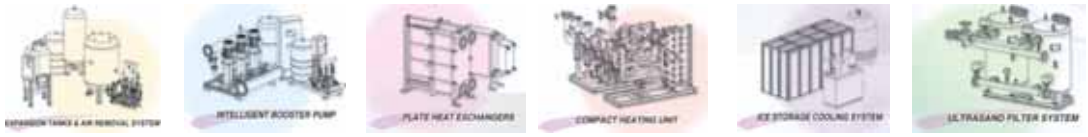
JANGHAN Engineers, Inc.

From the start of our business in 1987,
We devoted ourselves to develop the innovative system & products for hydronics, pumping system, heat exchangers, thermal energy storage, water filtration and environmental protection equipment
,with the challenging spirit of creating new industry standards.
,with the quality products from state-of-the-art production technology.
,with the experienced knowledge to provide solutions and O&M supports.
We are endeavoring to satisfy the customer's requirements and always opening the ears to hear of all your criticism for continuing improvement of our services.



Business History

1987 From the start of our business

1990 Convert to Corporation
Technical cooperation with AMTROL co.
- Manufactures and sells
Booster Pump, Extension Tank

1992 Permission to Trade business
Obtain Equipment construction a license
The Advance of Plate Heat Exchangers business

1993 Establish a research institute attached to a company

1995 Technical cooperation with FAFCO co.
Cool storage system (Ice-on-coil) business
Move into The Namdong industrial complex
at incheon

1995 Technical cooperation with ITT Lowara co.
- Expansion of Pump business

1996 Permission KT(Korea New Technique)
- Automatic Control of Booster Pump

1997 Awarded Exemplary taxpayer
The advance of ESCO Enterprise

1999 ISO9001 Permission of Quality-Management

2000 Development of Brazed Plate Heat Exchanger

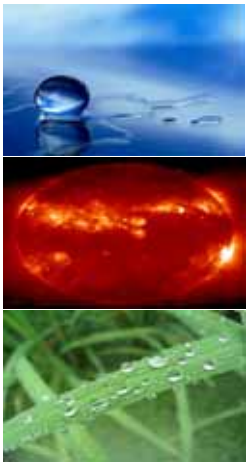
2001 INNO-BIZ Designated by Government

2002 Development of Pressure Holding System

2003 PX-TANK : Ulaanbataar Project, Mongolia

Factory and R&D Center

(405-819) 90B 5L, 671-4, Gojan-dong
Namdong-Gu, Icheon, Korea
Tel : 82-32-817-8231
Fax : 82-32-817-8238



Water

Energy

Environments

Webpage : http://www.Janghan.co.kr

Sales & Engineering Office

(153-775) #1501 Daerung Techno Town 8-Cha Gasan-dong
Geumcheon-Gu, Seoul, Korea
Tel : 82-2-2163-8731
Fax : 82-2-2163-8737

Expansion Tank

Advantage

1. **Prevention of corrosion for air**
2. **Excellent air venting capacity**
3. **No limitation in establishment place**
4. **Expansion of operation temperature scope**
5. **Smooth operation capacity**
6. **Semi-permanent life and energy saving**

EX, WX - Diaphragm

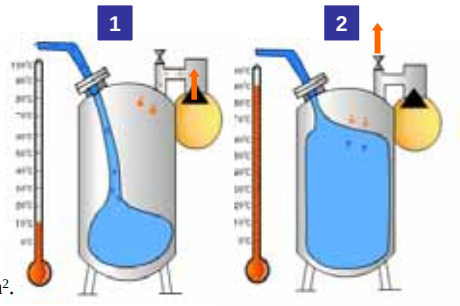
The closed expansion tank divided water and air chamber by an inner diaphragm completely intercepts the contact of the system water and the atmosphere, so that it is come true the best piping function.

<1> The air chamber of expansion tank was sealed with an initial pressure. This time the system water doesn't flow the inside of expansion tank.

<2> When a piping system operates and the temperature rises, the expansion water flows the inside of expansion tank. This time the volume of the air chamber diminishes and the pressure of the expansion tank rises until maximum pressure.

<3> When the temperature falls, the system water contracts and the expansion water returns to piping system by the pressure of the air chamber. With this the volume of air chamber increases, the pressure decreases, and the state goes back to initial.

KX - Series



The KX-Series as a closed expansion tank consist of small-sized and light weight air compressor, precise pressure sensor, high reliable automatic controller, and so on, and the microprocessor based automatic control maintains the system pressure of heating and/or cooling water circuits within a desirable range at all time. The KX-Series compared with a pressure changed-type expansion tank (EX/WX Series) have merits as follows.

