

PUMPS



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Your Reliable Partner, Hyundai Heavy Industries Turbomachinery (HHI-TMC)

HHI-TMC aims to provide more specialized products and services in the fields of turbo machinery by combining a wealth of production capabilities, abundant experiences and technology earned from this business sector over the last four decades.

HHI-TMC produces a wide variety of pumps for industrial and marine use including ships, offshore oil and gas facilities, thermal and nuclear power generation, desalination, and petrochemical plants.

HHI-TMC creates more values for our customers and provides optimum solutions to their needs through stringent process management ranging from material production to precision machining, assembly and performance testing.

HHI-TMC, as an affiliate of the world's No.1 shipbuilder HHI, has been technologically and systematically supported from Hyundai Heavy Industries Group. HHI-TMC continues to develop technology and to make sustainable growth for health, safety and environment management, quality management and customer services.

HHI-TMC will make an uncompromising commitment to service our customers and industry with high quality goods and services.



Brief History: Towards Best Partner for Turbomachinery

HHI-TMC started its business in 1978.

Now HHI-TMC is positioned to be one of top players of turbo machinery sector, as we are well aligned to our customers needs through developing its own proprietary technology and products, or through strategic technical collaboration with advanced companies.

Based on reputation and commitment, HHI-TMC produces a wide variety of pumps, centrifugal compressors and steam turbines for industrial and marine use including ships, offshore oil and gas facilities, thermal and nuclear power generation, desalination, and petrochemical plants.

HHI-TMC has supplied over 2,500 units of engineering pumps to the markets around the world since 1979. Notably, HHI-TMC has supplied main turbo machinery for Al-Khobar Power & Desalination Plant Phase 2 in 1981 and Uljin Nuclear Power Plant in 1986.

HHI-TMC will set up our own tradition of constant growth to be a best supplier in the market, by making an uncompromising commitment to service customers and industry with high quality goods and services.

1972. Establishing Hyundai Heavy Industries Co., Ltd. as a Shipbuilder

1978. Construction of the Industrial Equipment Plant.

1979. Manufacturing 1st Hyundai Pump

1986. Manufacturing 1st Pump for Nuclear Power Plant

1988. Manufacturing the Large Pump for Desalination Plant

1993. Manufacturing the Cargo Oil Pump

1995. Manufacturing the Concrete Volute Pump

1997. Manufacturing the Boiler Feed Water Pump

1999. Supplying 1000th Pump

2009. Manufacturing the Oil Stockpiling Pump

2010. Manufacturing the Aux. Feed Water Pump for Nuclear Power Plant

2011. Technology Share License Agreement with Mitsubishi for Gas Compressors

2014. Development of the Air Compressor

2015. Manufacturing the Steam Turbine

2016. Establishing Hyundai Heavy Industries Turbo Machinery Co., Ltd.

(Specialized in Turbo Machinery, Industrial Pumps, Compressors and Steam Turbines.)



**HHI-TMC
Products**

VERTICAL PUMPS

Vertical Pumps

Applications

Power Plant: Cooling Water Pump, Circulating Water Pump, Condensate Pump, Sea Water Lift Pump
 Desalination Plant: Brine Recirculation Pump, Brine Blow-down Pump, Distillate Pump, Sea Water Intake Pump
 Sewage Treatment Plant: Influent Pump, Effluent Pump
 City Water: Intake Pump, Transfer Pump
 Other Water Works: Rain Water Drainage Pump, Irrigation Pump, Fire Fighting Pump
 Dock Dewatering Pump, ETC

Features

Stability in capacity, head and shaft power enables continuous operation without noise or vibration, even under circumstances where a wide variation of capacity is required.
 Comparative low revolution speed of pump attains high suction performance, eliminating cavitation problem, and is suitable for a system of a wide variation of water level.
 Superior quality and high performance.
 No fear for surging and overload.
 Large variety of options to meet all customer's requirements in combination of materials and constructions.

