step Technology

Specification of Pipe Product

- Pipe Diameter : 610 mm ~ 2540 mm
24 inch ~ 100 inch
- Wall Thickness X80 : 6.0 mm ~ 20.0 mm
- Wall Thickness X70 : 6.0 mm ~ 25.0 mm
- Pipe Length : 12 m ~ 24 m
- Pipe Weight : max. 24000kg
- Pipe Standard : API 5-L (Edition 20.12.2004)
- Steel Quality : Up to including API Grade X-80
Yield strength : Max. 690N/mm²

Specification of Hot Rolled Coil Material

- Strip Width : 1300 mm ~ 2050 mm
- Coil Outside Diameter : 1300 mm ~ 2200 mm
- Coil Inside Diameter : 720 mm ~ 780 mm
- Coil Weight : max. 45000 kg
- Material tolerances : according to DIN 1016
- Strip width : -0 +20 mm
- Strip camber : max. 15 mm per 10 m length
- Telescopic effect : max. 100 mm
- Specific coil weight : max. 22 kg per mm strip width
- Yield strength : max. 690 N/mm²

General Electrical Data

- Connecting Power : 1950 KVA without welding
- Connecting Power for welding : 650 KVA / 1080A
- Connecting Voltage : 3 x 480V / 60 c/s
- Working Voltage : 230 V / 60 c/s AC
- Control Voltage for solenoid valves and PLC control : 24 V DC

Climatic Conditions

- Ambient temperature : min. +5°C, max. +50°C
- Relative humidity : 72 ~ 90%

Other mains

- Compressed Air : 50 Nm³/h
- Cooling Water : max. 30°C

Shield gas 60 Nm³ at 7 bar

● Strip Feed-in Section



The base frame consists of 6 segments, each segment is provided with a flange and screwed together by bolts.

The machine groups in the section "Individual Equipment" are fitted on the top of the common base frame, which can be swiveled by a hydraulic cylinder on a horizontal plane around the king pin.

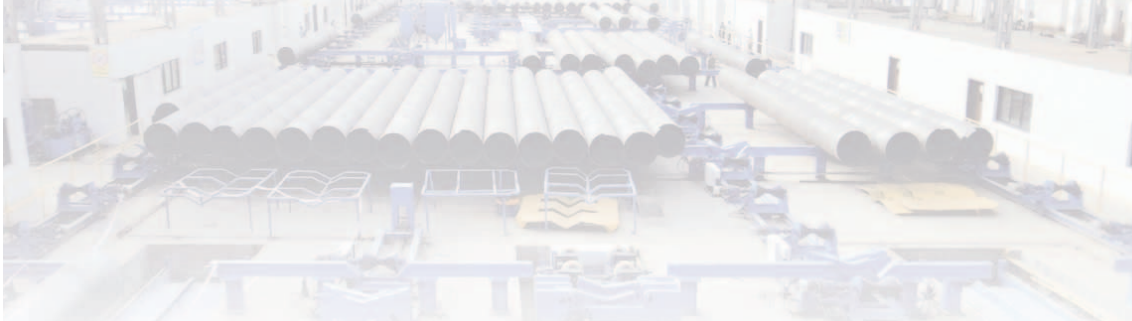
All machine groups are designed for heavy duty service, resisting all loads, originate from processing the steel strip and the weight of the machine groups. The machine groups are aligned to the machine center line and fixed by screws.

● Strip Feed-in Frame



The following machine groups are integrated in the strip feed-in section :

Coil Loading Carriage
Decoiling Station
Auxiliary Drive
Scrap Transport Carriage
Strip Horizontal Guide
Flattening Device
Strip Clamping Device
Strip Milling Machine
Strip Horizontal Guide
Main Drive
Vertical Strip Guiding
Edge Pre-Bending Device
Vertical Strip Guiding



● Coil Loading Carriage



The carriage is designed for reception and handling of new coil for change in the stand- by position. The coil is loaded by an overhead crane. The design allows the loading of coils by slow motion crane speed. Coil dropping is not allowed!

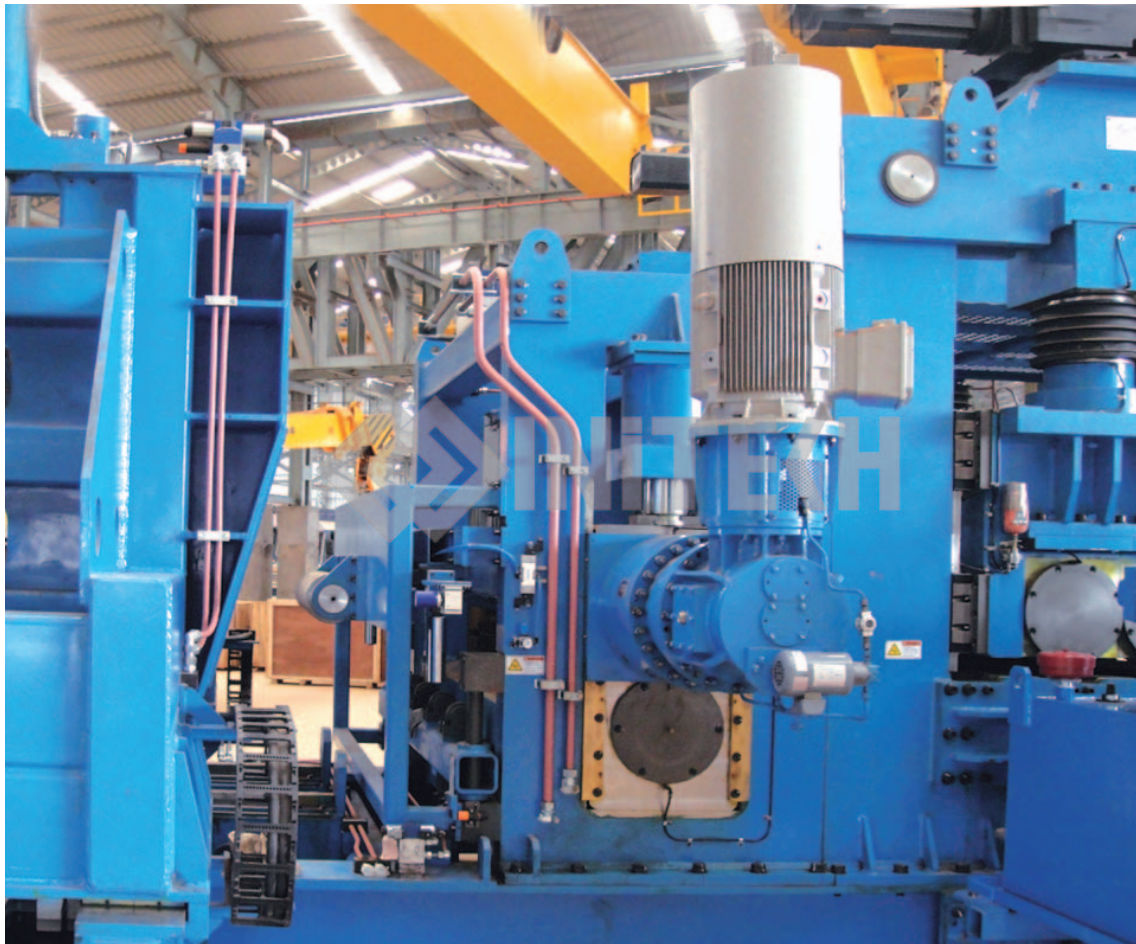


● De-Coiling Station



The de-coiling stand is designed for the reception of coils from the transport carriage and uncoiling for processing.