<1> When the temperature rises, the expansion water is inflow and the pressure of the air chamber side increases. This time the solenoid controlled valve is opened and it discharges the pressurized air. The pressure fluctuation of piping system is controlled within the +0.3kgf/cm^2.

<2> When the temperature rises at maximum, amount of expansion water inside the tank become maximum, the solenoid controlled valve is closed, and air discharge is stopped.

<Automatic wedding machine>

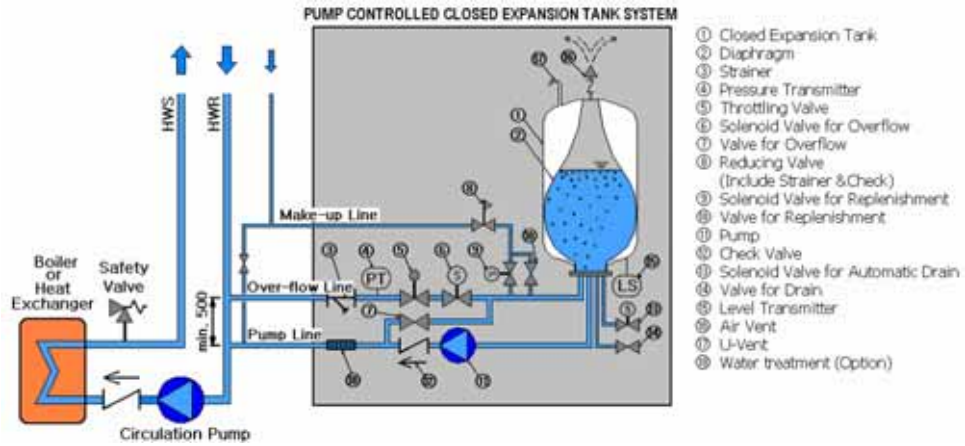
<Official inspection >

<POSCO, Kowangyang Korea>

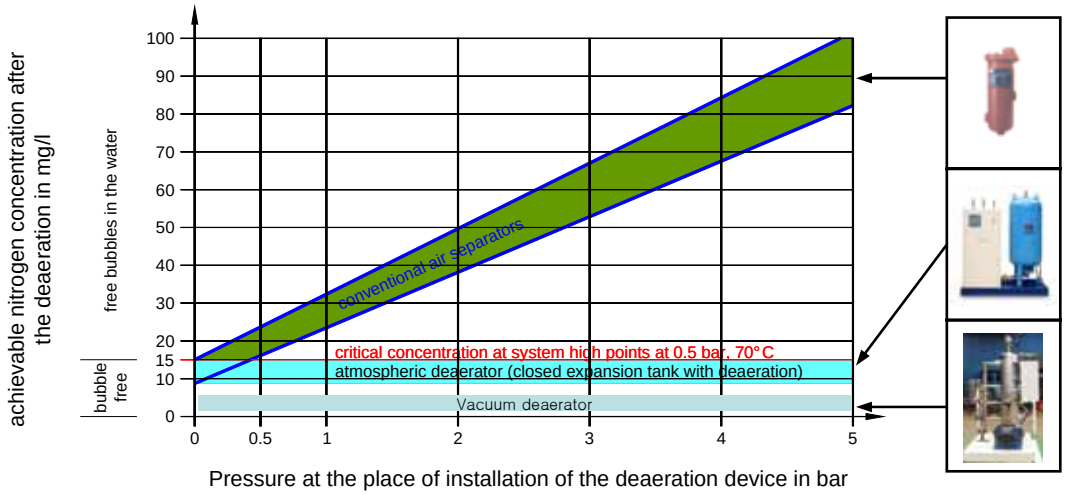
Pressure Holding System

PX-tank system

- Automatic replenishment; PX-tank system detects the tank water level by the Level transmitter, which is installed at one supporting leg of the expansion tank. If the water level drops below the minimum preset value, the replenishing solenoid valve opens to refill the tank until the tank water level is re-established over the minimum preset level.
- Automatic draining: By the same way, if the water level goes higher than the maximum preset value, the draining solenoid valve opens to drain the excess water from the tank until the tank water level is lowered under the preset maximum level. As a result, even if the heating/cooling system is operated somehow out of the design range for a while, the system can be operated as safe in some extent.
- Automatic deaerated gas: The dissolved gases in the high pressure water are deaerated in the closed expansion tank of atmospheric pressure according to the Henry's Law.