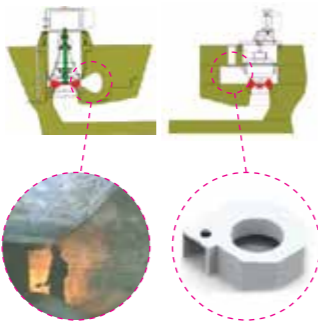




Models

Model	VK / VA	VKN
Type	Vertical Single Stage Pump (Mixed Flow, Radial Flow, Axial Flow)	Vertical Single Stage Pump-Pullout Type (Mixed Flow, Radial Flow, Axial Flow)
General Specification	Size: 300~3,500mm Capacity: 1,000~100,000m ³ /h Head: 10~160m	Size: 300~3,500mm Capacity: 1,000~100,000m ³ /h Head: 10~150m
Figure		
Major Applications	<ul style="list-style-type: none"> - Cooling Water Pumps - Circulating Water Pumps - Sea Water (Lift) Pumps - Irrigation and Drainage Pumps - Dock Dewatering Pumps - Influent and Effluent Pumps 	<ul style="list-style-type: none"> - Cooling Water Pumps - Circulating Water Pumps - Sea Water (Lift) Pumps - Irrigation and Drainage Pumps - Dock Dewatering Pumps - Influent and Effluent Pumps
API Application	VS1 / VS3	

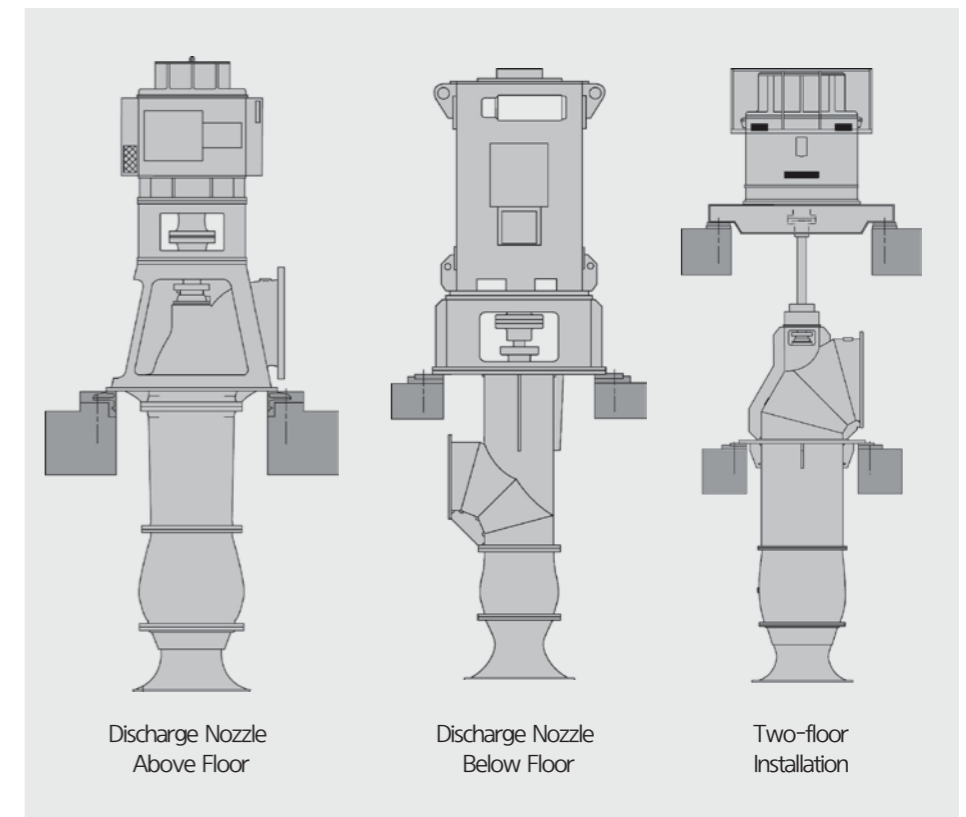
Model	VKA	VKAN
Type	Vertical Single Stage Pump -Vane Adjustable(Mixed Flow, Axial Flow)	Vertical Single Stage Pump -Pullout, Vane Adjustable(Mixed Flow, Axial Flow)
General Specification	Size: 2,000~3,000mm Capacity: 4,000~100,000m ³ /h Head: 10~150m	Size: 2,000~3,000mm Capacity: 4,000~100,000m ³ /h Head: 10~150m
Figure		
Major Applications	<ul style="list-style-type: none"> - Cooling Water Pumps - Circulating Water Pumps - Sea Water (Lift) Pumps 	<ul style="list-style-type: none"> - Cooling Water Pumps - Circulating Water Pumps - Sea Water (Lift) Pumps
API Application		

