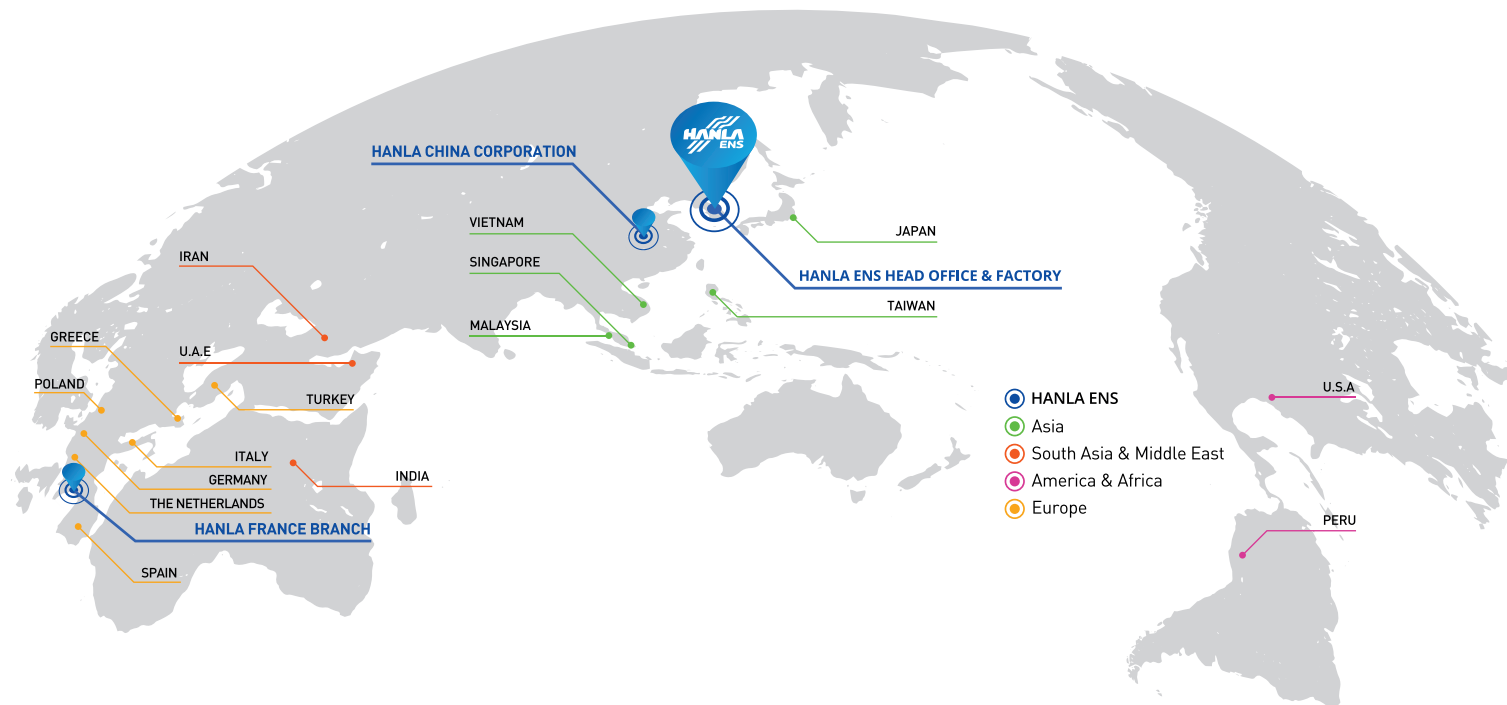


| GLOBAL NETWORK SERVICE



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HANLA
IMS
INSTRUMENT
MONITORING
SYSTEM

**VALVE REMOTE
CONTROL SYSTEM**



Greetings / Company History

Our company was established in 1989 specialized in the production of the level measuring instrument with the people oriented business philosophy while leading the technology. As a result, the company was listed in KOSDAQ under the company name "HANLA Level Co., Ltd. in 2007. In Oct. 2009, the company name was changed to HANLA IMS Co., Ltd. and now we are pushing forward with another new take-off through the expansion of the business area.

The company name was changed to HANLA IMS (Instrumentation Machinery System) Co., Ltd. to cover every business area to be diversified to Loading Computer, Valve Remote Control System, Deck Machinery, LED Lighting, Ballast Water Treatment System (BWTS), etc. from the measuring instrument business which is the company's existing business area, so we are determined to keep growing up as a company to be specialized in the integrate system in the field of shipbuilding and marine engineering, onshore plant and eco-friendly industry.

The business diversified to be developed for the company specialized in integrate system is now showing the increase in the sales every year thanks to our customers' encouragement and further BWTS will unveil the best quality product with better quality and price having the conveniences in installation and operation by improving the problems that other companies encountered in the existing market. Moreover, we are always doing our utmost for customer satisfaction since we have set up the factory in China to have the basis to be a global company.

We are committed ourselves to pulling out all the stops to be a company giving our customers the full satisfaction and reliability and contributing to the global society through the continuous challenge and innovation and continuous technical development.

We sincerely appreciate your encouragement and interest.

CEO/HANLA IMS Co., Ltd.

" We will provide our customers with much more benefits from the integrate system. "

CEO, Seok jun Ji

CEO, Yeong Gu Kim



1980

- 1989
- Established company

1990

- 1997
- ISO 9001 certified from DNV
- Representative agreement with kamstrup & klay : pressure & temperature instrument
- 1996
- Representative agreement with CSI by in Holland : Engine room alarm & monitoring system
- 1995
- Registered on manufacturer list of Korea Electric Power corporation about instrumentations : Nuclear electric power plant (T and S quality class)
- Technical license with Tokyo Keiso Japan : Level Instrument

- 1994
- Registered on manufacturer list of Korea Electric Power corporation for instrumentations : Thermal electric power plant (R quality class)
- Products type approved from : ABS, KR, LR, DNV, BV, GL, NK, RINA, etc
- Level instrumentations
- 1993
- Representative agreement with VEGA Germany : Level instrumentations
- 1992
- Technical agreement with Auxitrol France : Air purge type level gauging system
- Rader beam type level gauging system

2000

- 2005
- Awarded an export prize.(10,000,000 usd)
- Q-gold mark certified from Samsung Heavy Industries
- 2004
- Awarded an export prize(5,000,000 usd)
- 2002
- Established a joint-venture company in China : "TAIZHOU HANVI INSTRUMENT Co., Ltd
- 2000
- Moved into new factory in national industrial complex : Land 3,300m² / Floor space 3,200m²
- CE mark certified from DNV

- 2009
- Acquired equity in Blue Science Co.,Ltd
- Changed Name to HANLA IMS(November)
- Started business of Deck Machinery
- 2008
- Started business of Valve Remote Control
- Established an affiliated company of HANLA NMT
- 2007
- Established branch factory in China
- Listed in Korean Stock Market (KOSDAQ)