Efficiency of deaeration device



Booster Pump System

Booster pump system

The first to develop the LSR pressure control Booster Pump System in Korea(1990), we have continued our efforts as a pioneer in this industry. Since developing Electronic Step Booster Pump Controller(1992) e-pumpcon V.1, carrying out site-based tests of water usage in apartments(1994), developing inverter frequency controller i-pumpcon V.1(1993), and i-pumpcon V.2(with data communication module and BAS(Building Automation System) Interface), we have surely become one of the most promising Booster Pump Manufacturers in Korea.

Booster Pump Systems for residential use is another main product. The demand for Compact, Economic, Simple, Stable, Energy Saving Systems is growing rapidly and we are meeting these needs by optimum design and innovative manufacturing processes.

Key components of BPS

All Stainless pump
- health and durable goods

i-pumpcon
- Individual development

Level Sensor
: duplication lock

Utilized expansion tank – decreased power of pump

Stainless Valve

Sensor and Gauge

High efficiency Motor (Option)

Utilized Inverter
- High decreased power of pump

BooserNet

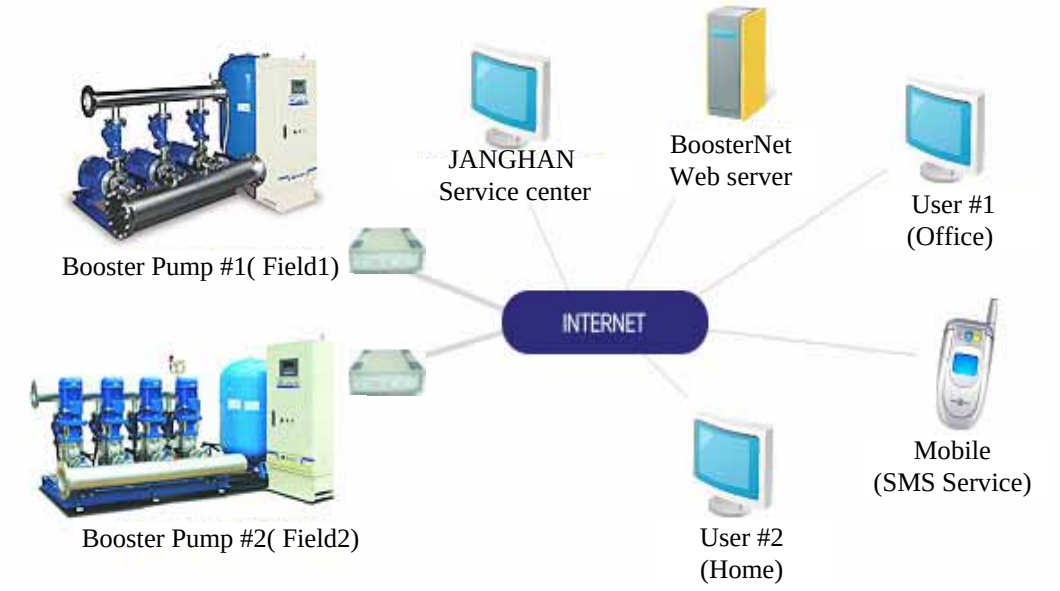
BoosterNet

Individual technical engineering of Janghan develop to remote Booster Pump Operation Support System as BoosterNet. Wherever our Pumps are, we know where and how they are.

BooserNet with iBP controls join modem/LAN to Janghan's service center. Janhan's web service provide user to O&M and A/S by On-line data-service.

Owing to Janghan's Booster Pump System basic utilized iBP controls, additionally customer have Janghan's professional technique and O&M, A/S service

New technical service with Internet for customer



Webpage service

If you join personal computer to webpage (BoosterNet web server), you would monitoring on your booster pump system.

For emergency, boosterNet service provide sign (SMS service) to user and Janghan's service center

http://www.BoosterNet.co.kr

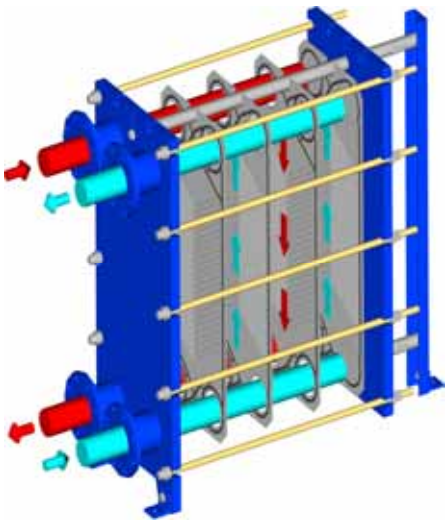
Pate Heat Exchanger

Compact Plate Heat Echanger

High quality JANGHAN's compact plate heat exchangers are designed with easy access for regular servicing and for a long, low maintenance lifetime with low life-cycle cost. Our compact plate heat exchangers offer may advantages over commodity-oriented conventional plate heat exchangers.