● AUXILIARY DRIVE ROLLER



The task of the auxiliary driver is to push the lead end of the strip through the strip flattening machine so that the lead end becomes straight and can be clamped later by the clamping system. It pushes the lead end of the first strip up to the main drive with a stop in the milling machine for strip width adjustment. At the frame entry side one strip centering device is mounted, which tracks the strip course and controls the strip position during production.

The rolls rest on heavy duty roller bearings. The lubrication is effected by central lubrication system via PLC, in accordance with the lubrication plan. Supporting rolls are mounted below the strip entry bottom line to avoid machine damage during feeding. The Auxiliary Pinch Roll Drive is screwed together with the following flattening device.



● Flattening Device



The flattening device is designed for straightening strip deformation, which originates from the strip coiling into the coil form after heat rolling process in the steel rolling mill. The flattening eliminates the material plastic stress.



● Strip Clamping Device



The Strip Clamping Device is designed for positioning the strip lead end in the center of the cross welding.

The strip clamping is effected mechanically by two hydraulic cylinders. The clamping jaws are provided with wear resistant plates. For visual check of the process there is a platform for the operator provided.



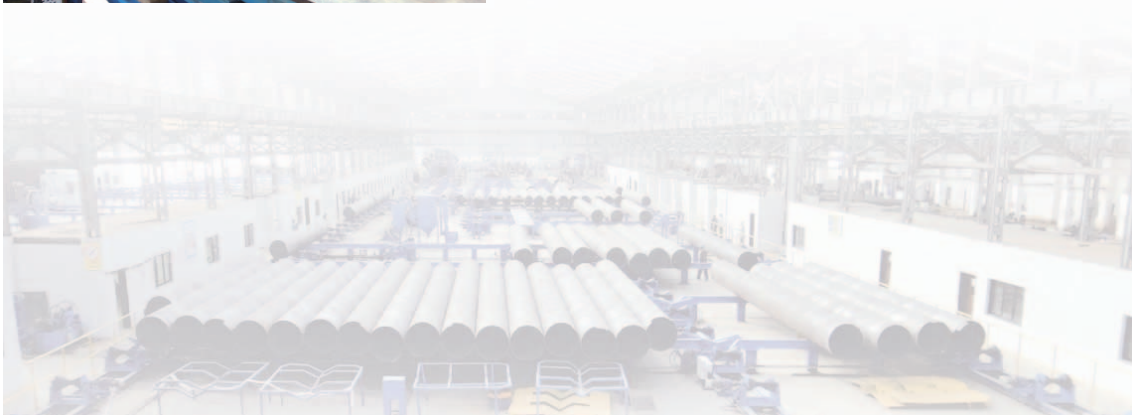
● Cross Cutting – Cross Milling – Cross Welding



There is one Cross Arrangement with various equipments. The Cross Arrangement is designed for:

The plasma cutting torch cuts a right-angled strip end. The cross milling machine is designed for preparing the strip end edges for welding.

The cross welding is carried out by one tandem automatic submerged arc welding unit. The power source is the DC/AC, taking electrical power from the external welding equipment by switch over.



- **Horizontal Strip Guiding before and after milling**



The Horizontal Strip Guiding is designed for optimal strip guiding in the strip edge milling machine.

● Strip Edge Milling Machine



The Strip Edge Milling Machine is an arrangement, consisting of 3 milling arrangements.

The machine is designed for preparing the strip edges for welding and maintaining constant strip width.

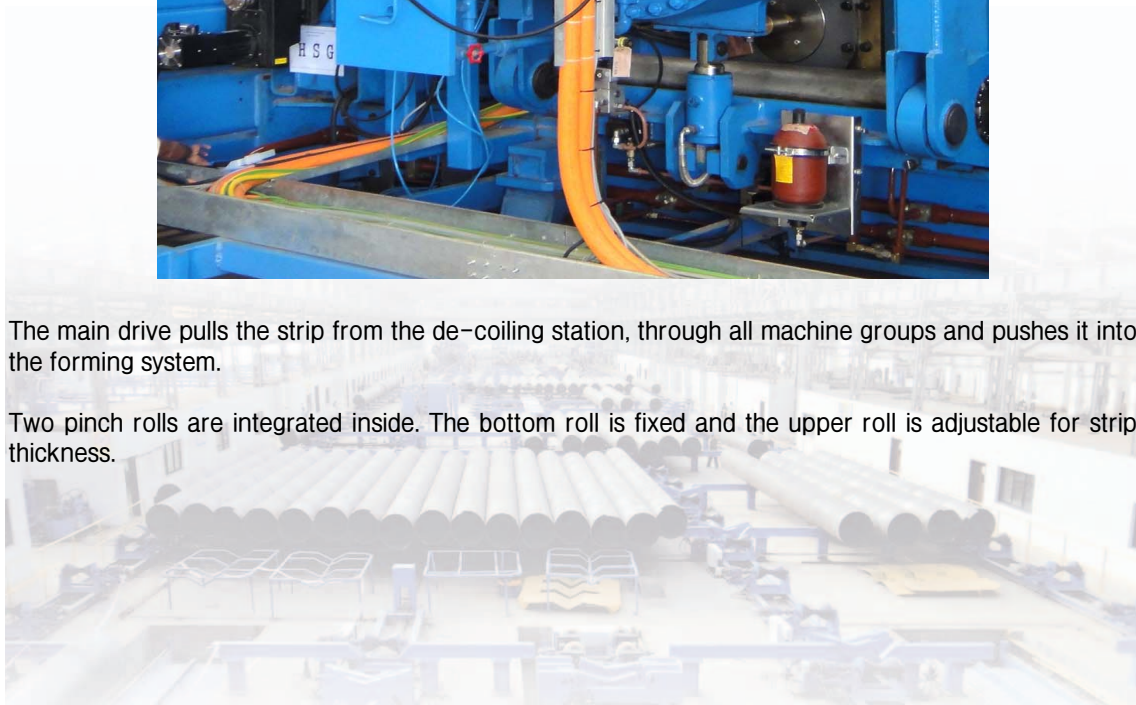
The chips produced are collected by the chip conveyor and transported out of the machine.