Models

Model	VC	VWDB
Type	Concrete Volute Pump	Vertical Barrel Pump -Double Suction
General Specification	Size : 300~3,500mm Capacity : 1,000~100,000m ³ /h Head : Max. 150m	Size : 300~1,600mm Capacity : 200~25,000m ³ /h Head : Max. 500m
Figure		
Major Applications	- Cooling Water Pumps - Circulating Water Pumps - Irrigation and Drainage Pumps - Flood Control Pumps	- Condensate (extraction) Pumps - Hot Water Pumps - Brine Recirculation Pumps - Brine Blow-Down Pumps - Distillate Pumps - Pipeline Booster and Product Unloading
API Application		VS6, VS7

Model	VKBx	VKx
Type	Vertical Barrel Pump -Single Suction	Vertical Multi Stage Pump
General Specification	Size : 300~1,600mm Capacity : 200~25,000m ³ /h Head : Max. 500m	Size : 300~1,600mm Capacity : 200~25,000m ³ /h Head : Max. 500m
Figure		
Major Applications	- Condensate (extraction) Pumps - Hot Water Pumps - Brine Recirculation Pumps - Brine Blow-Down Pumps - Distillate Pumps - Pipeline Booster and Product Unloading	- Cooling Water Pumps - Circulating Water Pumps - Sea Water (Lift) Pumps - Irrigation and Drainage Pumps - Dock Dewatering Pumps - Influent and Effluent Pumps
API Application	VS6	VS1, VS2

Installations



For Making Inquiries

In sending your inquiries for estimate or planning, please forward following:

- Capacity, Head, NPSHa
- Application of pump, construction, and installation method.
- Water quality and temperature.
- Driver, type of driver system (Frequency of available electricity).
- Distance from installed level of pump to the lowest water level.
- Materials if you have any special requirements.

**HHI-TMC
Products**

HORIZONTAL PUMPS

Horizontal Pumps

Applications


Power Plant: Feedwater Booster Pump, Boiler Feedwater Pump, Circulating Pump
 Desalination Plant: RO High Pressure Pump, Product Water Pump, Process Pump
 Sewage Treatment Plant: Influent Pump, Effluent Pump
 City Water: Intake Pump, Transfer Pump
 Oil & Gas: Crude Transfer/Booster Pump, Offshore Export Pump, Water Injection Pump
 Other Water Works: De-scaling Pump, District-heating Pump, General Industrial Pump

Features



Split case design permits easy disassembly, that is, inspection is simplified, it is not necessary to disturb pump alignment and suction & discharge piping when parts replacement is necessary.
 Double suction with advanced design of suction performance ensures high suction heads even with large capacities. Compared with conventional double suction design with the possibility of using a high speed motor, such system and related facilities can be installed in a small area.
 Higher operating efficiency over a wider range of capacities, lower operation cost and smaller motor output are all possible.
 Pump operation with lower noise & smaller pressure pulsation ensures comfortable environment.
 Variable combinations of materials permit wide application.