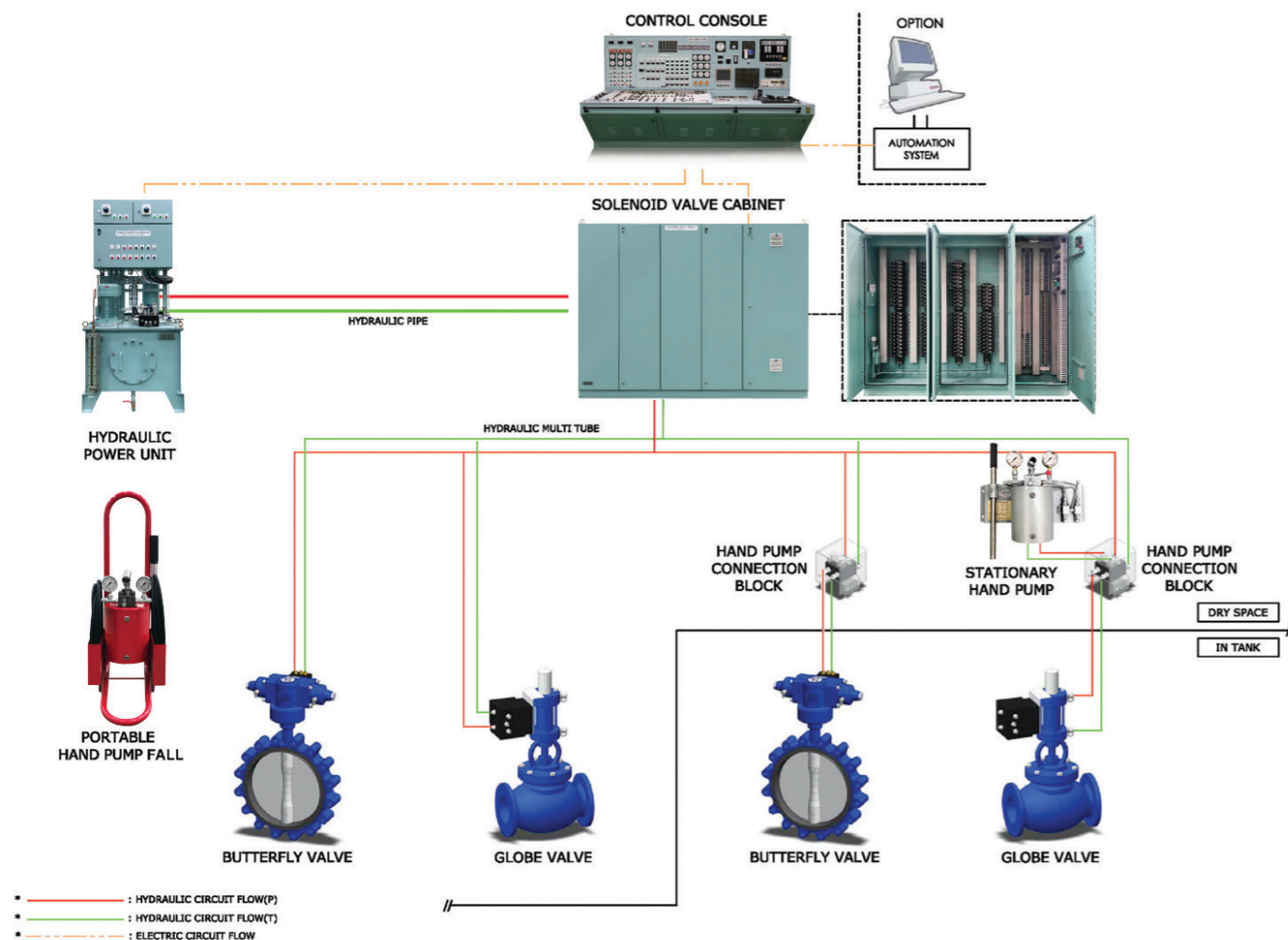
2010

- 2019
- USCG Type Approval of Ballast Water Treatment System
- 2016
- Best Family Friendly Company Certification
- USCG AMS Approval of Ballast Water Treatment System
- 2015
- New Excellent Technology Authentication
- High technology product confirmation
- 'World Class 300 Company' Certificate of Designation
- Next Global Champ Certificate of Designation
- Type Approval Certificate of Ballast Water Treatment System
- 2014
- Korean World-class Product Award 2014 by Minister of Trade, Industry & Energy Republic of Korea
- 2013
- Concluded OEM Agreement with ECONOSTO
- 2012
- Designated Global Small Giants 2012 Leading Employer Award (Busan Metropolitan City)
- 2011
- ISO 14001 Certified to EMS and QMS
- 2010
- Declared Vision HI 1520 LED Lighting certified by KS Mark

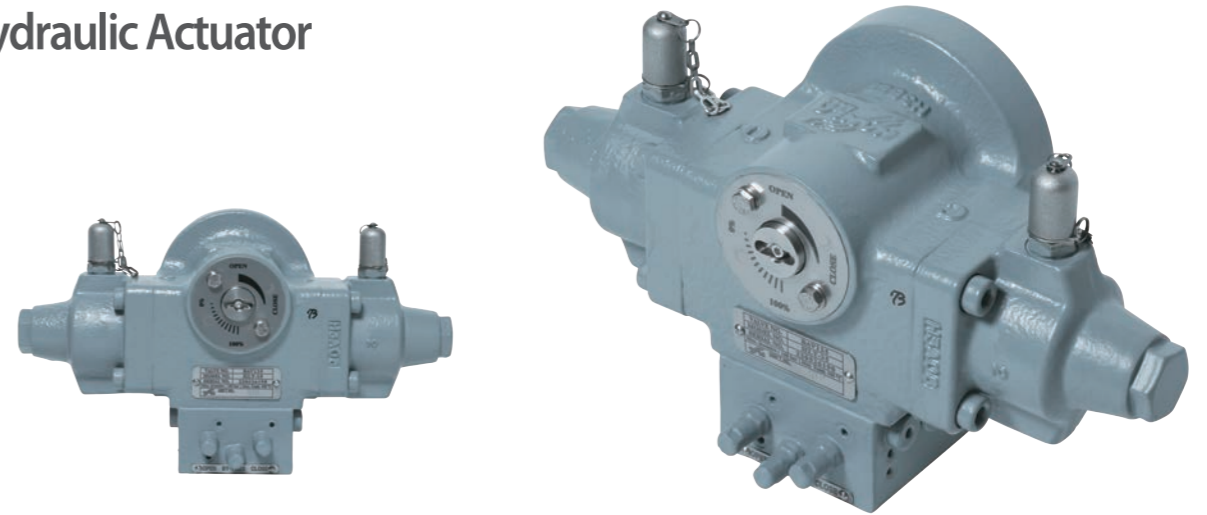
VALVE REMOTE CONTROL SYSTEM

"VALVE REMOTE CONTROL SYSTEM" manufactured by HANLA IMS are designed according to shipyard specification, client's requirements and rule requirement of classification society. Our system division in HANLA IMS make an effort to supply the best valve remote control system at a reasonable price.

System Overview

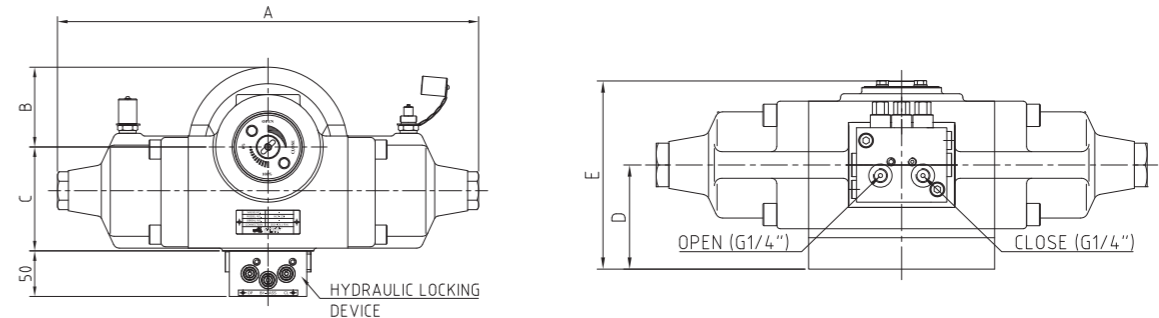


Hydraulic Actuator



HANLA IMS hydraulic actuators type HLT-series are especially designed for the operation of quarter turn valves such as butterfly valve, plug valve and ball valves. HLT-Series hydraulic actuators are available in a range of up to 12,800 N.m at maximum working pressure (16MPa – 160 bar).

HLT-Series hydraulic actuators can be operated by stationary hand pump, portable hand pump or manual hydraulic transmitter via quick connectors or fitted pipes.