● Main Drive



The main drive pulls the strip from the de-coiling station, through all machine groups and pushes it into the forming system.

Two pinch rolls are integrated inside. The bottom roll is fixed and the upper roll is adjustable for strip thickness.



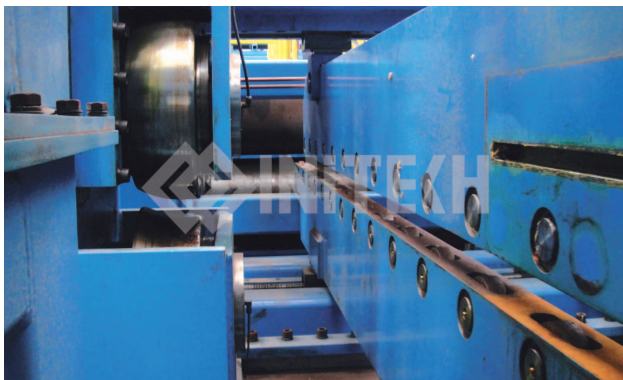
● Vertical Guiding System



There is one Vertical Guiding System consisting of two parts. One part is located before the main drive stand and one behind the main drive stand, i.e. this system guides the strip properly from the cross welding up to the forming system.



● Edge Pre-bending Unit



There are two strip edge pre-bending units.

The edge pre-bending is designed for preparing both strip edges to avoid the "bamboo effect" on the pipe after the later forming.

The body is made of robust steel welded structure, annealed and machined.

Each side system has 3 rolls, each separately adjustable by hand.



● Gap Scanner Centering Device

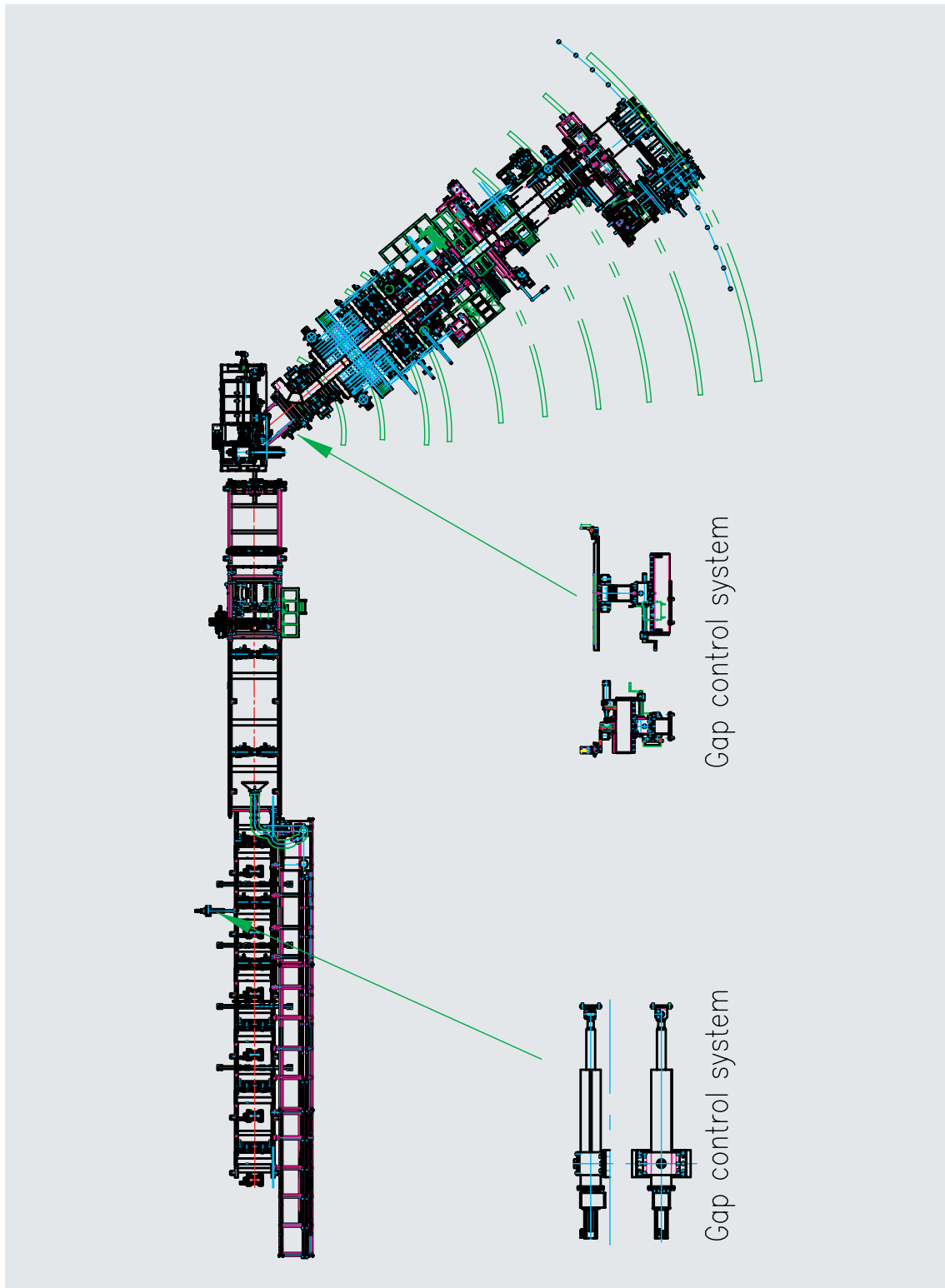


Two copying rolls follow the strip course. The firm contact to the strip is effected by one pneumatic cylinder, which is pressing the rolls to the strip edge. The laser scanner is mechanically connected to the copying rolls. The laser scanner scans the distance to the outrunning strip (before welding). An opening or closing of the gap is therefore scanned at every time. Changing of the gap can be done up to 0.01mm.

In the PLC a filter of the value is carried out. The size of the filter can be deposited in the machine data. The changing of the gap value is shown in the visualization of the PLC.



- Overview of the GAP Control system



● Forming Section



There is one forming table base, designed as a base which accommodates all groups necessary for forming strip into pipe.

