



K&D. PRESENTATION



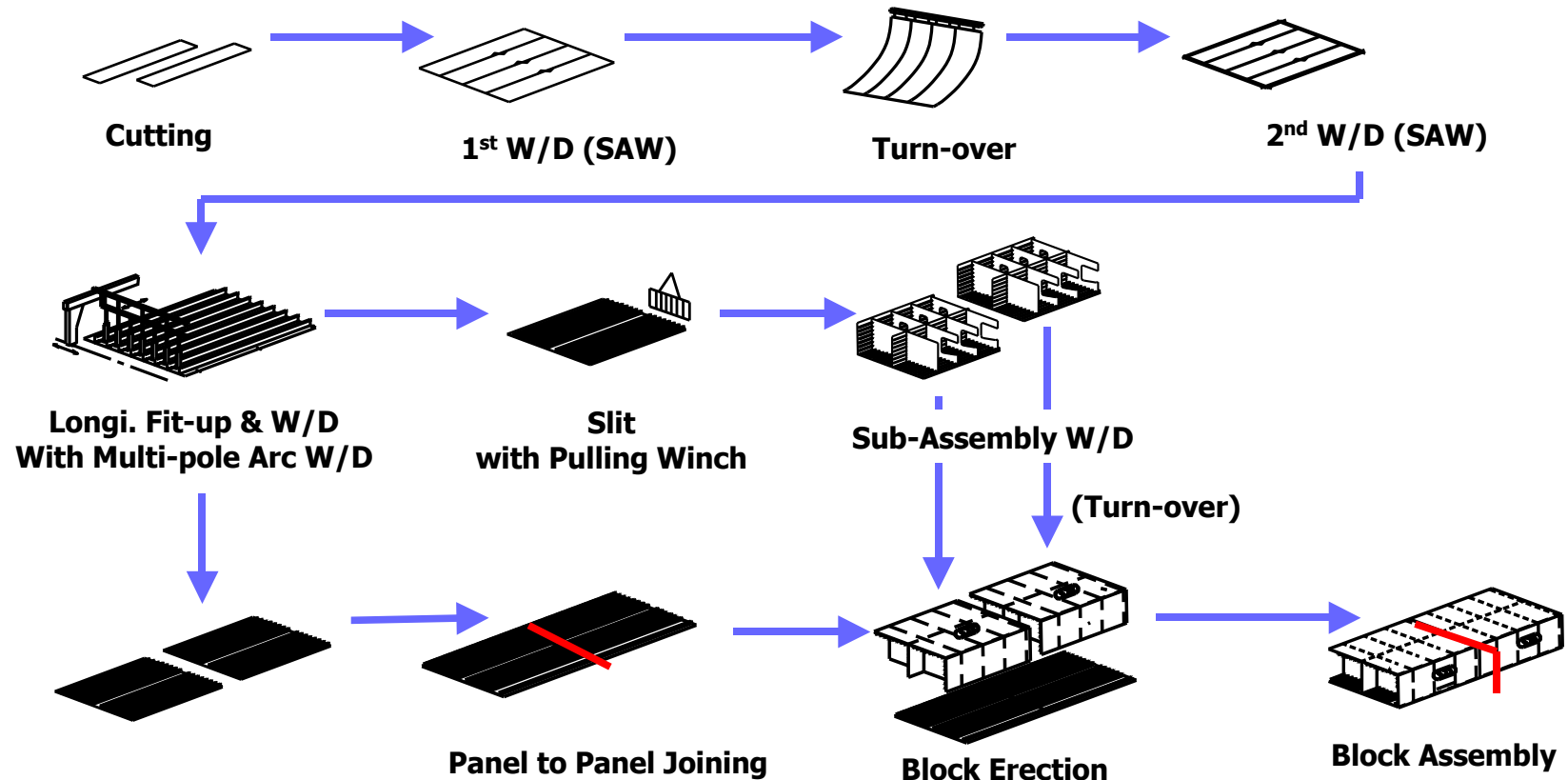


A. Shipbuilding Fab. System



1) Panel Line

- Ship Block Work Flow





A. Shipbuilding Fab. System



1) Panel Line

- Plate Joining Machine

Description	Specification
Structure Type	Gantry
Tack Welding Method	FCAW (Manual Welding)
Current Range	Max. 350 A
Traveling Speed	Max. 15 m/min
Traversing Speed	17 m/min
Plate Pressing Power	8Ton/Ea x 4Ea x 2Set = 64Ton
Slewing Angle	-90°, 0°, +90°
X-Y-Z Slide	X-Y Dir Stroke : ±150mm
	Z Dir Stroke : 400mm
Pulling Magnet	2.5 Ton x 4Ea = 10Ton (Ø315mm)
Hydraulic Unit	Working 140Kg/cm ²