Models


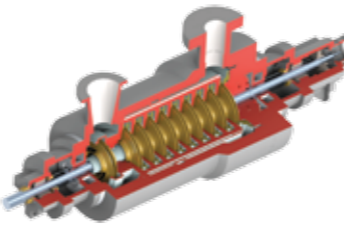
Model	HD / HS	
Type	Horizontal Double Suction Pump (Axial Split)	
General Specification	Size: 200~1,800mm Capacity: 300~28,000m ³ /h Head: Max. 800m	
Figure		
Major Applications	<ul style="list-style-type: none"> - Water Intake Pumps - Circulating Pumps - District Heating Pumps - Feedwater Booster Pumps - Crude Transfer/Booster Pumps - Offshore Export Pumps - General Industrial Pumps 	
API Application	BB1	



Model	HDR	HSR
Type	Horizontal Double Suction Pump (Radial Split)	Horizontal Double Suction Diffuser Type Pump
General Specification	Size: 400~600mm Capacity: 2,000~6,000m ³ /h Head: 500~800m	Size: 200~1,800mm Capacity: 300~28,000m ³ /h Head: Max. 800m
Figure		
Major Applications	<ul style="list-style-type: none"> - Water Intake Pumps - Circulating Pumps - District Heating Pumps - Feedwater Booster Pumps - Crude Transfer/Booster Pumps - Offshore Export Pumps - General Industrial Pumps 	<ul style="list-style-type: none"> - Water Intake Pumps - Circulating Pumps - District Heating Pumps - Feedwater Booster Pumps - Crude Transfer/Booster Pumps - Offshore Export Pumps - General Industrial Pumps
API Application	BB2	BB2

Models

Model	HMA	HMBA
Type	Axial-split Volute-type Multi-stage Pump	Double Case with Axial-split Volute-type Multi-stage Pump
General Specification	Size: 100~400mm Capacity: 150~2,000m ³ /h Head: Max. 1,800m	Size: 100~400mm Capacity: 200~2,000m ³ /h Head: Max. 4,000m
Figure		
Major Applications	- Boiler Feedwater Pumps, - Water-Injection Pumps - Steam Generate Pumps - De-scaling Pumps	- Boiler Feedwater Pumps, - Water-Injection Pumps - Steam Generate Pumps - De-scaling Pumps
API Application	BB3	BB5

Model	HMR	HMBR
Type	Radial-split Diffuser-type Multi-stage Pump	Double Case with Radial-split Diffuser-type Multi-stage Pump
General Specification	Size: 100~300mm Capacity: 150~700m ³ /h Head: Max. 2,500m	Size: 100~400mm Capacity: 200~2,000m ³ /h Head: Max. 4,000m
Figure		
Major Applications	- Boiler Feedwater Pumps, - Water-Injection Pumps - Steam Generate Pumps - De-scaling Pumps	- Boiler Feedwater Pumps, - Water-Injection Pumps - Steam Generate Pumps - De-scaling Pumps
API Application	BB4	BB5