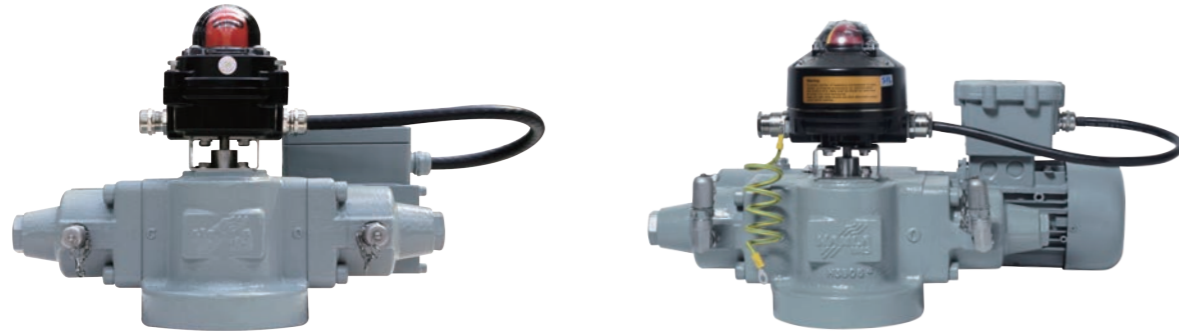


Model	Max. output torque -N.m (kgf.m)	Max. working press.- MPa (bar)	Adjustment angle	Cylinder volume capacity (cc)	Mounting flange (ISO 5211)
HLT-13	215.4 (22)	160 (16)	90°±5	28.5	F05, F07
HLT-35	586.1 (59.8)			62	F07, F10
HLT-70	1097.2 (112)			115	F10, F12
HLT-135	2110 (215.2)			223	F12, F14
HLT-300	4747.5 (484.4)			499	F14, F16
HLT-500	8510.4 (868.3)			895	F16, F25
HLT-800	12821.3 (1308.2)			1350	F25, F30

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
HLT-13	286	52.5	67	60	110	15
HLT-35	329	62.5	79.5	68	124	20
HLT-70	400	75	91	80	143	31
HLT-135	462	87.5	114	98	177	41
HLT-300	598	105	144	112	200	81
HLT-500	792	150	174	130	237	140
HLT-800	867	175	207	155	273	204

Electro-Hydraulic Actuator

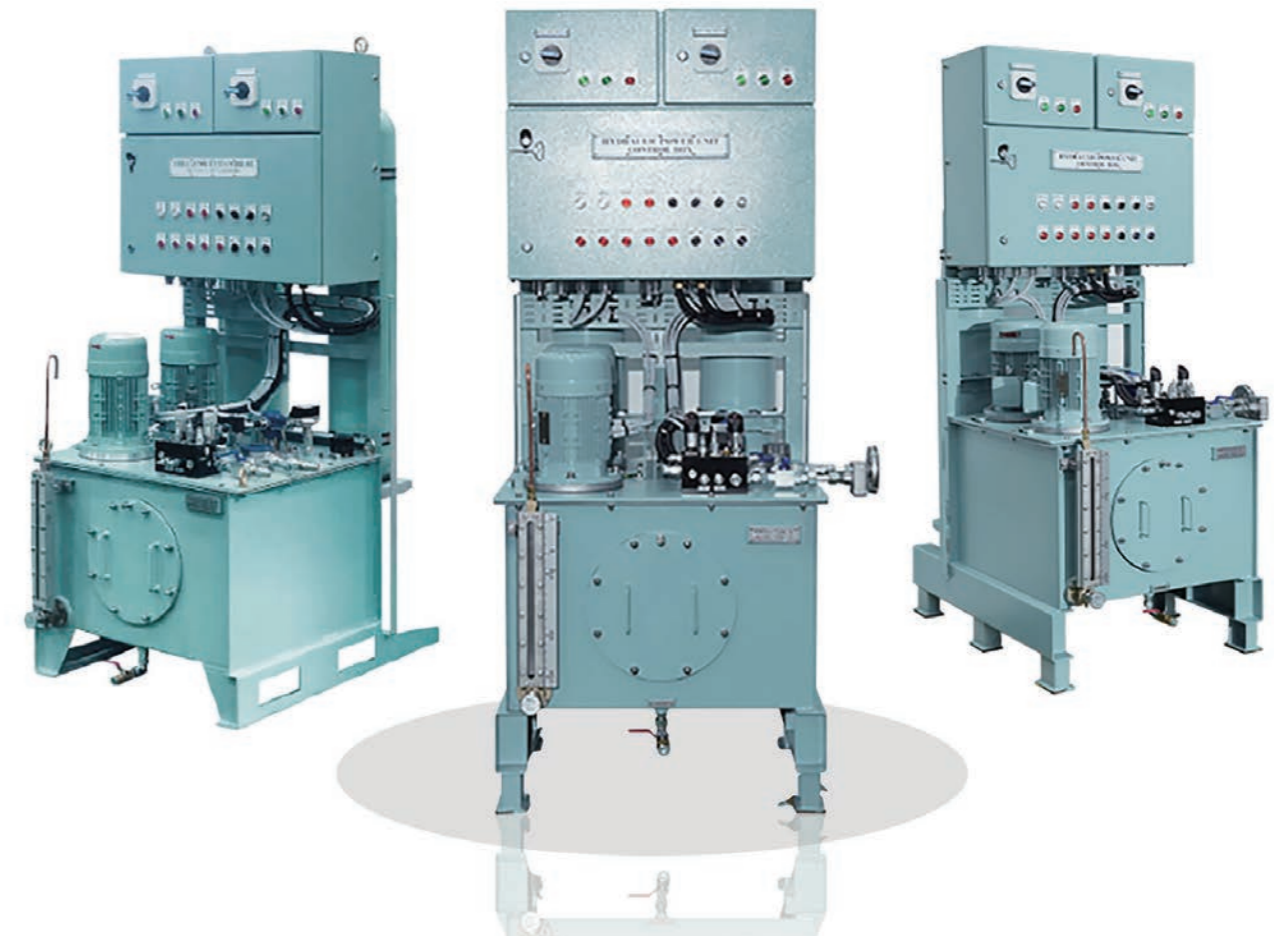
Electro-hydraulic actuator (EHLT-Series) consists of hydraulic actuator for operating valves, limit switch box for receiving single feedback, and micro power unit for supplying oil pressure. Micro power unit consists of electric motor with junction box, oil tank, and main block. Main block consists of relief valve and pilot check valve. Hydraulic pump connects with main block at the inside of oil tank. Normal and ex-proof type are available for electric motor. It is made of aluminum for body in addition to main block. IP68 of Electro-hydraulic actuator is available for double acting type.



Local Control Cabinet



Hydraulic Power Unit



Hydraulic power unit is designed to simple arrangement, easy control and easy maintenance. Control box of hydraulic power unit can control the hydraulic pumps (Main/Stand-by) and pump selection and monitor the abnormal alarm as like pressure, level and temperature.

In order to keep the adequate capacity of the accumulator, the hydraulic power delivers the higher pressure than the designed working pressure of VRC system. But the working pressure of VRC system can be limited at the required working pressure by the function of the pressure reducing valve.

