



*Global Only 1.*  
Company for Professional Fluid  
Engineering Solution

'Reliable World-Top Class  
Hydraulic Accessories & Engineering Service'

High Performance

Energy Saving

Eco-Friendly

Smart Engineering



- Accumulators
  - Oil Coolers
  - Oil Filters
  - Sensors
  - Cooling system...
- CE, ASME, UL Approval...  
All Country Certifications & Class

**FLOWFORCE CO., LTD.**

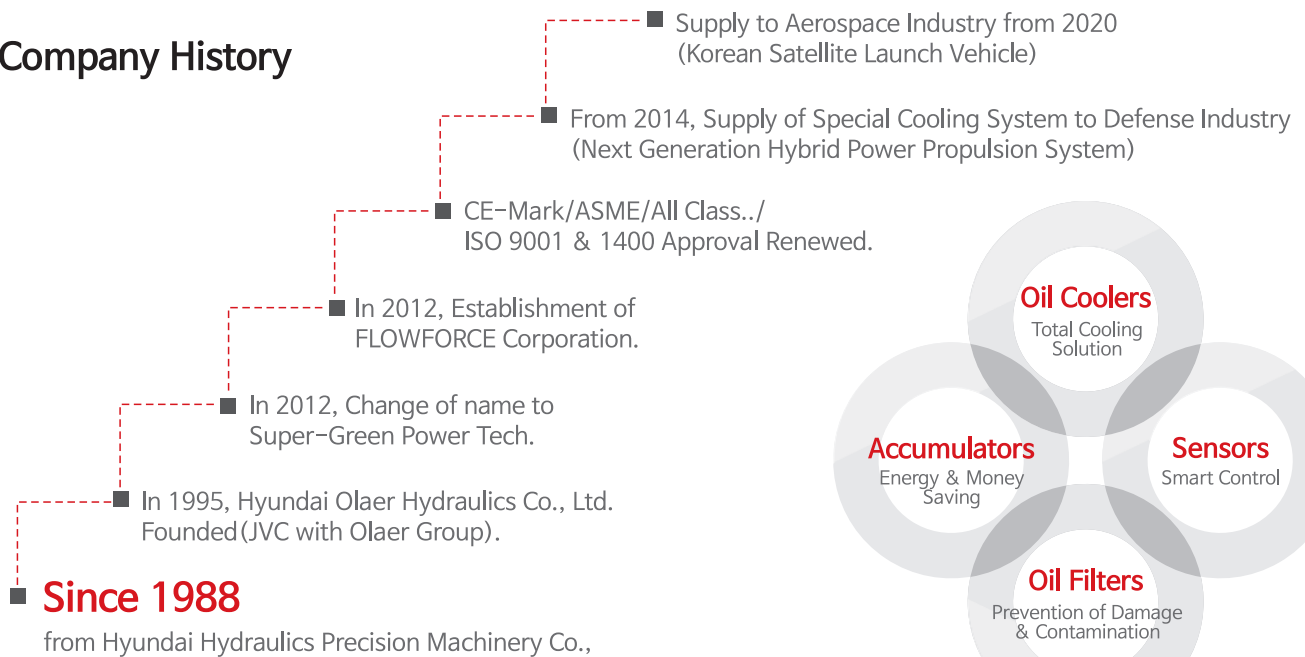
## Company Introduction



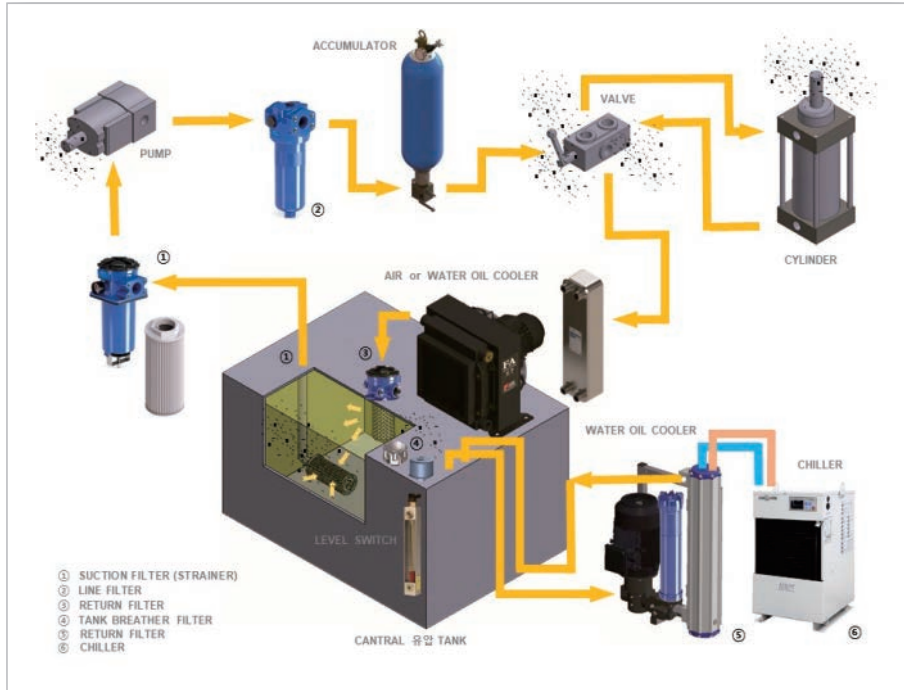
# Always Customer value-oriented Company!