Installations



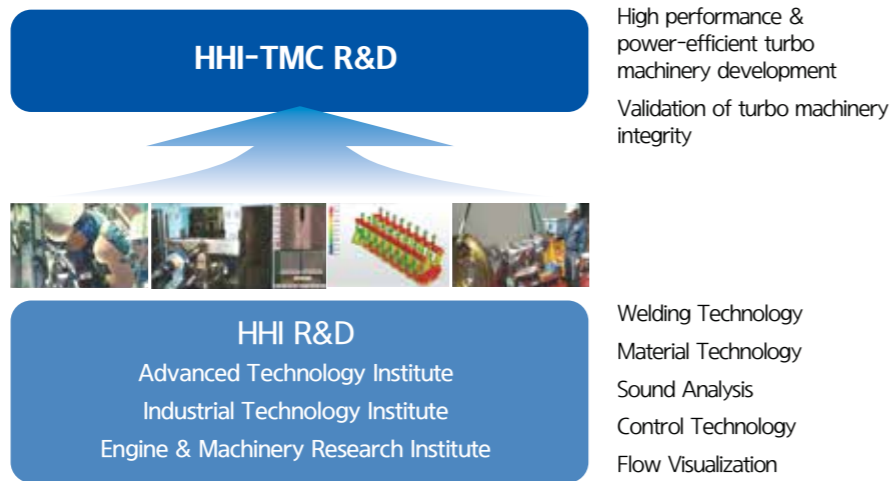
For Making Inquiries

In sending your inquiries for estimate or planning, please forward following:

- Capacity, Head, NPSHa
- Application of pump, construction, and installation method.
- Water quality and temperature.
- Driver, type of driver system (Frequency of available electricity).
- Distance from installed level of pump to the lowest water level.
- Materials if you have any special requirements.

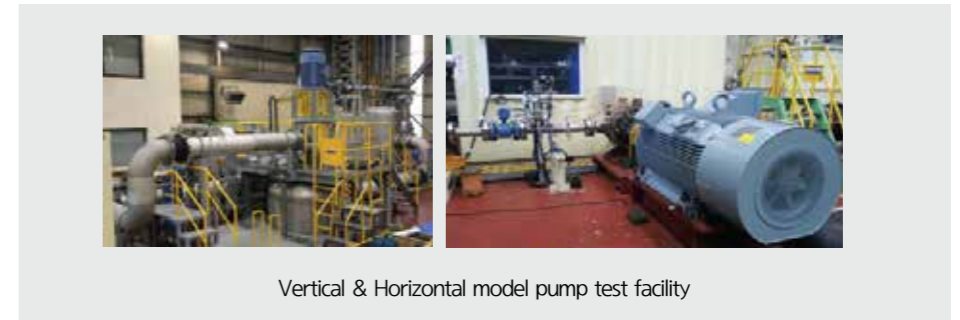
Research and Development

R&D Center



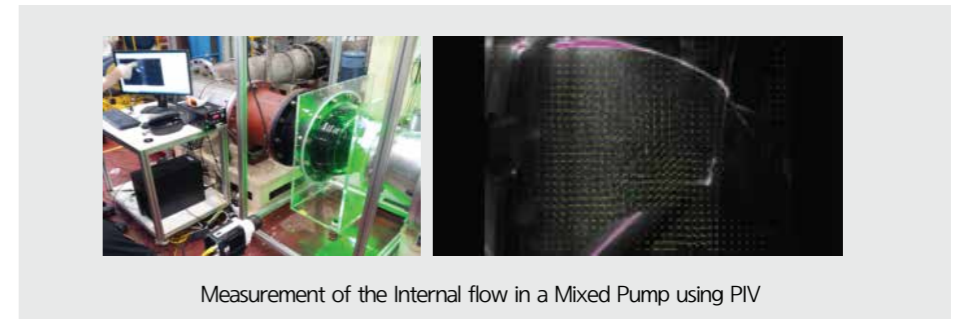
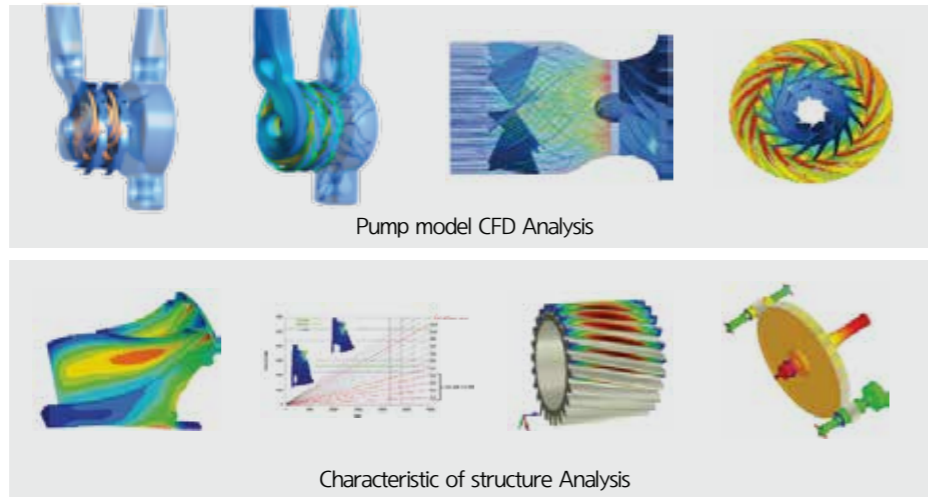
TEST