Consists of :
Forming Table Base
Forming Stand with
Internal Boom I
Internal Boom II
Front Roller Beam
Rear Roller Beam
Pipe Caging
Inside Welding Support Roller
Roller Adjustment Instruments
Central Lubrication for forming
Inside Welding Arrangement

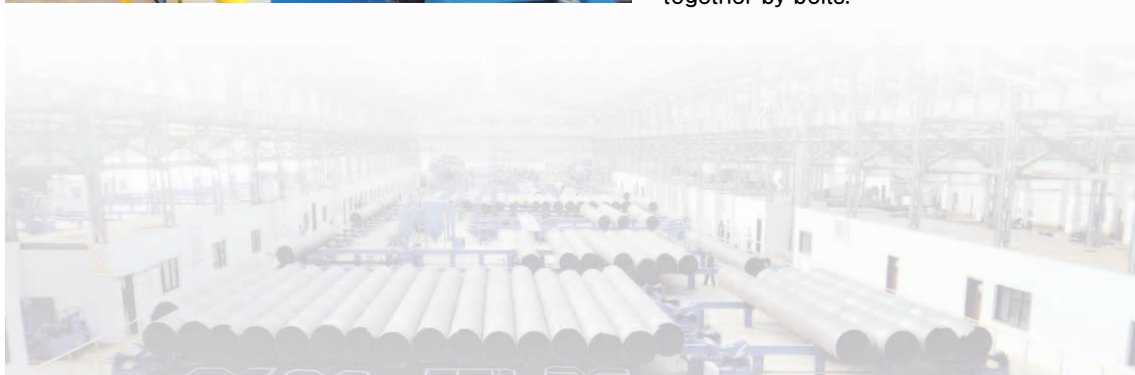


● Pipe RUN OFF Section



Consists of :
2 x Lunette
Welding Column
Support Device
Cutting Carriage
5 x Pipe Lowering Device
Pipe Centering Arrangement
Pipe Conveying System

There is one Run Out Section in the Spiral Pipe Machine SPM. The base frame consists of 4 frame segments, each provided with a flange and screwed together by bolts.



● Lunette



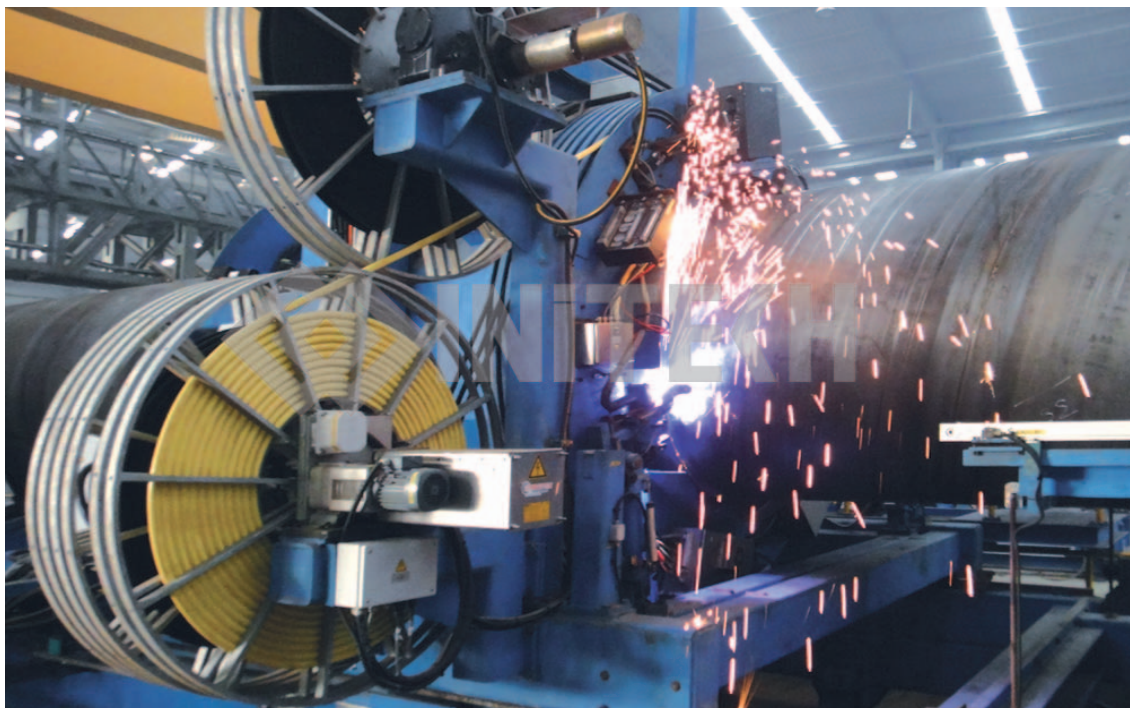
The lunette is designed for guiding pipe in the runoff frame. The guiding consists of 3 rolls, one bottom roll and two lateral rolls. The lateral rolls are positioned always in the pipe center.

● The Support Device



Is designed for guiding and supporting pipes in the cutting carriage area. The pipe is supported by this device as long as the pipe length has reached the required commercial length.

● Pipe Cutting Device



The cutting arrangement is designed for cutting pipes after welding.

● Pipe Lowering System

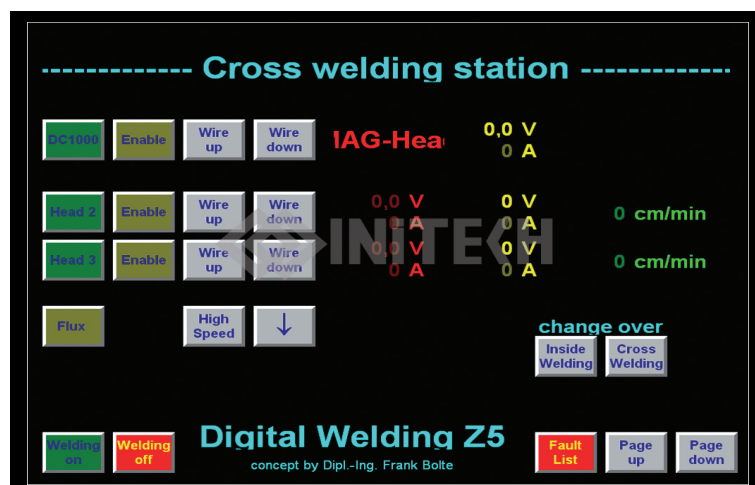
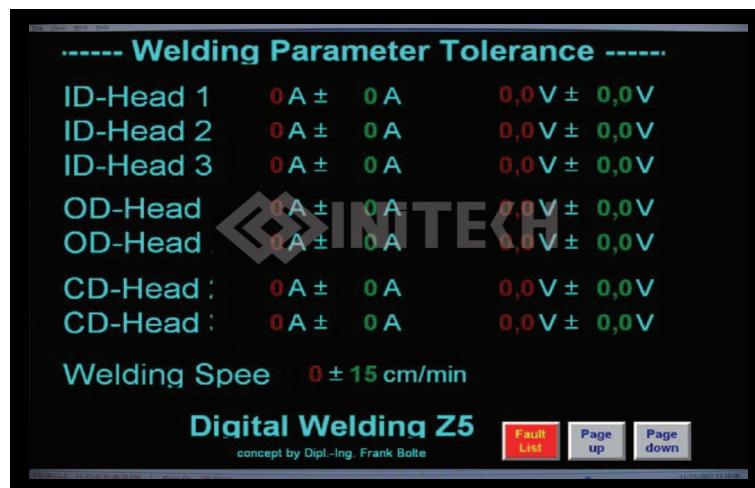
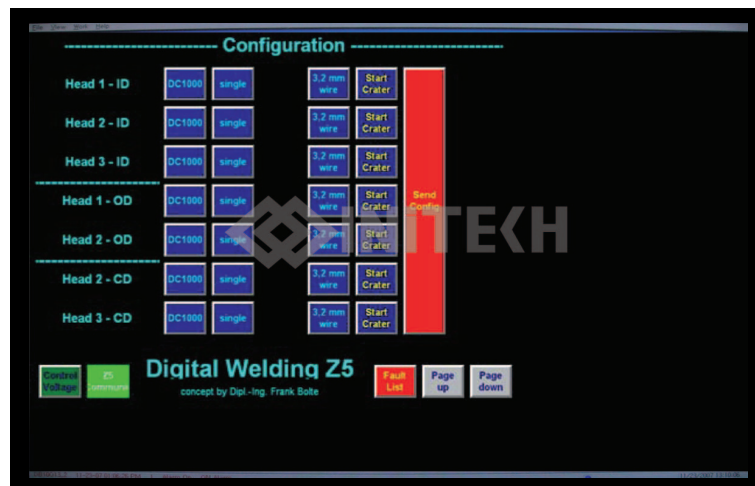