This is the eternal company philosophy and mission of **FLOWFORCE** that trust in product technology and customer priorities and continuous innovation are company motto to move towards the world market and key business value along with a true challenge for today's practice.

## Company History



## A Truthful Market Leader in Hydraulic Accessories Technology



### Business Field

- Air/Water Oil Coolers
- Accumulators (Bladder, Piston, Diaphragm, Bellows Type)
- Oil Filters (Suction, In-line, Return)
- Oil Chillers (Air/Water)
- Hyd. System Measurement and Fluid Control Sensors
- Others for Special Purposed Cooling Unit  
(ESS, Hybrid & Electric Engine Propulsion System for Defence Industry)





## Technology & Quality

The core business objectives and philosophy of **FLOWFORCE** is to promote customer's value and increase customer's profit by providing zero defect products and high technology services fully in accordance with the industrial specific requirements by the market segmentation.



### Regulation & Certification

- USA : ASME(American Society of Mechanical Engineers)
- Australia : AS1210 (Australian standards)
- Europe : CE(Conformity European)
- Japan : KHK(The High Pressure Gas Safety Institute of Japan)
- Canada : CRN(Canadian Registration Number)
- China : SELO(Special Equipment Licensing Office)
- Brazil : NR13(Brazilian Regulatory Standard)
- Russia : GOSTR(Gosstandart of Russia)
- Malaysia : DOSH(Department of Safety and Health)

### Classification Society

- KR – Korean Register of Shipping
- LR – Lloyd's Register of Shipping(LRS)
- DNV – Det Norske Veritas
- ABS – American Bureau of Shipping
- BV – Bureau Veritas
- GL – Germanischer Lloyd
- RINA – Registro Italiano Navale
- NK – Nippon Kaiji Kyokai
- CCS – China Classification Society
- RS – Russian Maritime Register of Shipping



## TOP 10 Technical service for customer satisfaction

**1**

Customized products as per customer requirements

**2**

Providing high performance & efficiency products

**3**

Development & supply of cost-saving products.

**4**

Providing a variety of products with a multi-function

**5**

New design concept for less cost & maintenance time

**6**

Quality qualified products (Zero-defect & No-leakage)

**7**

Providing products with smart function in self-cleaning & operating conditions

**8**

Provide a full certificate compliance with the regulation of ASME, CE (PED, AD2000) as well all of Class.

**9**

Water saving / energy saving / less installation space / Eco-friendly products

**10**

ISO 9001 & ISO 14001 certificated

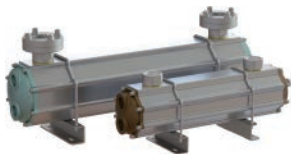


## Product Information

### Air & Water Oil Coolers



FA - Series  
(AC MOTOR)



FST H - Series

Air Coolers: FA, FD, FC, FH-Series / Water Coolers: FST, FPO, FOC-Series.