The accumulator has three main purposes ;

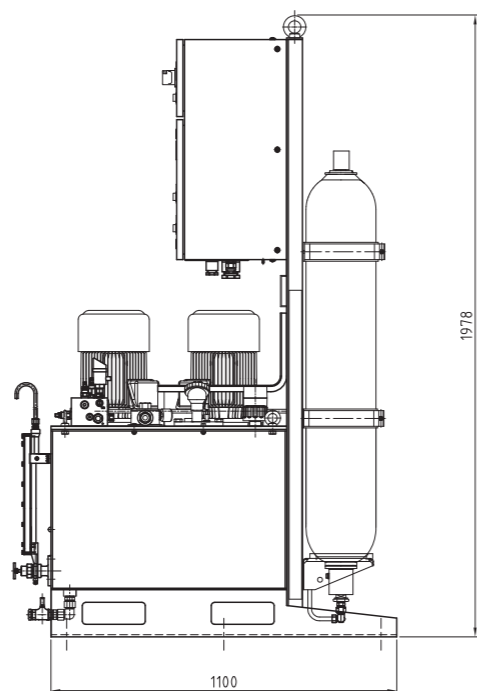
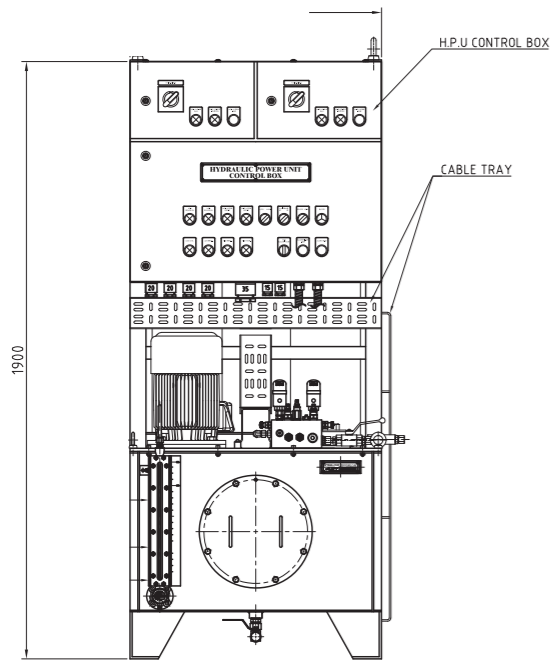
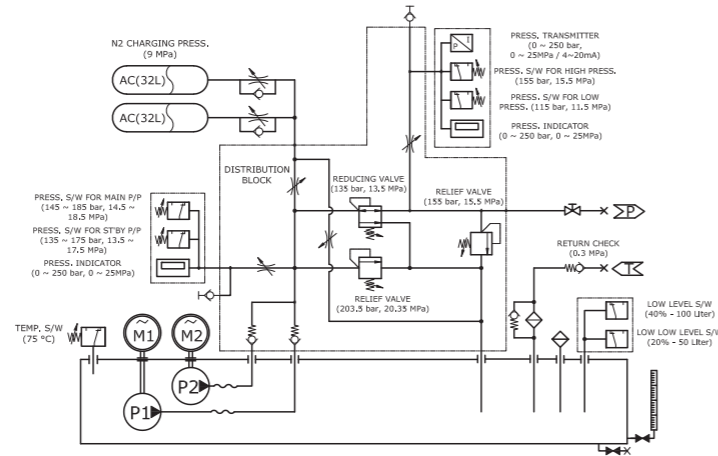
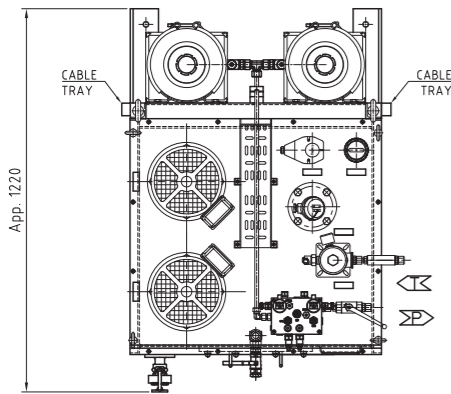
- Provide the reasonable time interval between start and stop of pumps by the compensation of the internal leakage in VRC system during the time given by the customized requirement.
- To secure and supply the constant hydraulic pressure
- To guarantee the complete operation of the specified valves which are clarified by the client's request under an emergency operation.

Features

- Simple design & arrangement
- Easy control & operation
- Easy Maintenance
- Constant hydraulic pressure

Components

- Hydraulic pump
- Electric motor
- Accumulator
- Pressure relief valve
- Pressure switch for control with pressure gauge
- Pressure switch for alarm with pressure gauge & transmitter
- Pressure reducing valve
- Level indicator
- Level switch
- Filter & indicator
- Temperature switch



Solenoid Valve Cabinet



“Solenoid valve cabinet” is divided into the hydraulic part and the electric part.

The hydraulic part consists of solenoid valves, flow control valves, manifold blocks, pressure filter and feed back components etc.

The electric part arranges to connect for electric wiring of valve control and feed back signal.

Solenoid valve cabinet controls in accordance with the function of each valve and it is an equipment to process its signal. Through this equipment, it sends the valve position signal to control console or computer and receives the valve position signal, and controls each valve.

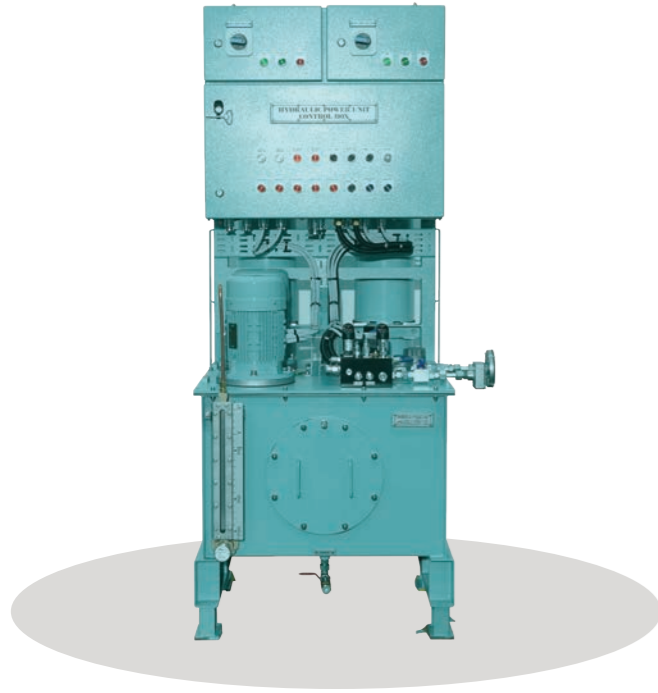
Dual Fuel System

Valve remote control system for LNG-DF consist of cargo valve control system and ballast valve control system.

Hydraulic Power Unit

Components

- Hydraulic pump
- Electric motor
- Pressure return filter
- Pressure transmitter
- Level switch & Level indicator
- Pressure relief valve
- Temperature switch
- Control panel for Hydraulic power unit
- Fitting, gauge and valve part
- Accumulator