A. Shipbuilding Fab. System



1) Panel Line

- Butt Welding Machine

Description	Specification
Welding Method	SAW 2 Poles – 2 Heads
Current Range	DC 300~1,500 A
	DC 300~1,200 A
Welding Wire	Ø 4 ~ 4.8 mm
Welding Speed	0.5~2.0 m/min
Carriage Speed	Max. 30 m/min
Structure Type	Gantry
Seam Tracking	Laser Sensor
Flux Supply & Recovery	Auto Recycling System





A. Shipbuilding Fab. System



1) Panel Line

- Longi. Stiffener Fit-up Machine

Description	Specification
Welding Method	FCAW
Current Range	Max. 350 A
Welding Wire	Ø 1.2~1.6 mm
Welding Speed	100~800 mm/min
Traveling Speed	Max. 30 m/min
Structure Type	Gantry
Seam Tracking	Mechanical Guide Roller





A. Shipbuilding Fab. System



1) Panel Line

- 40-Poles Stiffener Welding Machine

Description	Specification
Welding Method	FCAW Twin Tandem (5~10 Heads)
Current Range	Max. 600 A
Welding Wire	Ø 1.2 ~ 1.6 mm
Welding Speed	0.1 ~ 1.5 m/min
Traveling Speed	Max. 30 m/min
Return Speed	Max. 10 m/min
Structure Type	Gantry
Seam Tracking	Mechanical Guide Roller
Welding Database	Memory & Playback





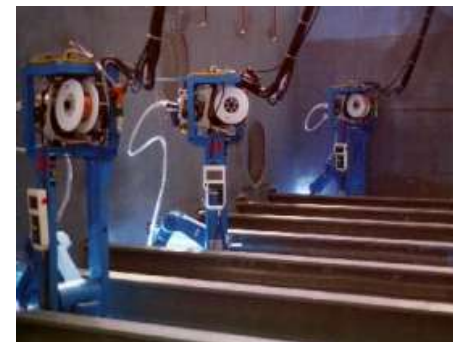
A. Shipbuilding Fab. System



1) Panel Line

- Robot Welding Machine

Description	Specification
Welding Method	FCAW 1 Pole – 12 Heads
Current Range	Max. 600 A
Welding Wire	Ø 1.2~1.6 mm
Welding Speed	0.1~0.5 m/min
Traveling Speed	Max. 10 m/min
Seam Tracking	Touch Sensor, Arc Sensor
Structure Type	Gantry
Robot Type	5 Axes Articulated
Programming Type	Off-line
Program Download	LAN
Work Division	Cell Controller





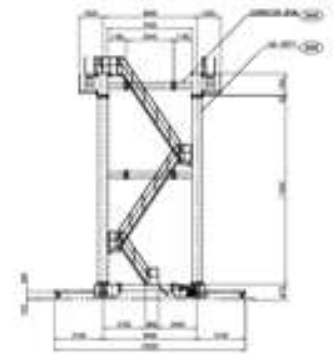
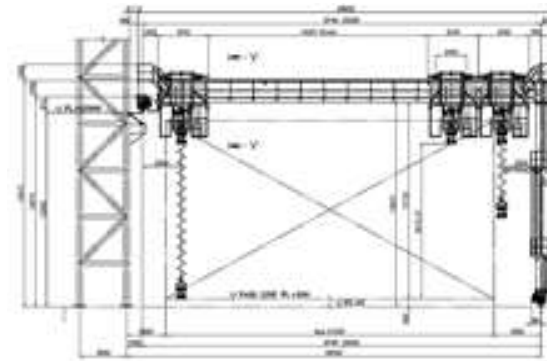
A. Shipbuilding Fab. System