Verification of Turbo machinery Performance and Power efficiency (Vertical & Horizontal type pump, Centrifugal compressor)
Development of Flow Measurement Technique
Estimation of Axial Thrust and Vibration Characteristics



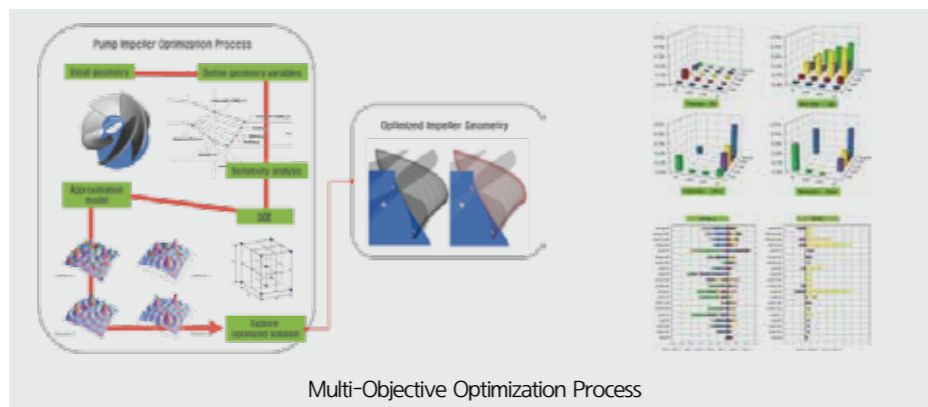
CFD/FEM

Improvement of Performance Estimation Accuracy at Off-design point
Estimation of Leakage and Thrust
Rotordynamics Analysis for Stable Operation
FE-Analysis for Structural Integrity & Dynamic Stability

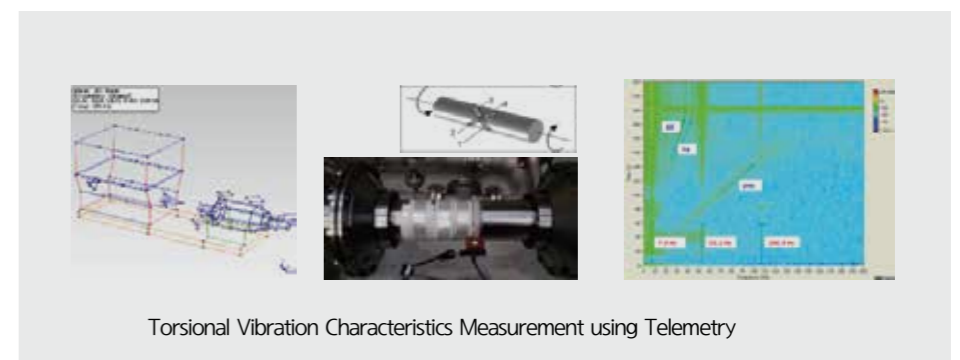
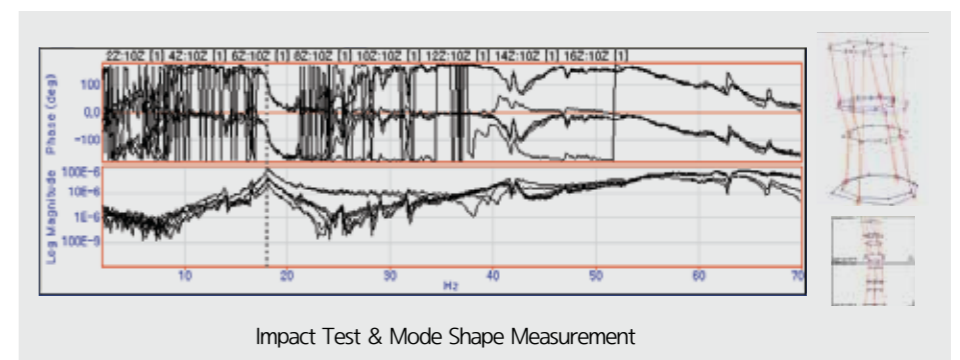