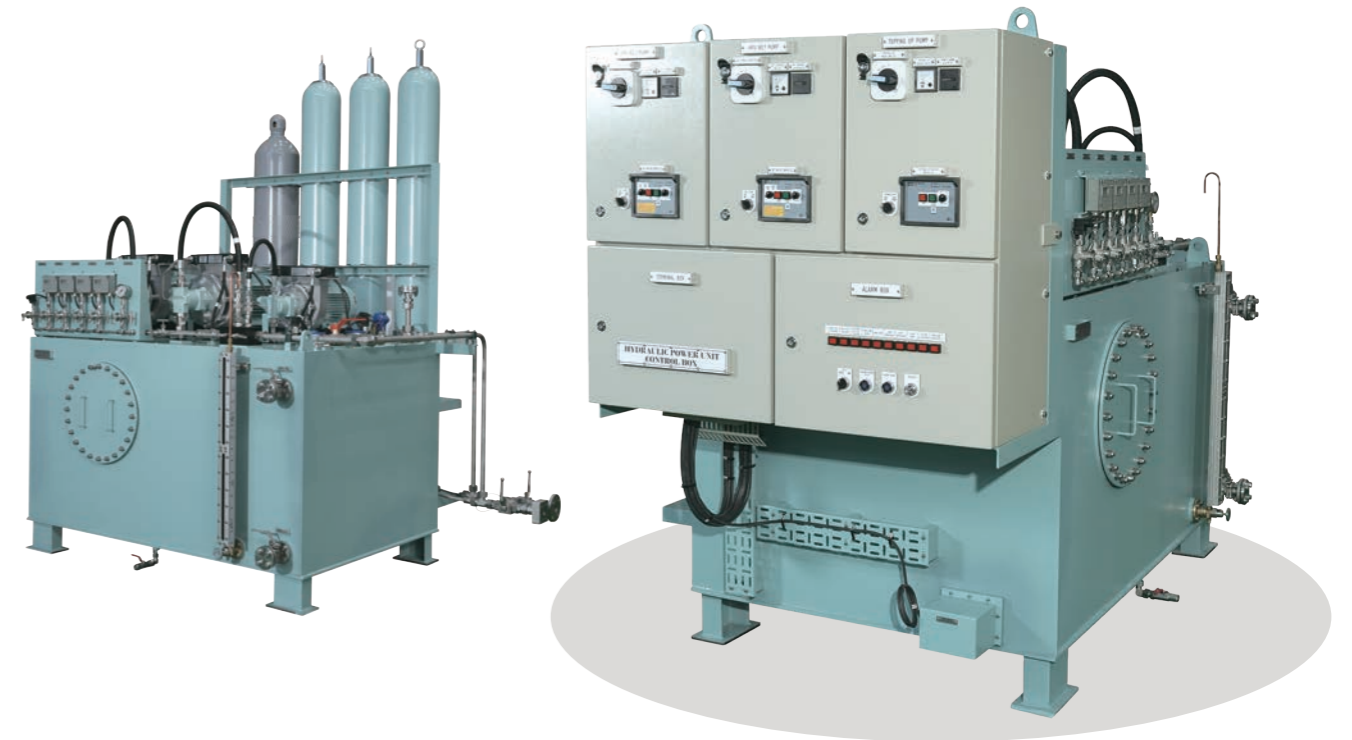
Solenoid Valve Cabinet with ESD system and Accumulators

Components

- Steel cabinet (IP44 Grade)
- Solenoid valve (Non-Ex. type)
- Manifold block
- Pressure filter unit
- low control valve
- Pressure guage
- Stop valve
- ESD block with electric/hydraulic components
- Accumulators

LNG CARRIER

Hydraulic Power Unit



The hydraulic power unit for LNG Carrier consists of two main hydraulic pumps/motors, one hydraulic topping up pump/motor, filters, gauges, electric & hydraulic components, control panels, and so on. There are two main pumps: one is for normal operation; another one is for back up operation. When the standard pressure level is under abnormal condition, the standby pump automatically runs in order to maintain the normal pressure level. The hydraulic topping up pump is designed to preserve the whole system pressure level when no valve is under operation.

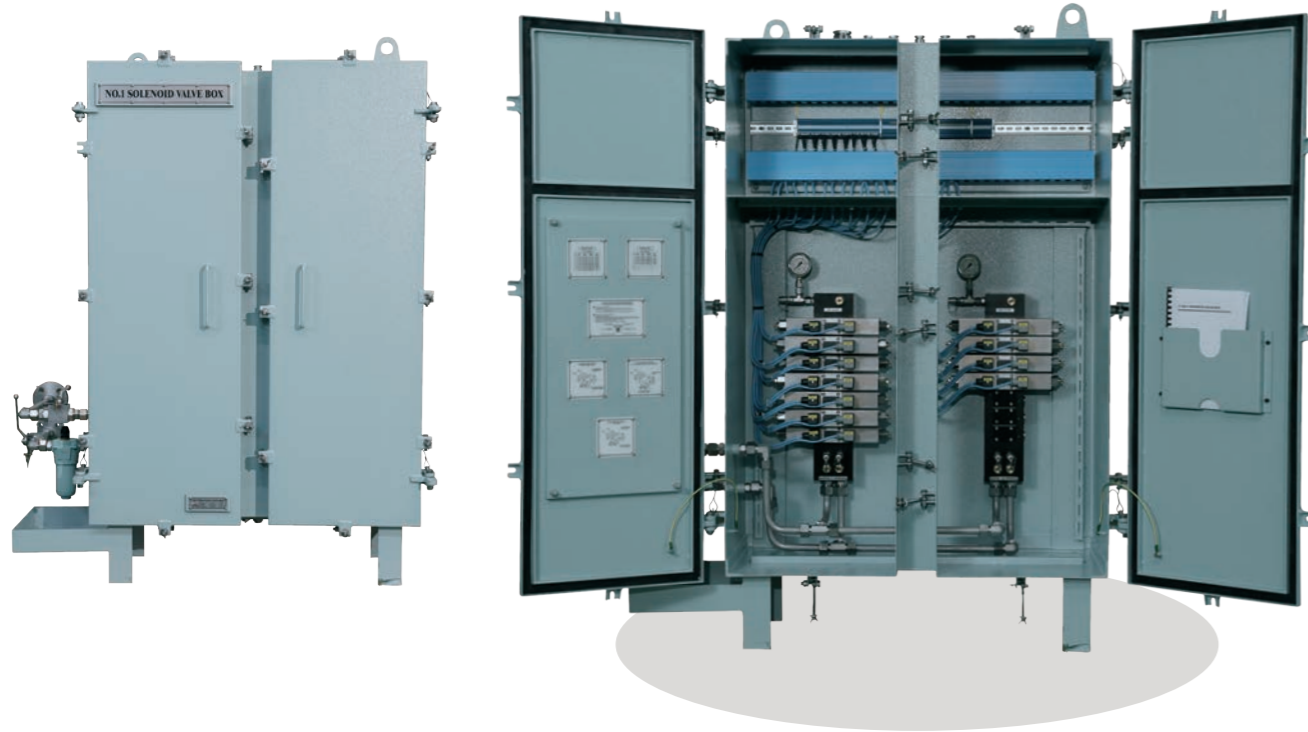
Normally, the hydraulic power units of LNG uses 'piston type pumps' & 'self-regulating type pumps' which keep the hydraulic pressure the standard condition. It supplies the constant pressure in the circuit when the pump runs.

Components

- Electric motor / Hydraulic pump
- Filters
- Pressure switch & Transmitter
- Level switch & Level indicator
- Pressure relief valve
- Temperature switch
- Accumulator
- Fitting & Valve, Gauge part
- Control panel for H.P.U



Solenoid Valve Cabinet



'Solenoid valve deck box for Emergency Shut Down (ESD) system' or 'Solenoid valve deck box' is installed in the passage way or the pump/ machinery room of the hazardous area for LNG carrier. It is constructed to operate the valve and to process the signal.

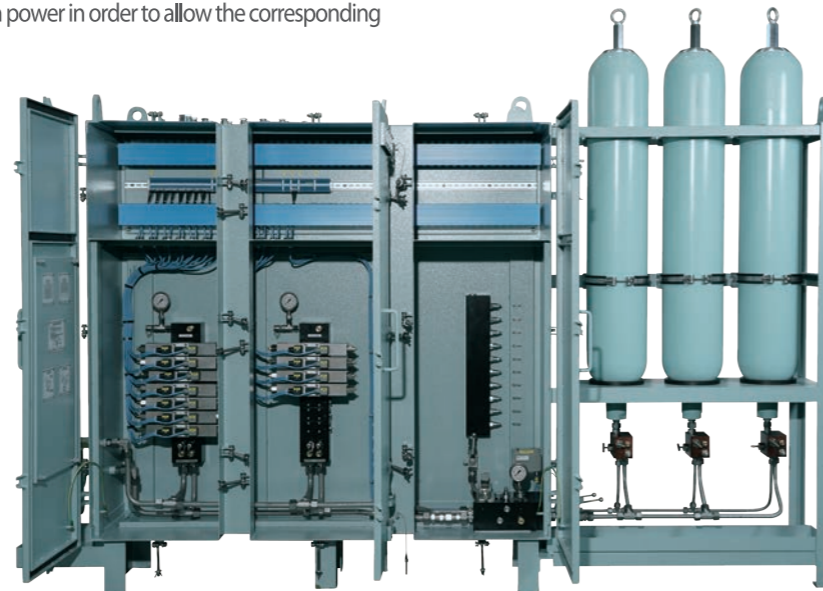
For the ESD system of valve operation, the ESD valves can be controlled the same as the other valves under the normal operating condition. When ESD solenoid valve is energized, it makes the oil way closed from ESD solenoid valve to closing chamber of the corresponding actuators. When the ESD solenoid valve under ESD condition, however, is dis-energized, it makes the oil way opened from ESD solenoid valve to closing chamber of the corresponding actuator.