1) Panel Line

- Co2 Welding Service Gantry

Description		Specification
Welding Method		Manual FCAW 1 Pole x 12Head
Current Range		Max. 600 A
Welding Wire		Ø 1.2 ~ 1.6 mm
Welding Speed		0.1 ~ 0.5 m/min
Structure Type		Gantry
Gantry Traveling Speed		Max. 15 m/min
Gantry Span		25,500mm
Hoist for Bucket Up-down	Capacity	0.5Ton x 12Sets
	Hoisting Speed	10m/min
	Hoisting Stroke	10,000mm
	Traversing Speed	12m/min





A. Shipbuilding Fab. System



1) Panel Line

- Co2 Welding Service Hanger

Description		Specification
Welding Method		Manual FCAW 1 Pole x 10Head
Current Range		Max. 600 A
Welding Wire		Ø 1.2 ~ 1.6 mm
Welding Speed		0.1 ~ 0.5 m/min
Structure Type		Wall Crane
Traveling Speed		Max. 10 m/min
Boom Span		20,000mm
Hoist for Bucket Up-down	Capacity	0.5Ton x 10Sets
	Hoisting Speed	10m/min
	Hoisting Stroke	7,000mm
	Traversing Speed	12m/min





A. Shipbuilding Fab. System



1) Panel Line

- Pulling Winch

Description	Specification
Working Load	10Ton x 5st = 50Tom
Pulling Speed	5 / 10m.min (Inverter Control)
Pulling Motor	AC 22kw Cyclo Geared Motor
Welding Speed	0.1 ~ 0.5 m/min
Winding Distance	35m
Travelling Method	Manual
Pulling Wire	Ø 20 Wire Rope
Body Clamping	Hydraulic System
Control	Wired / Wireless Remote Control





A. Shipbuilding Fab. System



1) Panel Line

- Chain Conveyor & Idle Roller

Description		Specification
Chain Conveyor	Feeding Motor	AC22kw x 6p
	Reducer	Box Type 1/312
	Feeding Speed	1 ~ 6m/min (Inverter)
	Chain	RF17200-M
	Feeding Weight	250Ton
	Feeding Control	Inverter
	Control	Wired / Wireless Remote Control
Idle Roller	Roller Size	Ø 200 x W80
	Pass Line	F.L + 400mm
	Loading Weight	3Ton





A. Shipbuilding Fab. System



2) Small Component Fabrication Line

Stage	Process	Specification
Small Material Handling Device	Handling Capacity	320Kg
	Up-down Stroke	1,000 mm
	Up-down Method	Air Balance Hoist
6-Poles Welding Machine	Welding Method	FCAW 1 Pole
	Current Range	Max. 600 A
	Welding Wire	Ø 1.2 ~ 1.6 mm
	Welding Speed	0.1 ~ 0.5 m/min
	Traveling Speed	Max. 30 m/min





A. Shipbuilding Fab. System



3) Curved Block Line

- Chain Conveyor
- Skid 정반
- Pin Jig
- Welding Service Gantry





A. Shipbuilding Fab. System



4) T-bar Auto Fabrication Line

- Edge Rounding Machine
- Main Welding Stage
- Shot & Painting Stage
- Fit-up Stage
- Repair Welding Stage
- Straightening Stage





A. Shipbuilding Fab. System



5) Pipe Spool Fabrication Line

- Pipe Cutting machine
- Feeding Conveyor
- Flange Fit-up Machine
- Transfer Car
- Pipe to Flange Welding M/C
- Turning Roller
- Welding Manipulator
- Tilted Turning Roller
- Welding Positioner
- Clamping Turning Roller
- Pipe Bending Machine
- Jib Crane





A. Shipbuilding Fab. System



6) Propeller Fabrication Line

- Propeller Turning Machine
- Pitch Measuring Machine
- Boss Boring Machine
- Blade Milling Machine
- Propeller Balancing M/C





A. Shipbuilding Fab. System



7) Block handing system

Stage	Process	Specification
Block jack up system	Lifting Capacity	200tons
	Up-down Stroke	1,800 mm
	Up-down Method	Hydraulic system
	Block dimension	15m X 15m