When the pipe is cut, the rolls accelerate the pipe by faster rotating. By this process are the cut pipes separated from the still processing pipe body and moved outside.

The lowering is effected electrically by an Servomotor and spindle. The positioning is controlled by the PLC.



● Digital Welding Control Tack Welding / Cross welding



The SCDA System is integrated in the Main Operator Panel.



2. OFFLINE WELDING STAND

Technical Data

- Pipe Diameter : 610 mm ~ 2540 mm, 24 inch ~ 100 inch
- Wall Thickness : 6 mm ~ 25 mm
- Pipe Length : 12 m ~ 24 m
- Pipe Weight : max. 28.800 kg
- Rotating Speed : 0,6 m/min – 40 m/min
- Inside welding power source : 2xAC 1200A, 1xDC 2000A(2x1000A)
- Outside welding power source : 1xAC 1200A, 1xDC 2000A(2x1000A)
- Suction system : 2x AC Motor 30kW
- Exhaust System : approx. 1600m³/h at 500 mbar
- Welding Flux supply : 2xAC Motors
- Hydraulic Power Pack : 210 bar
- Electrical Supply : 3 Phase, 480 V / 60 Hz, 2500kVA



● OFFLINE WELDING STAND



3. HYDROSTATIC TESTING MACHINE



The hydrostatic testing machine consists of

- 4 tension bars,
- 1 headstock,
- 1 tailstock,
- 2 hydraulic systems
- 1 high-pressure water supply
- 1 low-pressure / high volume water supply
- 1 switch cabinet with PLC system
- 1 operator panel
- 2 ball aligning heads



● Hydrostatic Testing Machine

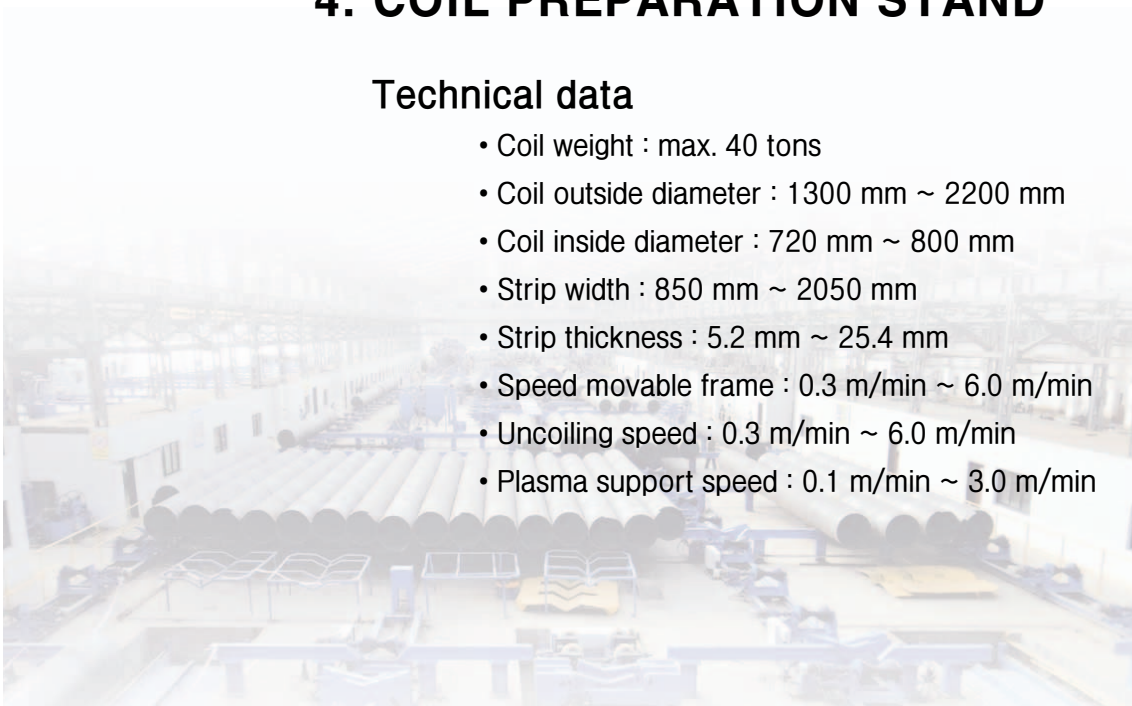




4. COIL PREPARATION STAND

Technical data

- Coil weight : max. 40 tons
- Coil outside diameter : 1300 mm ~ 2200 mm
- Coil inside diameter : 720 mm ~ 800 mm
- Strip width : 850 mm ~ 2050 mm
- Strip thickness : 5.2 mm ~ 25.4 mm
- Speed movable frame : 0.3 m/min ~ 6.0 m/min
- Uncoiling speed : 0.3 m/min ~ 6.0 m/min
- Plasma support speed : 0.1 m/min ~ 3.0 m/min



● Coil Preparation Stand



● Online COP





5. PIPE END BEVELING MACHINE

The Pipe End Beveling Machine is designed for beveling the pipe ends of large diameter steel pipes. The beveling is effected from both sides at the same time.