Optimization

Development of Multi-Objective Optimization Technique
Optimization of Balance device



Experimental Model Analysis & ODS Measurement
Torsional Vibration Measurement



Test Facilities Capacity

Test Capacity

FACILITIES	SPECIFICATIONS	Q'TY
1)Open Loop Test -Vertical-Type	Max. Flow Rate 127,000 m³/hr	
2)Closed-Loop Test -Horizontal-Type -Vertical-Type -Horizontal High-Pressure	Max. Flow Rate 18,000 m³/hr Max. Flow Rate 18,000 m³/hr Max. Flow Rate 9,900 m³/hr	

Mechanical

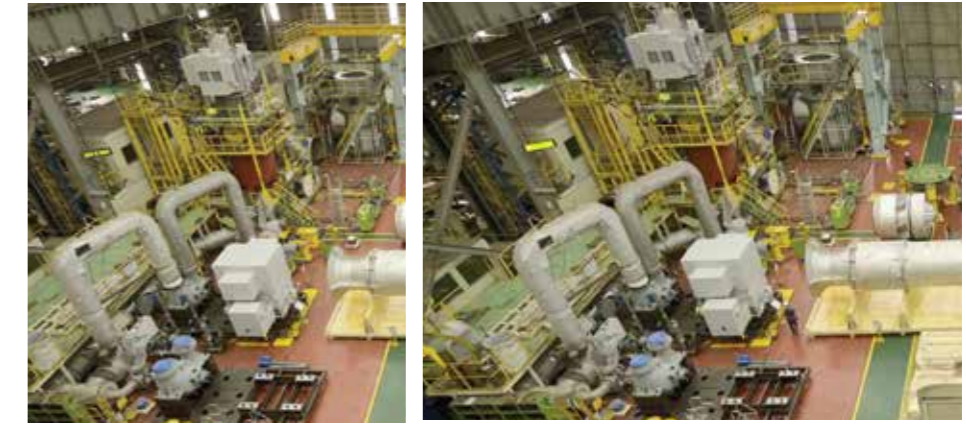
FACILITIES	SPECIFICATIONS	Q'TY
Suppressed Rectangular Weir	Width 6m, 62, 160m³/hr	2
Suppressed Rectangular Weir	Width 3m, 31, 80m³/hr	2
Functional Test Equipment		
1)Ultra-High-Pressure Pump	9,900 m³/hr X 400 kg/cm²	2
-Motor for Shop Test	20,000kW X 60Hz X 3Φ	1
-Fluid Coupling	20,000kW(3,200~7,200rpm)	1
2)High-Pressure Pump	18,000 m³/hr X 50 kg/cm²	2
3)Horizontal Pump	20 kg/cm²	4
4)Vertical Pump	30 kg/cm²	4
5)Marine Pump	20 kg/cm²	5
6)Model Test Equipment	3,000 m³/hr X 15 kg/cm²	1
Others		
1)Hydrstatic Test Equipment	1,000kg/cm², 50kg/cm² Φ3,000 X 5,000 X 7,000kg	2
2)Balancing Machine		3