Stage	Process	Specification
Block transfer system	Lifting Capacity	150tons
	Up-down Stroke	300 mm
	Up-down Method	Hydraulic system
	Block dimension	15m X 15m





A. Shipbuilding Fab. System



8) Loadout system



Stage	Process	Specification
Block transfer system	Lifting Capacity	20000tons
	Speed	500 mm/min
	Method	Hydraulic system





B. Steel Structure Fab. System



1) Bridge Box Girder Fabrication Line

- Roller Conveyor
- CNC Drilling Machine
- Butt Welding machine
- Marking Cutting Machine
- Stiffener Fit-up Machine
- Stiffener Welding Machine
- Flange Straightening Machine
- Box Fit-up Machine
- Box Out-Side Welding Machine
- Box Turning Machine





B. Steel Structure Fab. System



2) Column Box Girder Fabrication Line

- Roller Conveyor
- Butt Welding machine
- Marking Cutting Machine
- Diaphragm Fit-up Machine
- Diaphragm Welding Machine
- High Current Welding Machine
- Box Turning Machine





B. Steel Structure Fab. System



3) H-Beam Fabrication Line

- Gas Cutting System
- In-Feeding Conveyor & Centering Device
- Auto Fit-Up & Tack Welding M/C
- Turning Device
- Lifting Device
- Main Welding Machine
- Turning Device
- Straightening Machine



GAS CUTTING	CENTERING	CO2 WELDING	TURNING	LIFTING
CO2 WELDING	SUBMERGED ARC WELDING	SUBMERGED ARC WELDING	STRAIGHTENING	COMPLETION





C. Pipe & Pressure Vessel Fab. System



1) Pipe Spool Equipment

- Pipe Beveling Machine (Max. Ø4")

Description	Specification
Dimension	1,050 × 1,250 × 1,420 mm
Weight	750 kg
Beveling Angle	25 ~ 35 °
Rotating Speed	0 ~ 1,600 rpm
Pipe Diameter	0.5 ~ 4 "
Input Power	380 V, Ø 3, 50/60 Hz
Drive Motor Power	Gear Motor 1.5 kW





C. Pipe & Pressure Vessel Fab. System



1) Pipe Spool Equipment

- Pipe Beveling Machine (Max. Ø32")

Description		Specification
Operating Method		CNC Control
Beveling Capacity	Diameter	Ø 6~32 "
	Thickness	100 mm
Face Plate Diameter		Ø 27.5 "
Spindle Part	Spindle R.P.M	40~200 rpm
	Main Motor	11 kW
X-axis Part(Tool)	Motor(Servo)	1.5 kW
	Stroke	130 mm
Y-axis Part(Head)	Motor(Servo)	2 kW
	Stroke	250 mm
Clamping (Chuck)	Range	Ø 6~32 "
	Motor(Geared)	1.5 kW





C. Pipe & Pressure Vessel Fab. System



1) Pipe Spool Equipment

- Auto GTAW System

Composition

Rotator Type

- GTAW Equipment
- Support Roll with Rail
- Rotator with Manipulator

Positioner Type

- GTAW Equipment
- Support Roll with Rail
- Positioner
- Welding Manipulator with Rail

System Capacity

- 1) Rotator with Manipulator : Max. Ø48"
- 2) Positioner : Max. Ø48"
- 3) Manipulator for Positioner : Max. Ø48"
- 4) Support Roller & Rail :
Pipe Length Max. 12,000 mm



<Rotator Type>



<Positioner Type>





C. Pipe & Pressure Vessel Fab. System



1) Pipe Spool Equipment

- Auto FCAW System

Composition

Rotator Type

- FCAW Equipment
- Support Roll with Rail
- Rotator with Manipulator

Positioner Type

- FCAW Equipment
- Support Roll with Rail
- Positioner
- Welding Manipulator with Rail

System Capacity

- 1) Rotator with Manipulator : Max. Ø48"
- 2) Positioner : Max. Ø48"
- 3) Manipulator for Positioner : Max. Ø48"
- 4) Support Roller & Rail :
Pipe Length Max. 12,000 mm