Consequently, ESD valves are automatically shut down at ESD condition. The hydraulic power for dosing ESD valves at ESD condition is supplied from the hydraulic accumulators.

Normally, the capacity of accumulators has the enough power in order to allow the corresponding ESD valves work 2 strokes.

Components

- Steel cabinet(IP56 grade)
- Intrinsically safety solenoid valve(Ex ia Type)
- Manifold block
- Pressure filter unit
- Stop valve
- Flow control valve
- ESD block with electric/hydraulic components
- Accumulators



Control console



"Control console" operates and monitors the valve remote control system and position indication via switches and lamps installed on "Mimic" plate.

And control console monitors the tank level gauging system, cargo monitoring system and various related equipment.

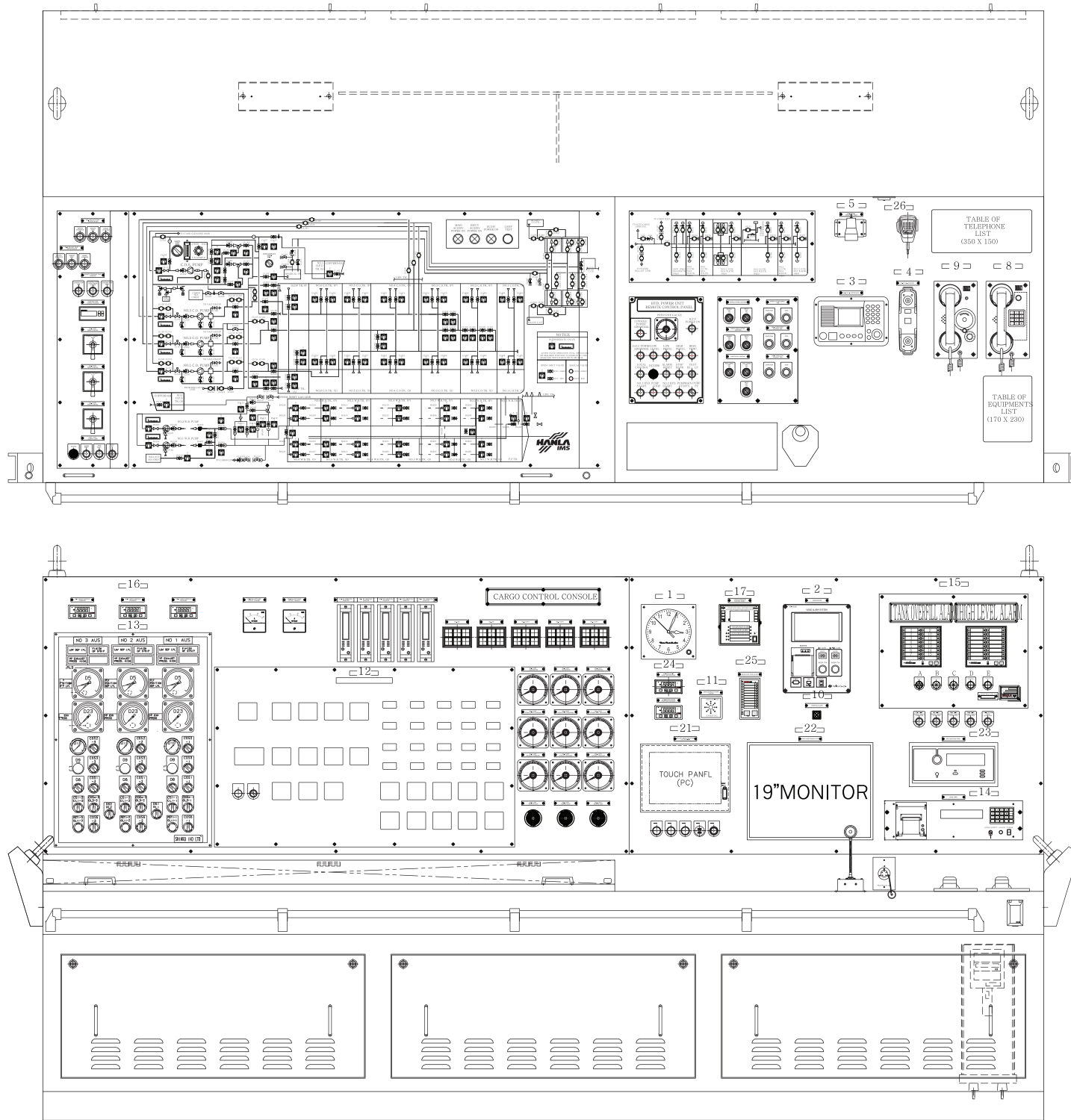
And it's possible to organize the equipment by shipyard's request optionally.

Components

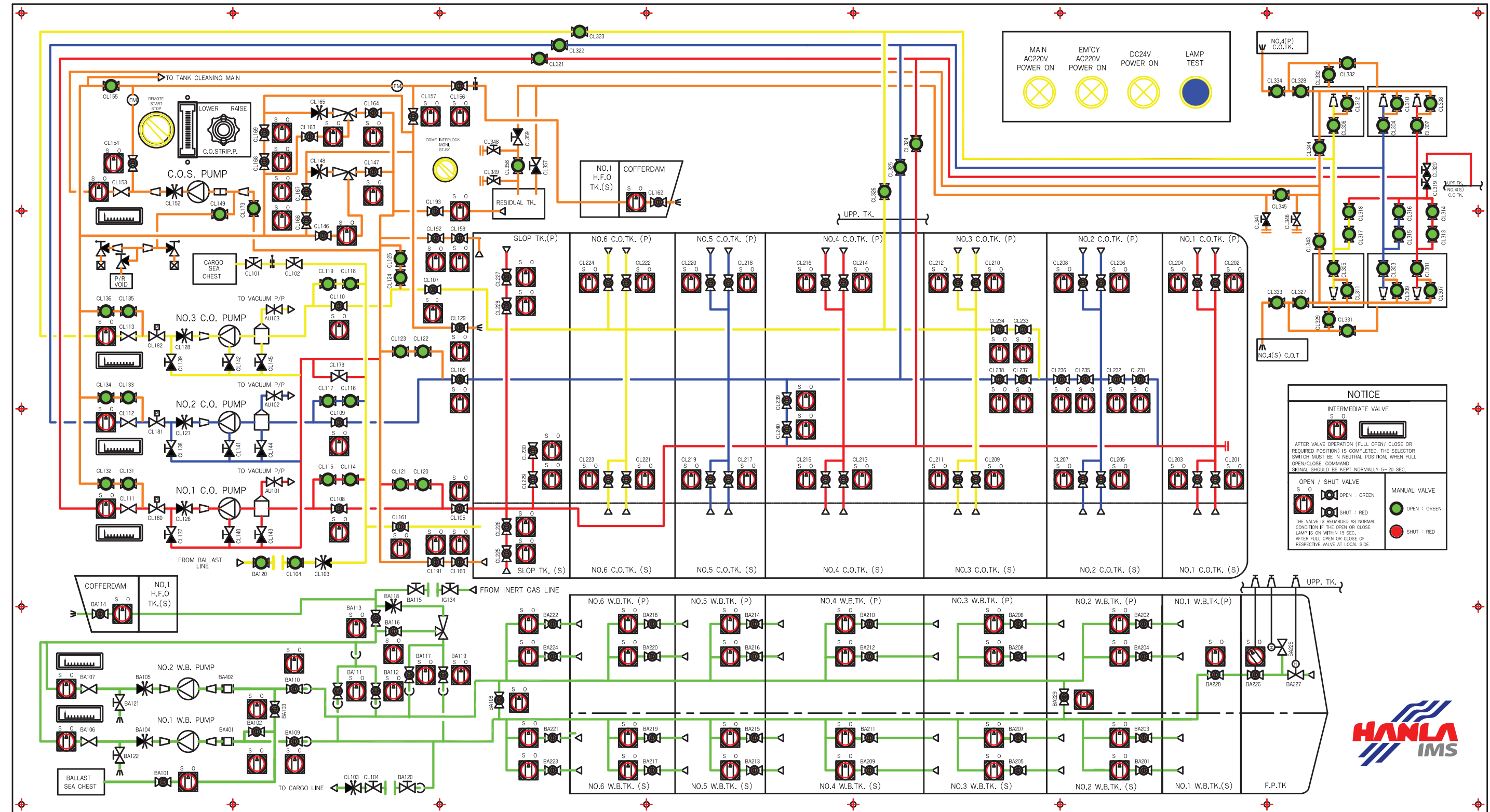
- Steel Structure
- Mimic board with valve control switch & indication device
- HPU remote control panel
- Electric power distribution
- Gauge part (Pressure, Tank level etc.)
- Others (Telephone, clock and Monitor etc.)