● PIPE END BEVELING MACHINE



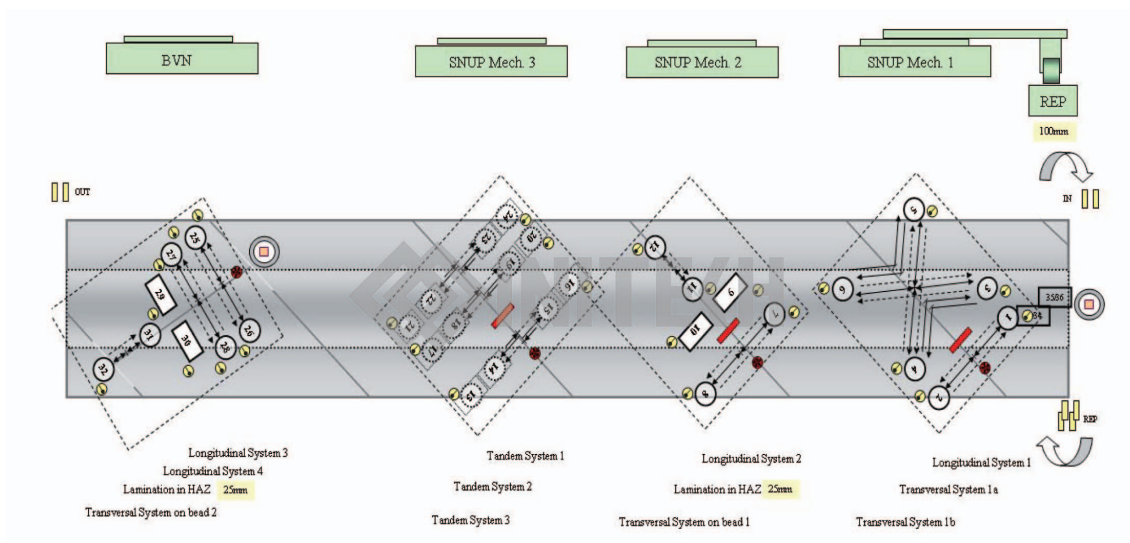
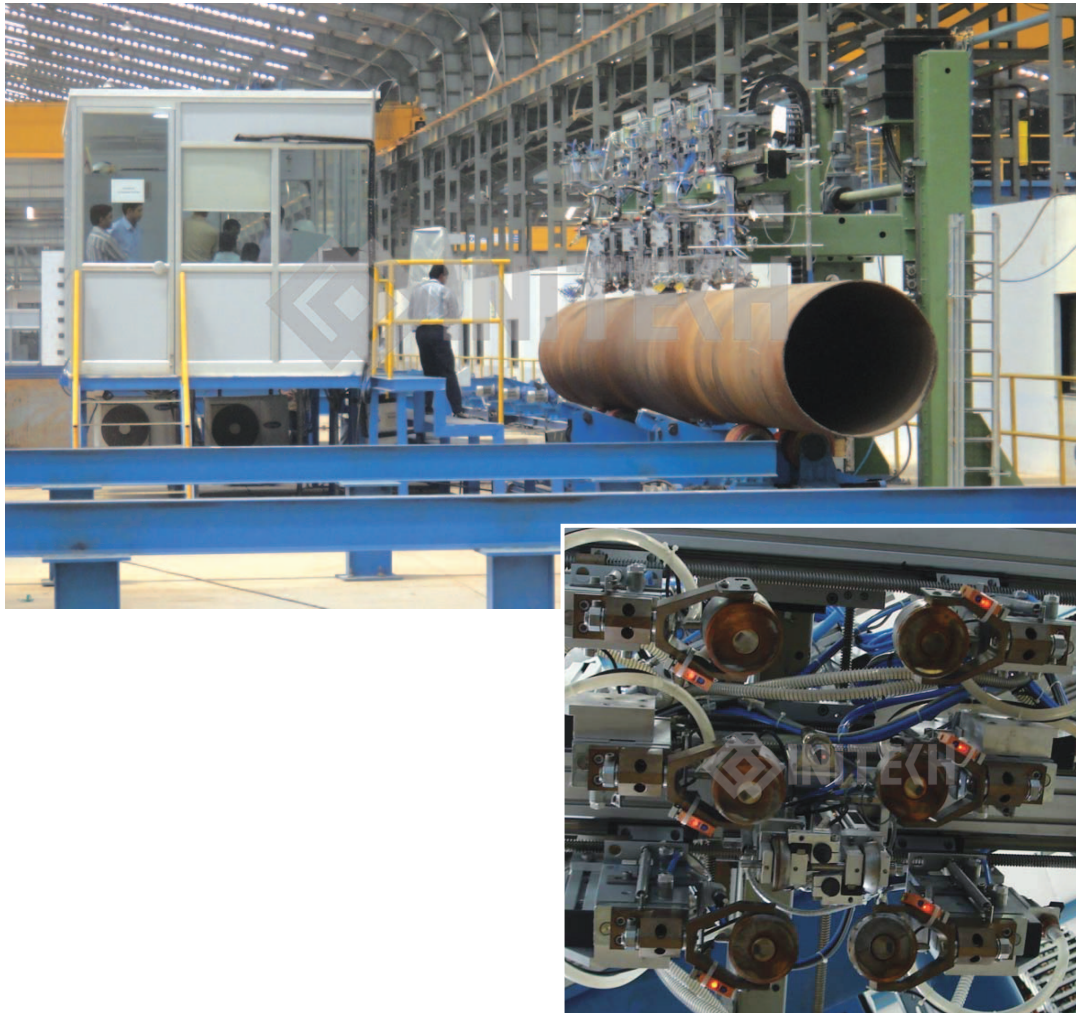


6. ULTRASONIC OFFLINE WELD SEAM TESTING / REP

The Ultrasonic Seam Testing Station is designed for continuous testing the welded seam of the spiral welded pipes.