<Rotator Type>



<Positioner Type>



C. Pipe & Pressure Vessel Fab. System



1) Pipe Spool Equipment

- Auto SAW System

Composition

Rotator Type

- SAW Equipment
- Support Roll with Rail
- Rotator with Manipulator

Positioner Type

- SAW Equipment
- Support Roll with Rail
- Positioner
- Welding Manipulator with Rail

System Capacity

- 1) Rotator with Manipulator : Max. Ø48"
- 2) Positioner : Max. Ø48"
- 3) Manipulator for Positioner : Max. Ø48"
- 4) Support Roller & Rail :
Pipe Length Max. 12,000 mm



<Rotator Type>



<Positioner Type>



C. Pipe & Pressure Vessel Fab. System



2) Pipe Line Equipment

- Double Joint Inside Welding System

Description	Specification
Welding Method	SAW 1 Pole
Current Range	DC 300~1,500 A
Welding Wire	Ø 3.2, 4.0 mm
Pipe Diameter	Ø 16~48 "
Welding Speed	0.3~1.0 m/min
Bevel Type	Narrow or U-groove
Structure Type	Moving Boom
Seam Tracking	Laser Sensor
Welding Database	Memory & Playback
Flux Supply & Recovery	Auto Recycling System





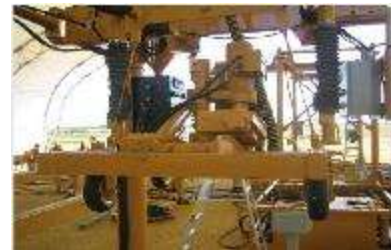
C. Pipe & Pressure Vessel Fab. System



2) Pipe Line Equipment

- Double Joint Outside Welding System

Description	Specification
Welding Method	SAW 1 Pole or 2 Poles
Current Range	DC 300~1,500 A
Welding Wire	Ø 3.2 ~ Ø 4.0 mm
Pipe Diameter	Ø 16~48 "
Welding Speed	0.5~1.2 m/min
Bevel Type	Narrow or U-groove
Fit-up	Internal Clamp
Structure Type	Boom & Column
Seam Tracking	Laser Spot Light
Flux Supply & Recovery	Auto Recycling System





C. Pipe & Pressure Vessel Fab. System



3) Pipe Mill Equipment

- In/Outside Welding System(1/3)

Facilities

- 1) Inner longitudinal Welding System for Steel Pipe (3 Poles)
- 2) Exterior Longitudinal Welding System for Steel Pipe (5 Poles)
- 3) Secondary Material Transport Car
- 4) Secondary Material Transport Conveyor



Production Capacity

- 1) Standard Specification of Material:
Ø44"×25.4mmt ×12,200mm
- 2) Productivity
 - Inner Welding: 3pcs/hr, 1M/C
(on the basis of arc rate 70% and operating rate 100%)
 - Exterior Welding: 5pcs/hr, 1M/C
(on the basis of arc rate 70% and operating rate 100%)
- 3) Product Material: API 5L X42 ~ API 5L X80
(included mild steels)
- 4) Product Shape and Range: Circular Pipe, Ø16~60", 6~40mmt
- 5) Product Length: 6,000~12,000mm





E. Transportation Equipment



Transfer Car



Mega Block Transportation System



Mega Block Transportation System



Mega Block Transportation System



Mine Block Transfer Car



Block Lifting & Adjusting Transfer Car



Propeller & Rudder Transportation System



E. Transportation Equipment



Transfer Car



50Ton Battery Transfer Car



450Ton Block Car



400Ton Transfer Car



60Ton Turn Table Car



100Ton Transfer Car



300Ton Transfer Car



G. Industrial Machinery



1) Lug Welding Machine

Description		Specification
Work Loading Crane	Spam	10m
	Travelling Speed	12m/min
	Travelling Rail	22kg/m
	Hoisting Capacity	1Ton
	Traversing Speed	18.8m/min
	Lifting Speed	6.5m/min
	Magnet Capacity	500kg
Turn Table	Size	Ø700
	Turning Speed	5 rpm
	Turning Motor	Servo
Welding	Welding Method	FCAW 1 Pole x 4Head
	Current Range	Max. 600 A
	Welding Wire	Ø 1.2 ~ 1.6 mm
	Welding Speed	0.1 ~ 0.5 m/min