Outline Drawing



Mimic Diagram

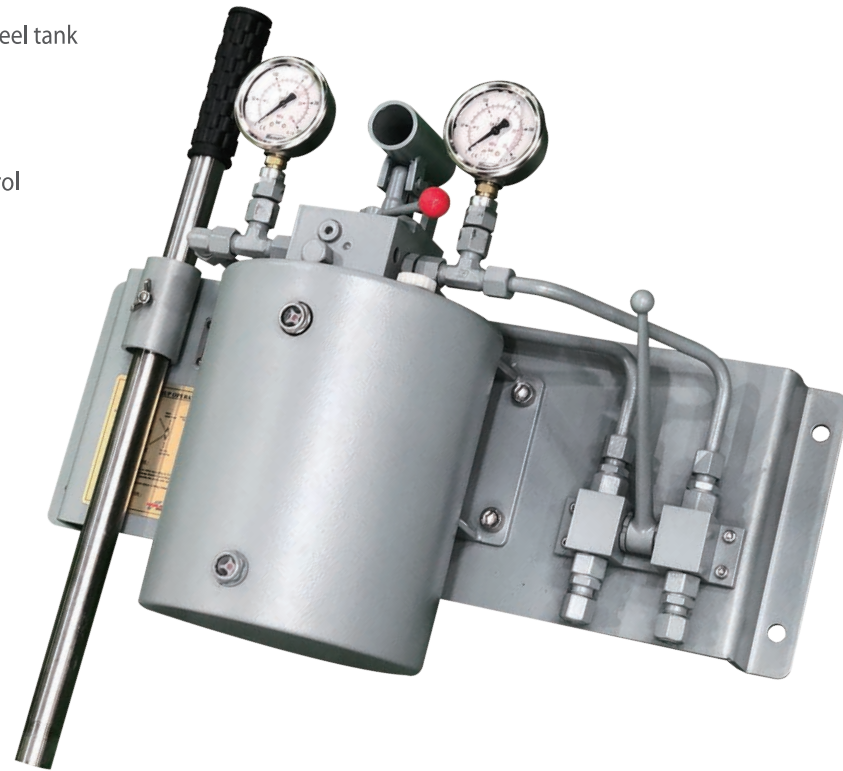


Emergency Operation Unit – Stationary Hand Pump

“Stationary hand pump” is supplied according to classification and specification. Therefore it can be supplied with protection box and the function can be added according to valve operation specification.

Components

- Hand pump unit with Stainless steel tank
- Pressure gauge
- Hand lever
- Valve part
- Optional – Protection box
 - Dual/Multi valve control
 - Indication
 - Operation method (Single acting)

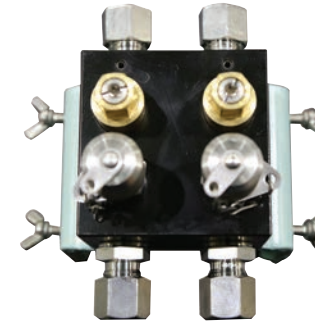


Emergency Operation Unit – Hand Pump Connection Block

“Hand pump connection block” is the equipment to operate the remote valve which is installed in the cargo & ballast tank or inaccessible area, using the hand pump in case of emergency. It is generally installed in the dry space of easy accessible area or on deck.

Components

- Emergency hand pump block
- Emergency hand pump connectors
- Stop valve
- Seat with protection cover for welding

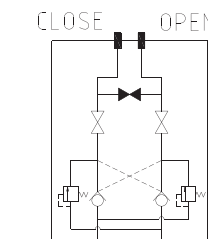


Safety Block with Isolating Valve Block

Features & Composition

- The double pilot check valve makes the last position of actuator kept when hydraulic pressure stopped.
- Two relief valves drain hydraulic oil in actuator cylinder when setting pressure exceed.
- Two isolating valves cut off hydraulic oil to hydraulic actuator.
- The by-pass valve by-passes the hydraulic oil to flush the hydraulic line.

Hydraulic schematic diagram



Specification

- Max. working pressure : 160 bar (16 Mpa)
- Hydraulic connection thread : G1/4"
- Relief cracking pressure : 180 bar (18 Mpa)
- Temperature range : -25°C ~ +100°C (If need other temperature range, consult us)
- 30 liter/min. at 120 bar (12Mpa)
- Weight : 3 Kg

Material

- Block : FCD400 (With electric coating for corrosion free marine service)
- Seal : NBR (Nitrile Butadiene Rubber)
- Relief valves : SCM440 with heat treatment
- Check valve : SCM440 with heat treatment
- Valve body : BC6



Emergency Operation Unit – Portable Hand Pump

“Portable hand pump” is used in case of emergency and when HPU is inoperable. And it is useful when the operation of actuator is required (when maintenance of actuator or valve).

Features

- Easy to move and carry with wheels
- Easy to tidy up the hose
- Excellent performance

Components

- Hand pump unit with Stainless steel tank
- 5m X 2 Flexible hose with self sealing coupling
- Pressure gauge (0~250bar)
- Steel frame with wheels

Flow Meter

“Flow meter” can read out the oil flow when operating each actuator and is a device to detect about open and shut of valve.

Type

- Standard**
- Electric type (Output : 4~20mA)
 - Electric type (Output : Dry contact)

Option

- Mechanical type (Output : 0~1 KΩ)
- Mechanical type (Output : Dry contact)

Components

- Main body
- Main gear part
- Temperature & Pressure compensation block
- Indication part (Electric or Mechanical type)



Limit Switch Box

“Limit switch box” is installed to actuator directly. This device can receive the signal on actuator operation and deliver the position of valve.