● Ultrasonic Offline Weld Seam Testing



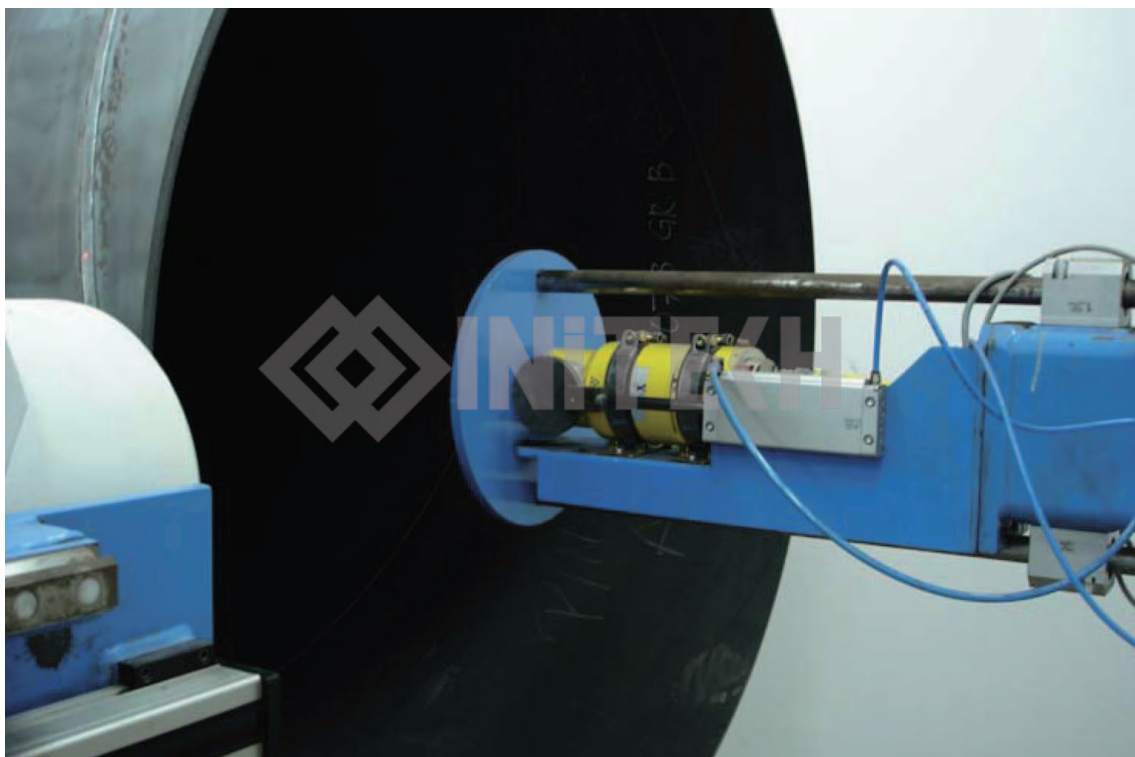
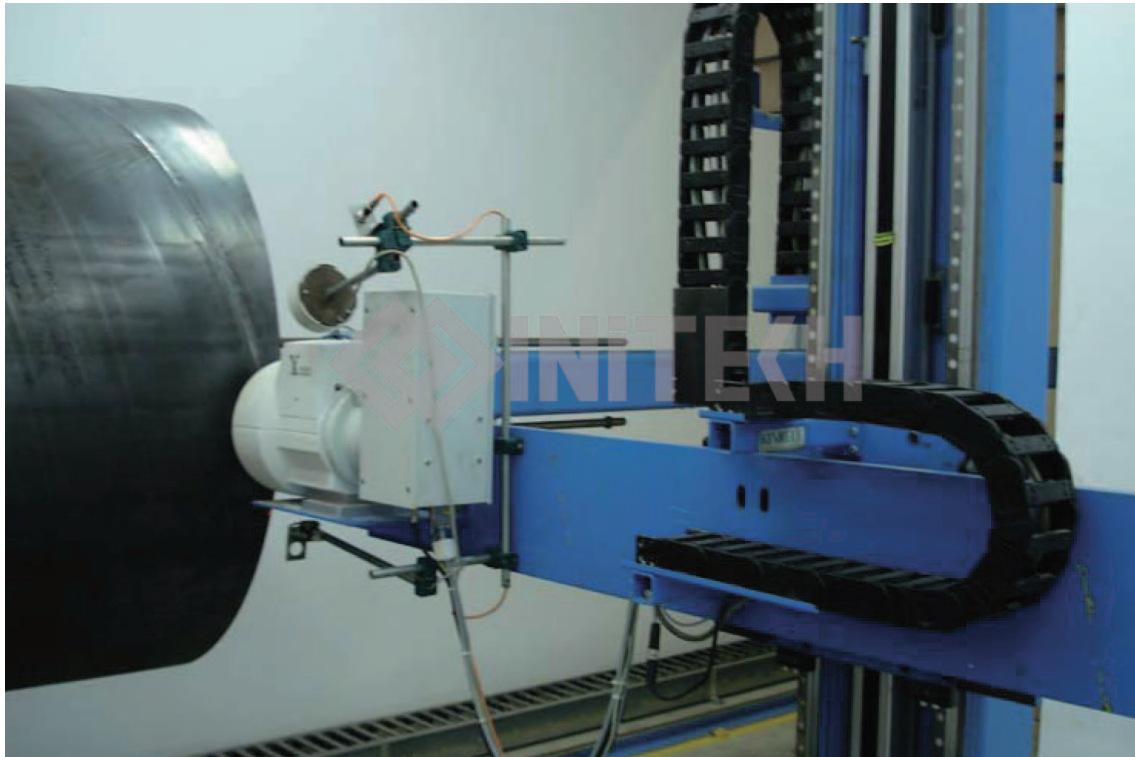


7. FLUOROSCOPY STATION



Fluoroscopy Boom Column
Telescope Table
Counterweight
Boom
X-ray Head
Fluoroscopy Outsidestand
Transport Carriages
Rotating Device
Hydraulic Equipment
Electrical equipment /PLC Control

- Fluoroscopy X-ray Station



SPIRAL PIPE MILL

Two Step Technology

● PIPE CONVEYING SYSTEM & DOUBLE EJECTOR



● PIPE INSPECTION STAND



● SKELP REPAIR WELDING STATION



● PIPE END X-RAY STATION



● TAB PLATE WELDING STATION



● PIPE INSIDE CLEANING MACHINE



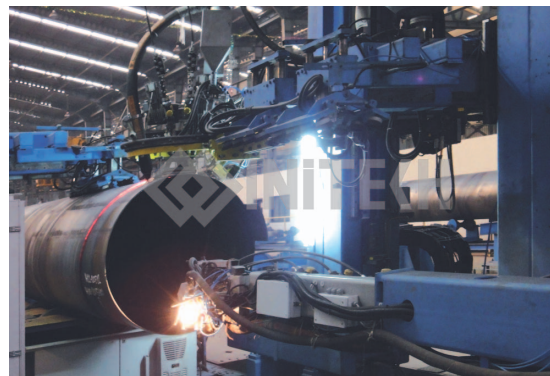
● ULTRASONIC OFFLINE

Base material Testing Equipment in the SPM before milling

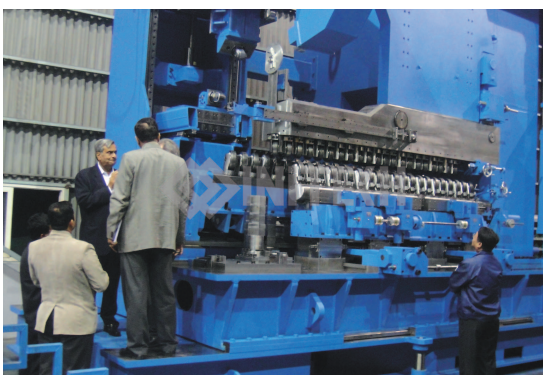
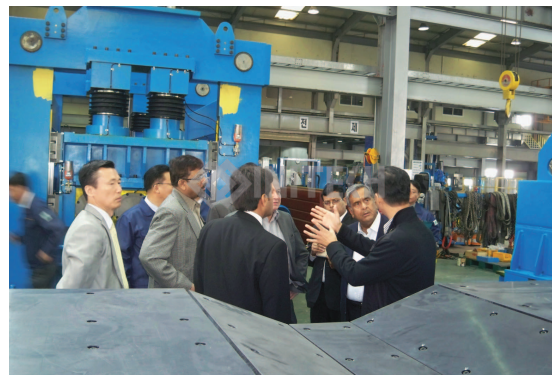