Basic Specification	<ul style="list-style-type: none"> <li>Max. Cooling Capacity : 300Kw at ETD 40°C / 11,627Kw (FPO-G Series)</li> <li>Max. Flow rate : Up to 1,000L/Min./0~40,764L/Min. (FPO-G Series)</li> <li>Max. Operating Pressure : 14bar(Dynamic), 21bar(Static)/30bar(STD)</li> <li>Approval : CE, ASME(Depending on Models)</li> </ul>	
	<ul style="list-style-type: none"> <li>Cooler matrix: Aluminum powder coated</li> <li>Fan blade: Fiber-glass reinforced polypropylene</li> <li>Cooler housing: Carbon steel powder coated</li> <li>Fan guard &amp; Others: Carbon steel</li> </ul>	
Materials	<ul style="list-style-type: none"> <li>Body: AL 6061, Carbon steel, Stainless steel</li> <li>Case: Cast iron, Stainless steel</li> <li>Fin-tube: Copper+AL(STD), AL+Ni Alloy(Blackish)</li> </ul>	
	<ul style="list-style-type: none"> <li>Various working fluids</li> <li>Low installation cost</li> <li>Low operating cost</li> <li>Easy maintenance</li> </ul>	
Main Features	<ul style="list-style-type: none"> <li>Various working fluids</li> <li>Light weight</li> <li>Water-saving &amp; High-efficiency</li> <li>High quality &amp; reliability</li> <li>Easy maintenance</li> <li>Original technology/International patent</li> </ul>	



FD - Series  
(DC Motor)



FH - Series  
(Hydraulic Motor)



FC - Series  
(With Circulation Pump)



FPO-K Series



FPO-G Series



FOC-P&S Series



FST - Series

Brand New

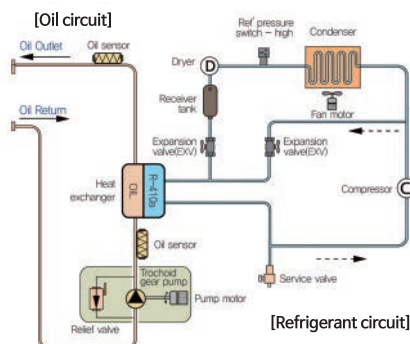
### Oil Chillers (Air & Water Type)

FKAC, FAO, FAW, FAI, FAMOC - Series



FAW-Series

Basic Specification	<ul style="list-style-type: none"> <li>Cooling Capacity <ul style="list-style-type: none"> <li>Air Condensing Type : 1.60Kw ~ 116.00Kw</li> <li>Water Condensing Type : 1.53Kw ~ 15.00Kw</li> </ul> </li> <li>Power Source: Three-phase 220V/380V/440V(50/60Hz)</li> <li>Temperature Control Precision <ul style="list-style-type: none"> <li>General Rating: +/- 1°C</li> <li>High Accuracy: +/- 0.1°C</li> </ul> </li> <li>Refrigerant: R22, 407C, R-410A(New eco-friendly refrigerant)</li> </ul>	
	<ul style="list-style-type: none"> <li>Precise control of oil temperature up to 50°C(55°C option available)</li> <li>Custom made for high temperature regions(India, China, Vietnam etc.)</li> <li>Condenser design &amp; evaporator way can be selected under pollution</li> <li>Adoption of step control capable by load level(mold tolerance:+/- 10um)</li> </ul>	



FAI-Series



FAO-Series



FKAC-Series



# ■ Product Application



Product Information

■ Accumulators(Bladder, Piston, Diaphragm Types)



FBN, FLM FPA – Series

Basic Specification	<ul style="list-style-type: none"> <li>• Max. Discharge rate: Up to 2,400LPM</li> <li>• Max. Working pressure: Up to 690Bar</li> <li>• Volume: 0.075L ~ 757L</li> <li>• Certification: ASME, ABS, BV, DNV, GL, RINA, SELO</li> </ul>
Material	<ul style="list-style-type: none"> <li>• Shell &amp; Fluid port : 34CrMo4, Stainless steel</li> <li>• Bladder : NBR(STD), Viton(FKM), Butyl, EPDM</li> </ul>
Main Features	<ul style="list-style-type: none"> <li>• High reliability product (Quick response, high quality and anti-corrosion)</li> <li>• Various application</li> <li>• Electronic control as optional                             <ul style="list-style-type: none"> <li>- Sensing a piston position</li> <li>- Sensing a temperature &amp; pressure (Proactive maintenance function)</li> </ul> </li> </ul>

Hydropneumatic Accumulator



STD. Bladder Accumulator  
 FB Series..



Piston Accumulator  
 FP Series..

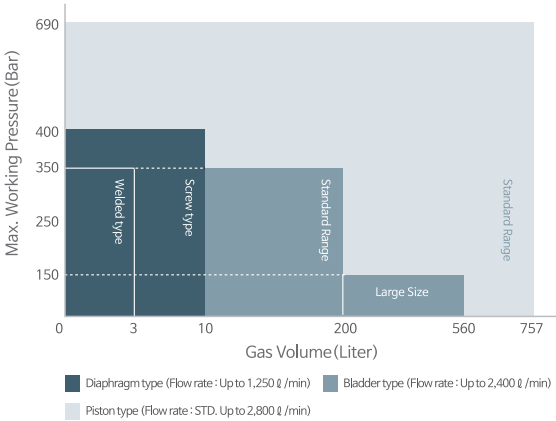


Membrane Accumulator  
 FLMS Series..