Features

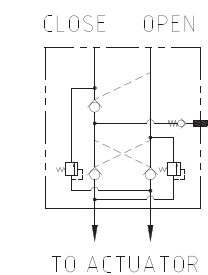
- Dry contact (2XSPDT)
- Potentiometer (Output : 0~1 KΩ)
- Output 4~20mA

Components

- It's actuator and limit switch box all in one for prevention of inflow of foreign substance
- Made with strong material on sea water (Material : Ductile cast iron - FCD450)
- Accessory is installable (Special recognition equipment such as flag Indicator etc.)
- Durable device



Hydraulic schematic diagram



ESD Block

Features & Composition

- The ESD block consists of threes pilot check valves and two relief valves.
- In the event of an emergency, actuator is operated (open/close) by auxiliary source such as accumulator through ESD block.

Specification

- Max. working pressure : 160 bar (16 Mpa)
- Relief cracking pressure : 180 bar (18 Mpa)
- Temperature range : -25°C ~ +100°C (If need other temperature range, consult us)
- 30 liter/min. at 120 bar (12Mpa)
- Weight : 7 Kg
- Emergency connection thread : G1/2"

Material

- Block : FCD400 (With electric coating for corrosion free marine service)
- Seal : NBR (Nitrile Butadiene Rubber)
- Relief valves : SCM440 with heat treatment
- Pilot check valve : Steel

Electric Actuator

HANLA IMS electric actuators type EQ-series are designed and invented for valve automation like ball valve, butterfly valve, plug and even dampers. Small, light and compact design, high torque and various control option meet all demands.

Features

- Manual hand wheel
- 4 Limit switches as standard (2 for operation and 2 for extra)
- Captive cover bolt
- Space heater
- Terminal block (11P)
- Mounting connection flange : ISO 5211
- Rechargeable battery backup actuator for emergency application

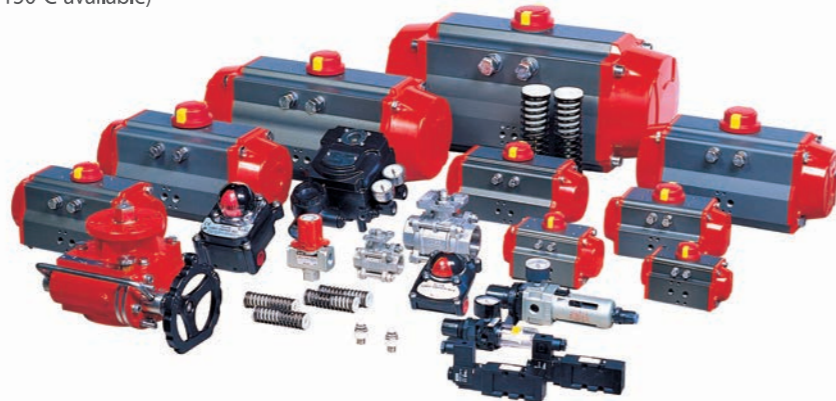


Pneumatic Actuator

HANLA IMS pneumatic actuators type HP series are compact, long-life and high quality and especially designed to meet the simple operation of quarter-turn valves. HP actuators provide a wide range of output torque for ball valve, butterfly valve, plug and damper valve.

Features

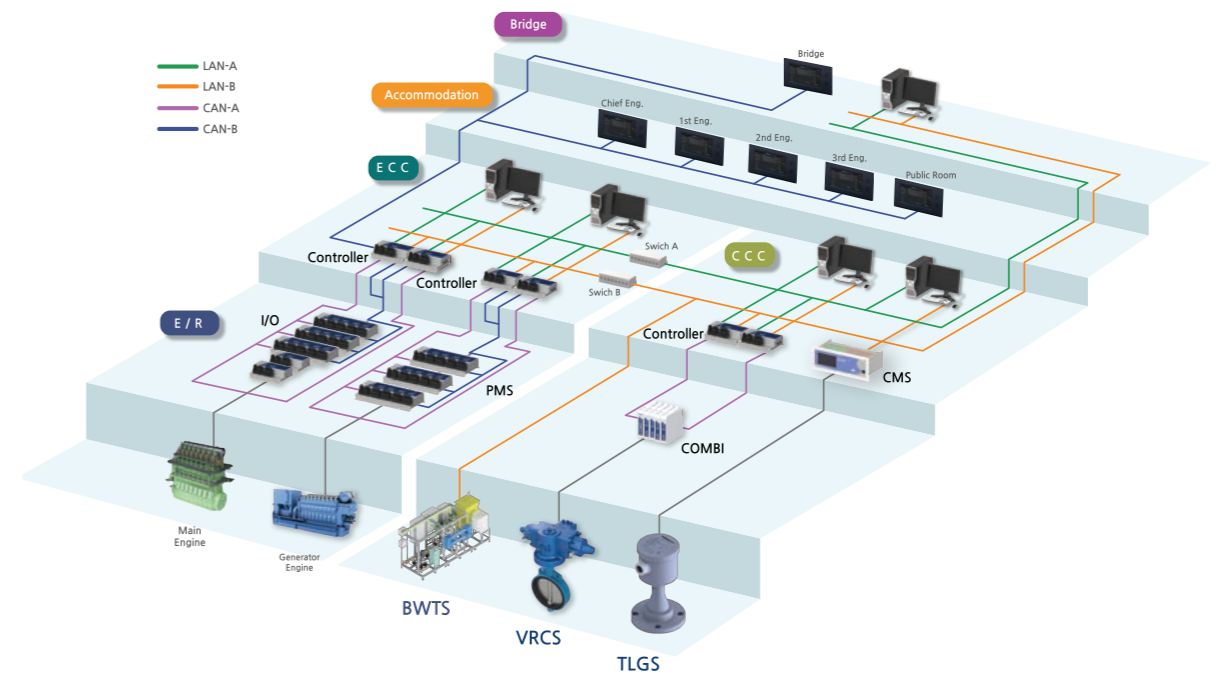
- Rack and pinion & Scotch yoke type design
- Double acting / Single acting (Spring return type)
- Connection flange : ISO 5211 / DIN 3337, VDI/VDE 3845, NAMUR
- Maximum working pressure 10 bar
- Temperature range : -20°C ~ 80°C as standard (-35°C ~ 150°C available)



Dynamic-A (Integrated Alarm Monitoring and Control System)

Dynamic-A is the product name of HANLA IMS integrated alarm monitoring and control system.

This system has been designed and developed in order to effectively operate the ship's engine room auxiliary machinery and cargo/ballast in HANLA IMS. Dynamic-A is an integrated alarm monitoring and control system that integrates remote operation of engine room auxiliary machinery based on computer workstation in the engine control room and remote operation of cargo and ballast based on computer workstation in the cargo control room.



Combi-A and Combi-D	
Main Power	24VDC
Operation Voltage	18VDC to 36VDC
Operation Temperature	0°C to 70°C
Humidity	95%
Communication	1 x CAN (2.0B Active)
2 x Digital Input	Dry Contact
2 x Digital Output	Relay Contact, 230VAC/24VDC, 5A
1 x Analog Input	4~20mA
Analog Input Source	Internal Source or External Source
Dimension	108(H)x22.6(W)x116.6(D)mm



Controller	
Main Power	24VDC
Operation Voltage	18VDC to 36VDC
Operation Temperature	0°C to 70°C
Humidity	95%
Communication	2 x LAN, RJ-45, Ethernet TCP/IP 2 x CAN (2.0B Active), No. of nodes : Up to 120 modules
Dimension	160(H)x210(W)x60(D)mm

The Dynamic-A includes the VRCS (valve remote control system) module, which remotely monitoring and controls various type of valves.

The VRCS typically consists of workstations installed in cargo control console and I/O modules for valve control installed in the local cabinet. They are interconnected through an Ethernet TCP/IP and CAN communications network.

Dynamic-A has obtained type approval certificates for ABS, BV, CCS, DNV GL, KR, LR and NK classification



Features

- Open/shut valve control and position indication at locally and remotely
- HPU status and alarm monitoring
- HPU pump change over
- Others
- Throttle valve control and position indication at locally and remotely
- HPU pump control
- Various pump control