Electrical

FACILITIES	SPECIFICATIONS	Q'TY
Control Desk	Monitoring System, Measuring System Pump/Motor/Valve Control	2
Data Logger	40CH kW V A PF Hz (Power Measuring)	1
Analyzing Recorder	12CH kW V A PF (Power Measuring)	2
Motor-Generator Set	11,000kVA X 3.8kV X 60Hz (M) 10,000kVA X 11-6.3kV X 50Hz (G)	1 1
Transformer	7,800kVA X 13.8kV/6.6-3.3kV, etc	5
Auto-Transformer	5,200kVA X 13.8kV X 80-65-50%TAP, etc	5
Torque Meter, Vibration Meter		5



Test Bed Lay Out
P1-01~04 (PC50)



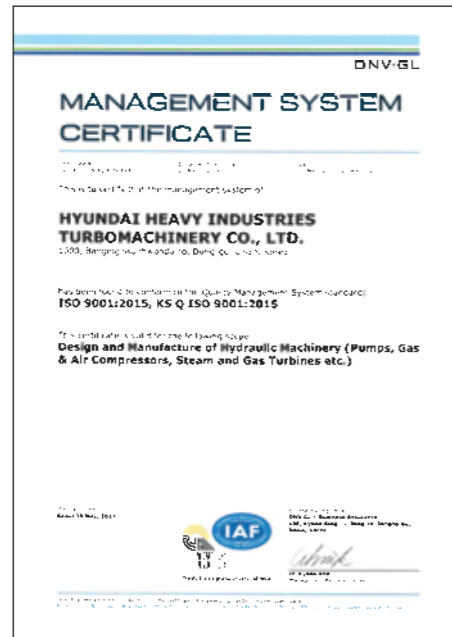
Test Bed Lay Out
PC500, Cargo



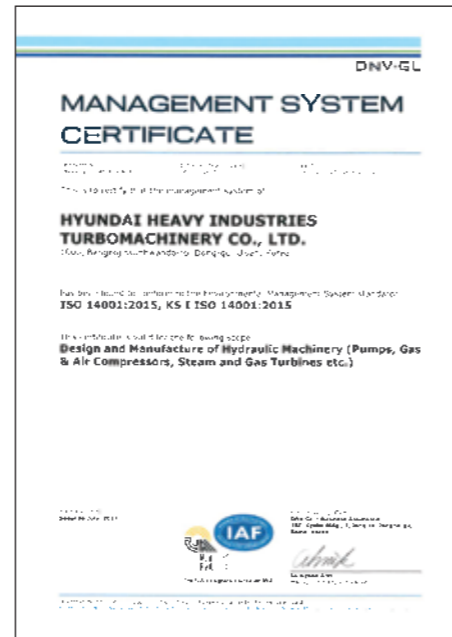
Test Bed Lay Out
PC30



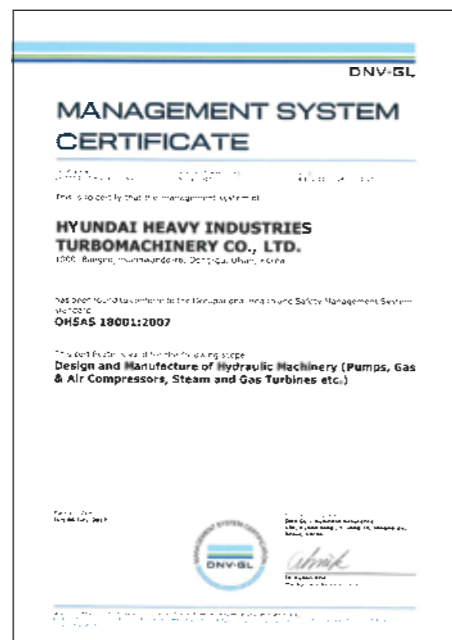
Certificates



ISO 9001-2015



ISO 14001



OHSAS 18001



TMC_KEPIC-MN

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Global Network for HHI Group