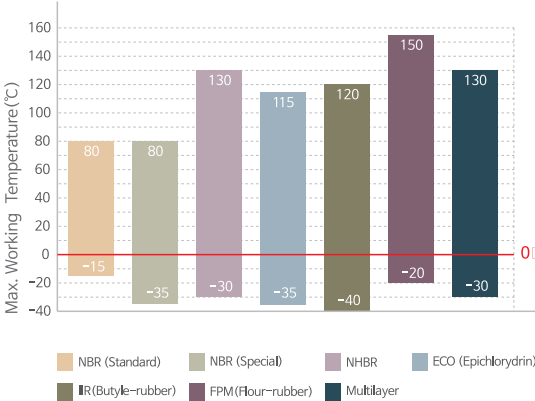


Diaphragm Accumulator  
 FLM Series..

Accumulator Product Range



Working temperature





# ■ Product Application



## Product Information

### ■ Oil Filters (MP Filtri...)

#### Return Filters



- Max. Working Pressure : 8, 10, 20bar
- Flow rates : 300, 350, 500, 750, 1,500, 1,800, 3,000 l /min
- Filtration Rating (filter media) :  
3µm ~ 25µm (Inorganic microfibre)  
25µm ~ 90µm (Wire mesh)  
10µm ~ 25µm (Resin impregnated paper)

#### Low & Medium Pressure Filters



- Max. Working Pressure : 16, 20, 25, 30, 60, 80bar
- Flow rates : 200, 330, 500, 690, 740, 2,000, 2,400, 3,000 l /min
- Filtration Rating (filter media) :  
3µm ~ 25µm (Inorganic microfibre)  
25µm ~ 90µm (Wire mesh)  
10µm ~ 25µm (Resin impregnated paper)

#### High Pressure Filters



- Max. Working Pressure : 110, 320, 350, 420, 560bar
- Flow rates :  
80, 140, 250, 346, 460, 750 l /min
- Filtration Rating (filter media) :  
3µm ~ 25µm (Inorganic microfibre)  
25µm ~ 90µm (Wire mesh)

#### Stainless Steel Filters (High Pressure)



- Max. Working Pressure :  
320, 350, 420, 700, 1,000bar
- Flow rates :  
10, 50, 60, 75, 150 l /min
- Filtration Rating (filter media) :  
3µm ~ 25µm (Inorganic microfibre)

#### Spin-On Filters



- Max. Working Pressure : 12, 35bar
- Flow rates : 196, 365 l /min
- Filtration Rating (filter media) :  
3µm ~ 25µm (Inorganic microfibre)  
25µm ~ 90µm (Wire mesh)  
10µm ~ 25µm (Resin impregnated paper)

#### Suction Filters



- Two Types of Suction Filters
  - Suction Strainer
  - Suction filter mounted on the tank upper plate/wall
- Max. Working Pressure : 12, 35bar
- Flow rates : 160, 800, 875 l/min.
- Filtration Rating (filter media) :  
25µm ~ 90µm (Wire mesh)

### ■ Fluid Control Sensors

#### Temperature Sensor



- Pt100 sensor
- Alternatively with 4-20mA output
- As an option with 2-10V output
- Length up to 1000mm
- Material of the body brass or stainless steel
- Different kind of electrical connectors available like M12 and M3

#### Level & Temperature Switch



- Easy Just plug in plug system
- Modular construction system
- Length 280, 370 & 500mm
- Up to 4 level contacts
- Material body:  
Brass or stainless steel
- Different kind of connectors available
- As an option with temperature control as bi-metal switch, Pt100 or 4-20mA
- As an option with air breather
- As an option with Temperature Display
  - up to 4 programmable alarm outputs
  - as an option with analogue output 0-5V, 0-10V, 2-10V and 4-20mA
  - Frequency output