SPIRAL PIPE MILL

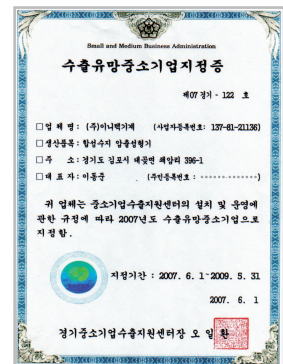
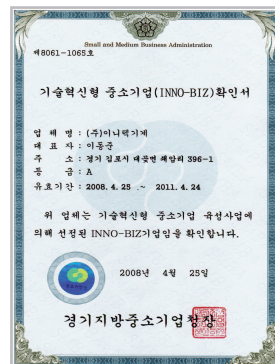
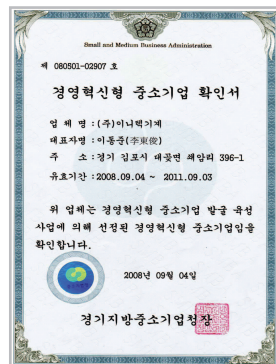
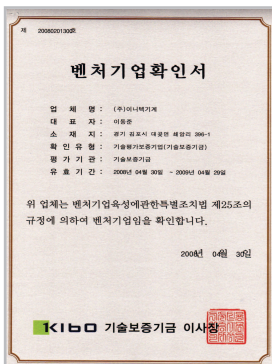
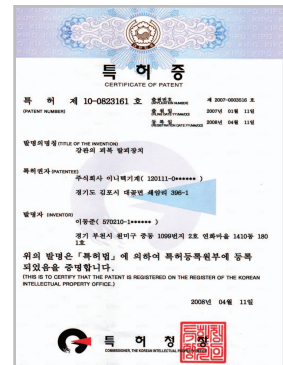
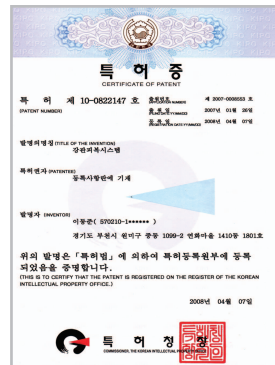
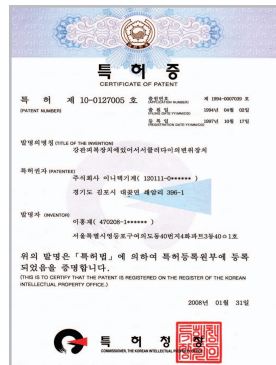
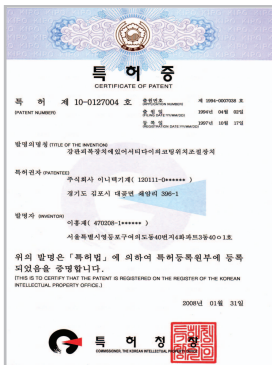
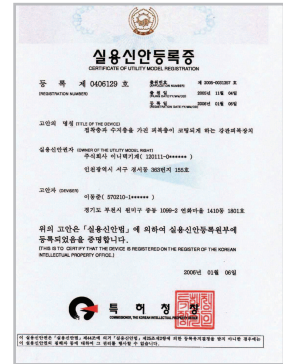
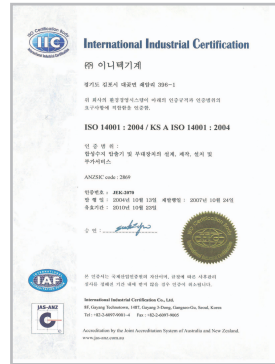
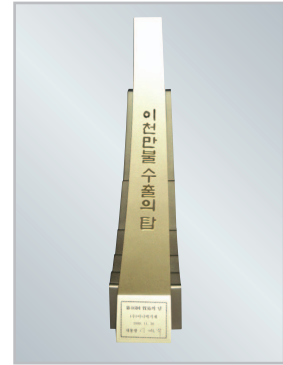
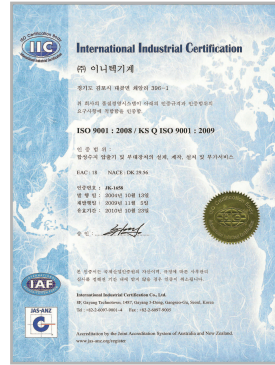
● PERFORMANCE



● CUSTOMER'S INSPECTION



Quality Control / Patent Rights and Certificates



● MACHINERY

Extrusion Laminator

Single Extrusion Laminator
Tandem Extrusion Laminator
Co-Extrusion Laminator

PP,PE,PS,ABS,PVC,PET Sheet Machine

Thin Sheet Machine
Thick Sheet Machine
Multi-Layer Sheet Machine
Twin Screw Extrusion PET Sheet Machine

Special Sheet Machine

PP,HDPE DANPLA(Corrugated) Sheet Machine
PP,PS Foamed Sheet Machine
EVA,ECB GEO-Membrane Sheet Machine
Sheet + Non-Woven Fabric Sheet Machine

Cast Film Machine

CPP,CPE Film Machine
LLDPE + EVA Ventilation Film Machine

AL Composite Panel Machine

Pipe Machine

PVC Pipe Machine (Single, Twin)
PVC DSF Pipe Machine (Twin)
HDPE Pipe Machine

Monofilament Machine

Nylon, Polyester Monofilament Machine
PP,HDPE Monofilament Machine
PP DANLINE Monofilament Machine

Compounding Machine

Single, Twin Extrusion Compounding Machine
Wet Type Compounding Machine
Dry Type Compounding Machine

Rubber Extruder

Rubber Tube Extruder
Strainer

Super Henschel Mixer

Super Mixer
Combination (Mixer + Cooler) Mixer

● PLANT

Spiral Pipe Mill

Steel Pipe External Shotblasting & 3 Layers Coating Plant

Steel Pipe External Shotblasting & FBE Coating Plant

Company View





 INTERNATIONAL WORLD WIDE SALES CONTACT
HARVE TUBE TEKNIQS Pvt. Ltd

www.harvegroup.com

Regd Office 616 Raheja Palm Spring Complex, New Link Road, Above CROMA, Malad (West)
Mumbai-400064, India.
Tel 91-22-28805161 **Telefax** 91-22-28445116 **E-mail** rsh@harvegroup.com

MANUFACTURED BY

 **INITECH MACHINERY CO., LTD.**

Head Office 396-1, Seam-ri, Daegot-Myun, Gimpo-Si, Gyeonggi-Do, 415-855, Korea

Second Office 524-4, Chowonji-ri, Daegot-myeon, Gimpo-si, Gyeonggi-do, 415-837, Korea