The plate heat exchanger consists of a series of corrugated plates that are gasketed depending on the liquids passing through. The plates are then compressed together in a rigid frame to create an arrangement of parallel flow channels. One fluid travels in the odd numbered channels, the other in the even.

The plate heat exchanger shall be fixed the frame with the plate-pact using tightening bolt. The plate-pact arranged in plate and gasket order. Between plate and plate made up channel**.** The plate-pact have put between fixed frame and movable frame. It's tightening up bolts.



High and low theta plate

The plate heat exchangers have two different plate types. They differ on the shape of the chevron pattern of the corrugation as high and low theta plates. Owing to difference in plate pattern, the flow distribution and the pressure drop (at equal flow rate) in channels is not the same.

At equal flow rates low theta plates has lower pressure drop than high theta plates. High theta plates has effected turbulent flow than low theta plates and has higher heat transfer.


High-theta Plate


Low-theta Plate

PHE's Models


<PHE>


<Plate Coil>


<ViEX BLOC>

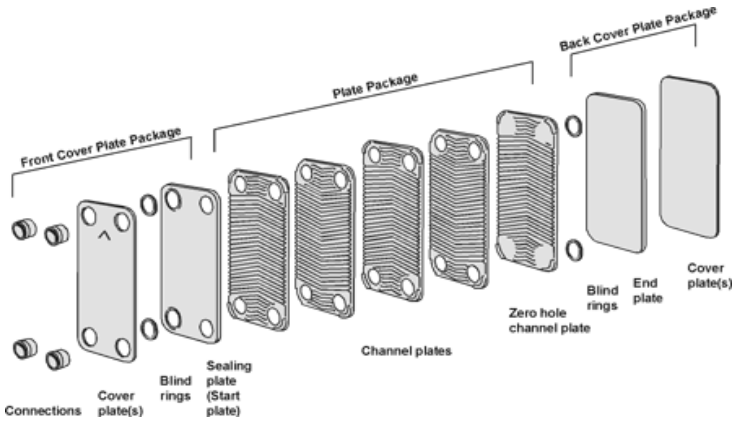

<Shell & Plate>


<ViEX BOX>

CBE Compact Brazed plate heat Exchanger

CBE (Brazed compact heat exchanger)

The efficient heat transfer capability, smaller size, lighter weight, lower cost and greater flexibility of compact heat exchanger makes them the logical choice for most uses in today's process industries.



Features

- Compact designed heat exchanger then low cost in shipping and all things (small than shell & tube as about 1/7)
- No need refrigerant-separator in conventional cooling cycle because efficiency evaporation.
- Brazed compact heat exchanger have small inner volume, that little necessary volume of fluid (refrigerant)
- Resist freezing as lattice shaped
- Identical and large capacity manufacturing by modular production method
- Low cost, high economical efficiency

Production facilities

<Automatic press>

<Vacuum furnace>

<Airtight Test (He tester)>

CBX Compact Brazed heat eXchanger Unit

District Heat Unit

CBX, **C**ompact **B**razed heat e**X**changer unit, comprise highly integrated prefabricated modules, where the modules themselves may be boilers, pumping stations, substations, metering device, automation equipment, information and management systems.

<Hot water + Hot tap water (2stage)>

<Cooling>

<Hot water + Hot tap water (1stage)>

Janghan's District heat unit

- Pre-Engineered, Optimum Design
- Factory-Assembled
- Pre-Fabricated
- Compact Design
- Minimized Cost
- High Energy Efficiency
- S. S Responsibility

Major experience record

<1> Poonglin construction, 27 Sets
<2> Korea National Housing Co. 20 Sets more than
<3> Samsung/Hanwha construction, 18 Sets
<4> Bucksan construction, 15 Sets and so on

Ice Storage System

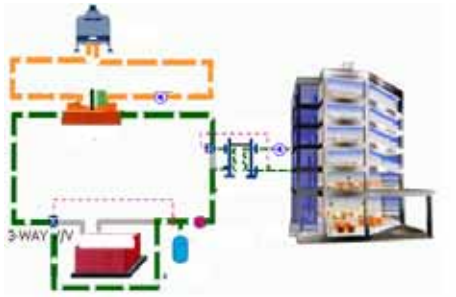
Ice storage system

As a new Thermal Storage System, Cool Storage Tanks have proven to be superior to others, by using low-cost energy to freeze water at night, and to use this energy to cool buildings at daytime. Now building engineers, consulting engineers routinely include this ice-based thermal energy system