#### Pressure Sensor



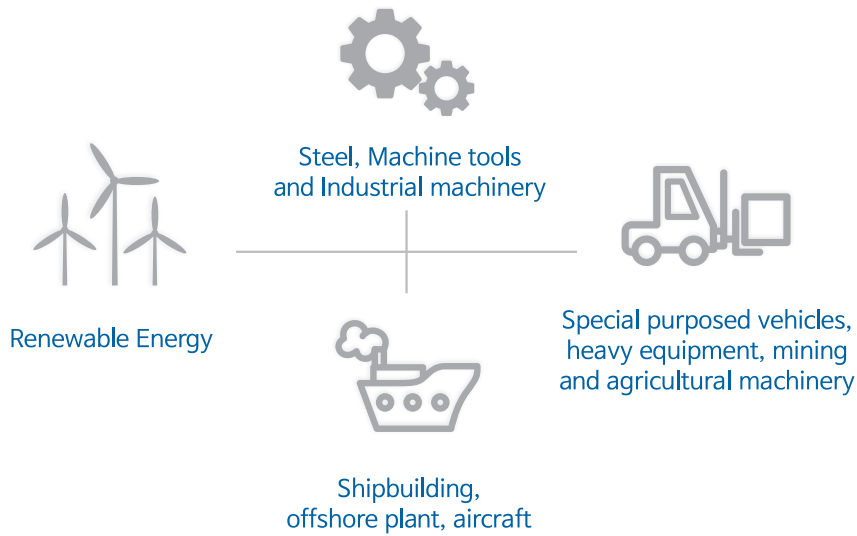
- Stainless steel cell
- 4-20mA output as standard
- Robust and compact design
- Reliable and long lifetime
- Max. working pressure 600 bar
- DIN, M12 connector officially

#### Multifunction Terminal



- Level and temperature control
- Display version as an option
- Filling port with quick coupling
- 2 sample ports
- Air breather
- Return line filter 40, 63 & 100l/min
- 3 connection points for return line
- Pollution indicator for return line filter
- As an option 2-way direction control valve to avoid overfilling

# ■ Product Application





## Special Cooling Unit

### ■ Renewable Energy



#### Application

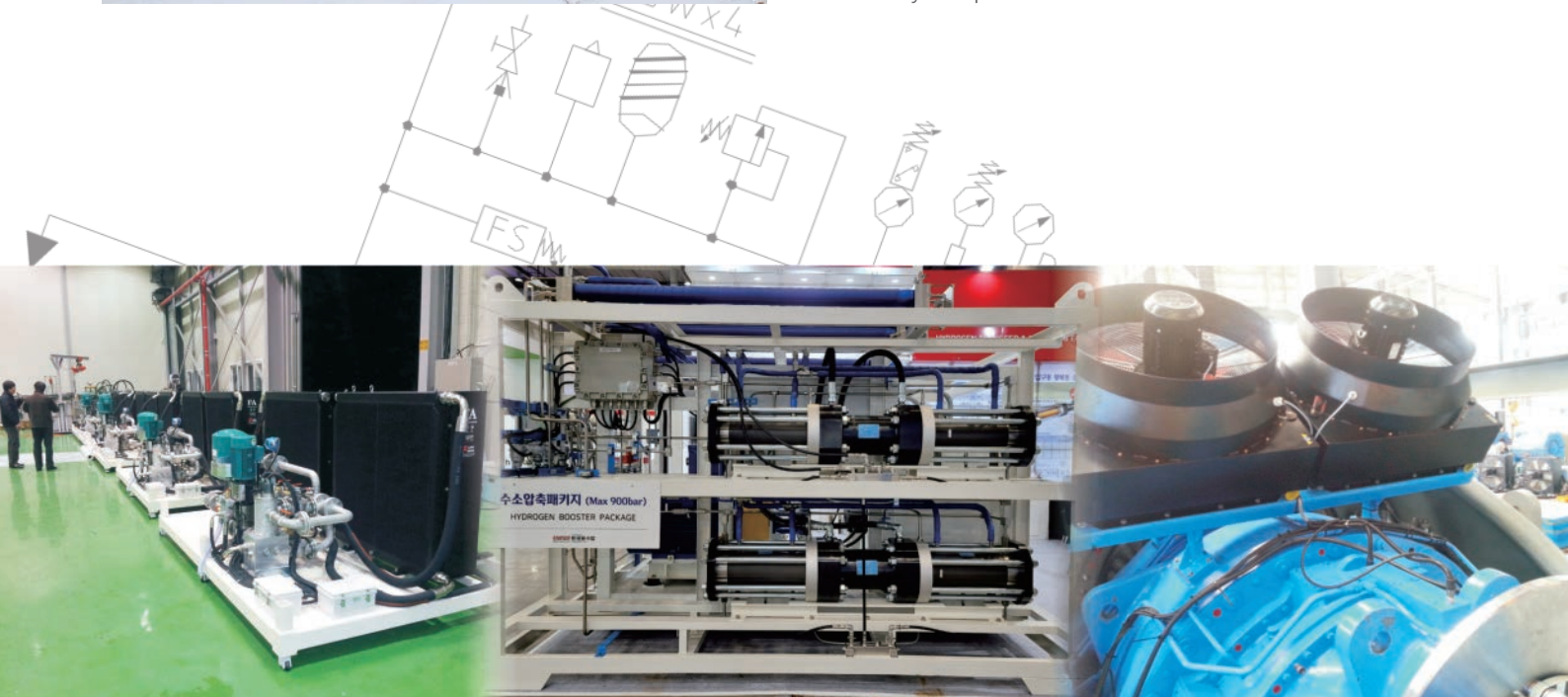
- Wind Turbine Generation
- Power Converter
- Gearbox Lubricant
- ESS(Energy Storage System)
- Steering Gear
- Secondary Battery
- Hydrogen Charging Station

#### Concept & Principle

During operation of the generator and PCS, determine the level of heat generated and circulation of cooling water for the appropriate level of working temperature. Performs cooling of the heated lubricant oil and hydraulic oil due to the friction when gearbox and the hydraulic system operation.

#### Advantage & Benefit

- Compact design for less installation space compared to the heat capacity
- Optimizing the air-flow and energy saving by selecting the minimum power, and also link to the control program to easy operation of hydraulic system(unit)
- Considered reliable parts supplying for easy maintenance
- As only one local maker that we design and manufacture cooling systems for the application of Wind Turbine and also have a variety of experience and references.



## Defense Industry

### ■ Special Cooling Unit



#### Application

- Battle/Warship
- Special Commercial Ship
- Power propulsion unit for hybrid and electric engines

#### Concept & Principle

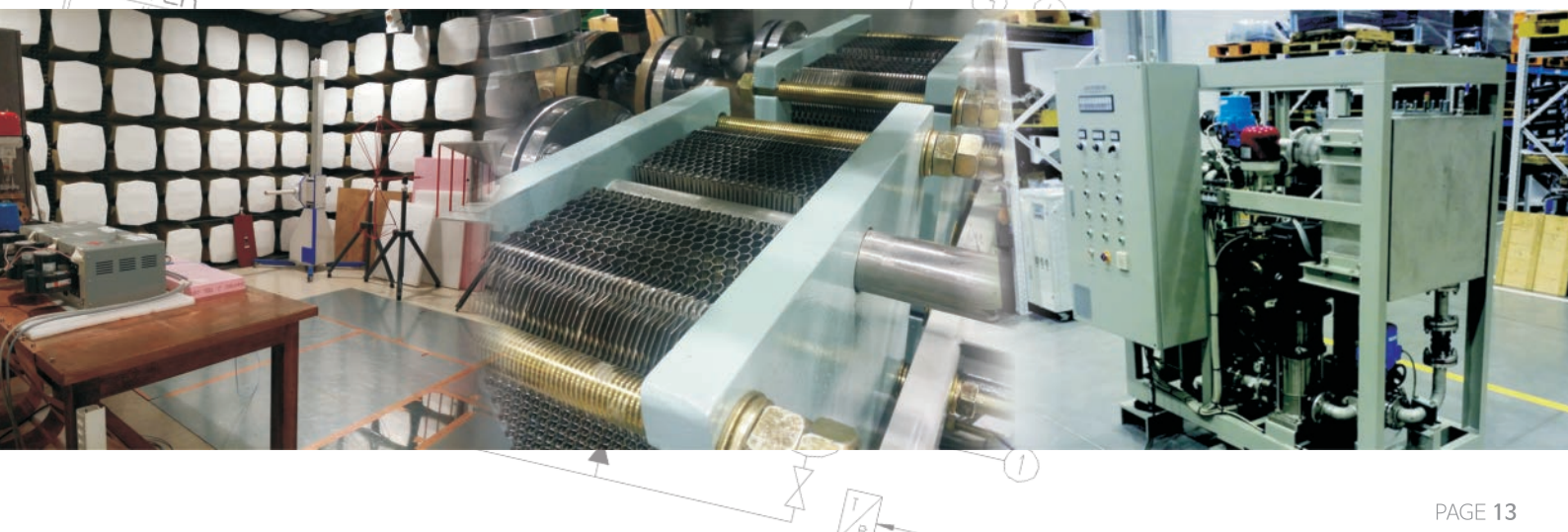
Circulation Pump Cooling System that supplies cooling water to an internal electric motor and a converter, and transfers generated heat from the heating system to the outside through the cooling system.