ICESTOR

Feature

- IPF 90%, largest melting capacity at small space
- Simplicity system
- Easy maintenance
- No ice bridge phase, No ice channel phase
- High COP
- Flexibly module type
- Certified durability



Major experience record

<1> ASEM Convention Center, Seoul, Korea [Capacity:33,000 RTH]
<2> The head-office of SC The first bank, Seoul, Korea [Capacity : 6,700 RTH]
<3> Yeonse Hospital, Seoul, Korea [Capacity : 9,000 RTH]
<4> KT Yeouido office, Seoul, Korea [Capacity : 3,500 RTH] and so on

UltraSand Filter System

UltraSand Filter system

The UltraSand Filtration System is the equipment which in a short time can solve the turbidity of water and the decline of piping capacity for external factors such as the continuous incoming of outer foreign materials or internal factors such as piping corrosion and scale.

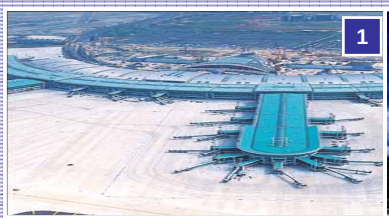
Since the UltraSand Filtration System removes suspended particles in system water up to highest 0.5 ㎛ above 99% in a short time, this equipment displays the quality of always clean water, the minimization of generating surroundings on piping corrosion and scale, the energy saving for improving of heat transfer capacity, the extension of life and reduction of trouble on piping equipments, and so on.

Feature and Application

- Always clean system water
- Prevention of scale at piping system such as heat exchanger, refrigerator, condenser, Etc.
- Saving of energy cost and minimization of chemical treatment cost
- Extension of equipments life and improvement of overall operating rate.
- Reduction of overall operation and maintenance cost
- Elimination of Legionella pneumophila by destruction of living circumstance.

Major experience record

<1> Incheon Airport
<2> SBS Broadcasting
<3> Youth training center, Kangwha
<4> SAMSUNG Electric



Janghan Agency and service center

JANGHAN Network

Agency & Service center

RMS ENG Inc.	58-13, Duckam-dong Daeduck-Gu, Daejeon , Korea TEL: 82-42- 933-8012/3 FAX: 82-42-933-8014
Dongwon-Janghan Engineering	1-#107, Industry supplies complex, Dewha-dong, Deduck-Gu, Daejeon, Korea TEL: 82-42-670-7112 FAX: 82-42-670-7111
Deagu Janghan Engineering	998-25(1 floor), Manchon 2 dong, Suseong-Gu, Daeku, Korea TEL: 82-53-744-4512 FAX: 82-53-744-3870
Neo-Tech	892-10, Chipyeong-dong, Seo-Gu, Kwangju, Korea TEL: 82-62-381-5040 FAX: 82-62-381-5041
YunWoo Engineers	1506-3, Dadea-dong, Saha-Gu, Busan, Korea TEL: 82-51-266-6989 FAX: 82-51-266-7709
Hansung	1021-1021, Ido 2 dong, Jeju, Jejudo, Korea TEL: 82-64-758-8017 FAX: 82-64-721-8017
Janghan ENG	12-#303, Commercial Center, 994-5 Wongok-dong, Ahnsan, Gyonggido, Korea TEL: 82-31-495-9114 FAX: 82-31-492-5982
Total Engineering	#201 Backsang bldg. 135-18, Songpa-dong, Songpa-Gu, Seoul, Korea TEL: 82-2-412-8154 FAX: 82-2-412-8142
Janghan PMS Inc.	Ga-Ma-#136, Gocheok Tool-Center, Gocheok-dong, Goro-Gu, Seoul, Korea TEL: 82-2-2686-8919 FAX: 82-2-2060-7181
Water Tec Pump	322-17, Ganseock 1 dong, Namdong-Gu, Incheon, Korea TEL: 82-32-435-2755 FAX: 82-32-435-7987

Special Agency

Hanbat Engineers Inc.	514 Seladri-plaza, 926-27 Geasandong, Geayang-Gu, Incheon, Korea TEL: 82-32-556-1570 FAX: 82-32-556-1574

Oversea office

JANGHAN-ODCON TECH	Sukhbaatar District, 11th Khoroolol, Building No. 17, Ulaanbaatar, Mongolia TEL : 976-11-354-358 FAX : 976-11-354-357