Also monitors temperature, pressure, flow condition of the fluid.

#### Advantage & Benefit

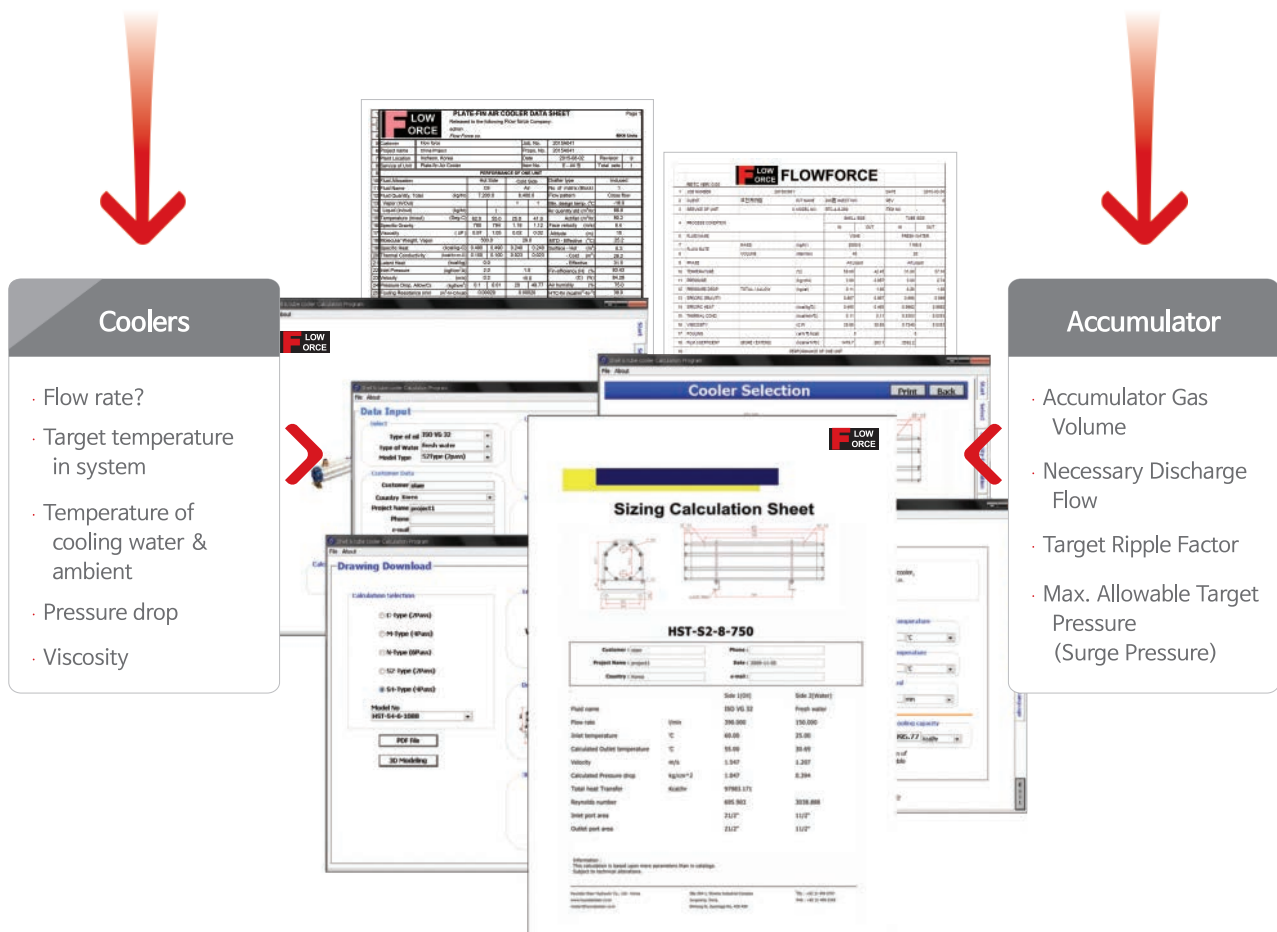
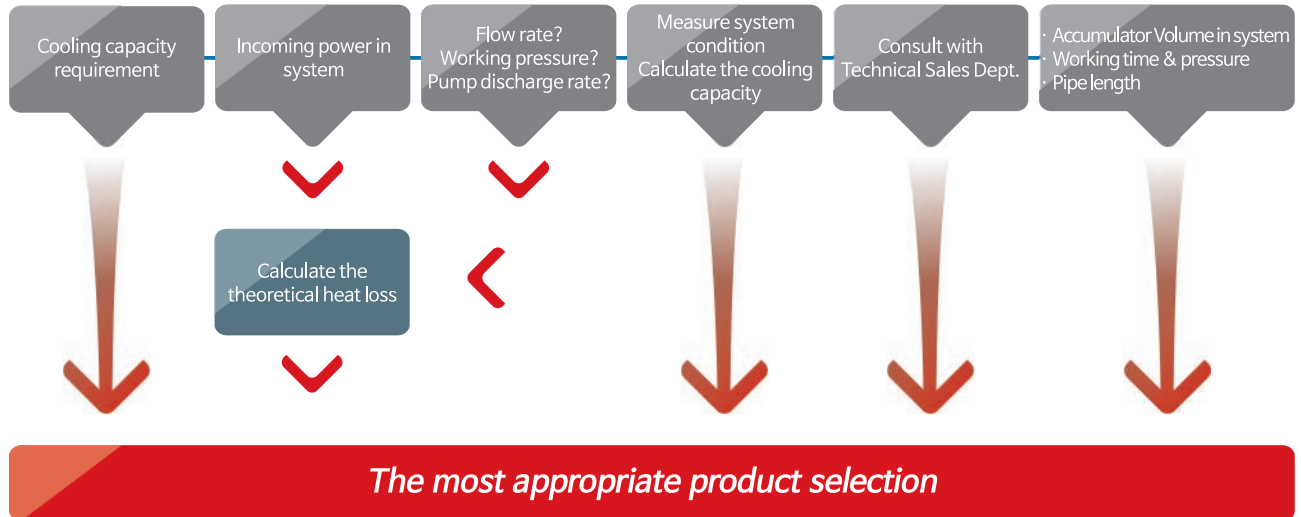
- When parts are failure, users can easily verify the control by the linkage system.
- Design of automatic control for easy operation of PLC Redundancy Mode (PID/HMD)
- Design for easy control by linking the control program.
- Considered reliable parts supplying for easy maintenance.
- Design for the high level of durability such as impact test at 3rd body in accordance with application requirements of defense industry.

CONVERTER



## Technical Supports

You can choose the best oil cooler and exact capacity of the accumulator that are required by the system.



Using a sizing program or calculation sheet by the formula



## Customers



 Austria Stemotech GmbH	 Germany Buehler Technologies GmbH	 China Shanghai Hang Ou/Buccma (Tianjin)
 Vietnam Viet Phat T.E.C.H	 Australia EXOTECH Fluid Management	 Indonesia PT. Tekno Fluida
 Taiwan Atos Electrohydraulics	 Malaysia Power & Motion Control SND BHD	

 HYOSUNG	 BUHLER
 HYUNDAI HEAVY INDUSTRIES	 BOSCH REXROTH
 LS M-tron	 MITSUBISHI
 UNISON	 SEW
 POSCO	 STAUFF
 SK ENERGY	 STX
 ENGEL	 HYUNDAI ROTEM
 SAMSUNG	 DAEWOO SHIPBUILDING & MARINE ENGINEERING
 TATA DAEWOO	 BEIJING HYUNDAI
 EATON	 HAWES HYDRAULIK

The faith and belief in technology with new CI, FLOWFORCE is a hydraulic system accessory manufacturer with

**35** years of business background and experience aiming to be the Global Only 1. Company in the hydraulic accessories and cooling solution technology.

FLOWFORCE also implements energy-saving on its site and lead the market with new technology by supplying the most efficient eco-friendly and next-generation products as its guaranteed, created and shared value for the customers.

By the experience together with next-generation technologies that we, FLOWFORCE will exert efforts to improve customer problems with differentiated engineering solutions and leading the market.

Thank you.



경기도 화성시 서신면 궁평항로 1686-7  
Tel. 031-499-9885 | Fax. 031-355-4175

1686-7, Gungpyeonghang-ro, Seosin-myeon,  
Hwaseong-si, Gyeonggi-do, Korea  
[www.flowforce.co.kr](http://www.flowforce.co.kr)

[master@flowforce.co.kr](mailto:master@flowforce.co.kr)