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**CHILLED & HOT  
WATER SOLUTIONS**



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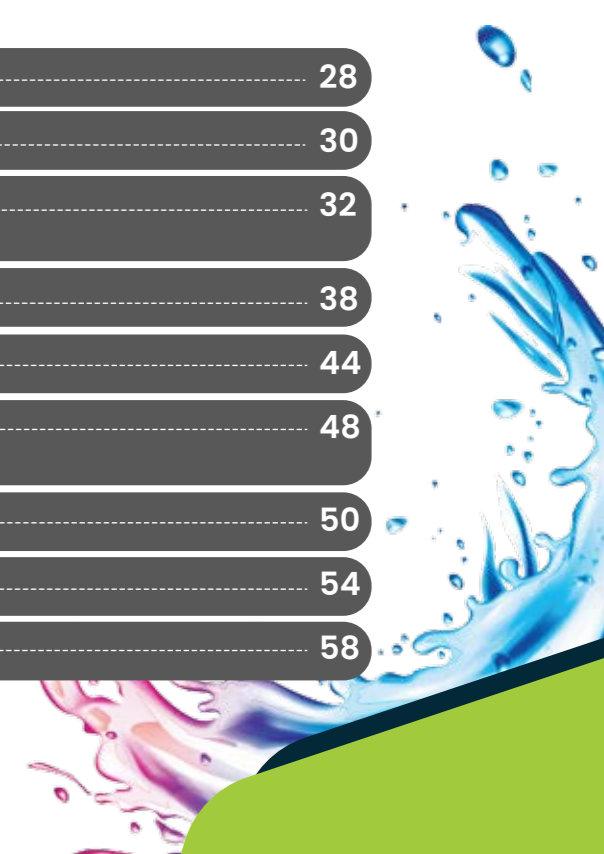
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# ABOUT US

# ABOUT US



Fluids Control Trading Company **FLUCON** Strength lies in being an Industrial Electro-Mechanical Integrator, which can deliver complete solutions for chilled and hot water projects, starting from design, engineering, calculations, supply of equipment, construction, testing & commissioning.

**FLUCON** Over the past years, the company has become more advanced and its work has become more efficient according to the deep understanding for our customers' requirements and their expectations.

Over the past years, the company has advanced by bringing more quality of work by understanding our customer requirements and expectations.

We design energy solutions according to the market needs through our technical experiences, business strategies and environmental conditions that need to be considered from the beginning.

Our business approach is the ability to deliver Design & Build (Turnkey) solutions according to the international standards.



# VISION & MISSION

# VISION & MISSION

## VISION

No.1 Engineering & Execution Services Provider for District Energy Plants in Middle East



## MISSION

Serve the Industrial Community to Transfer Chilled & Hot Water Energy by Best Engineering Practices

VALUES



# FLUCON

VALUES

- Focus on Future with Freedom
- Lead by Learning with Loyalty
- Understand the Utilization of Unity
- Commit to Change with Challenge
- Optimize the Opportunities... be Optimistic
- Now!**



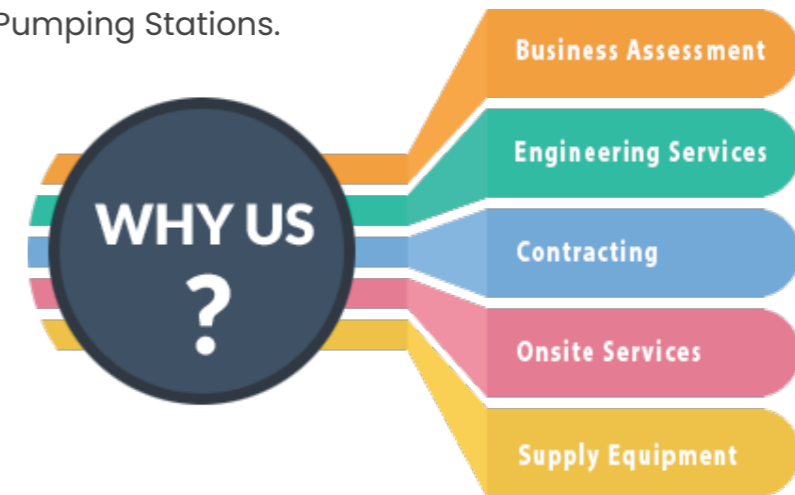
# Why FLUCON

# Why FLUCON

## Why FLUCON

FLUCON delivers distinguished turnkey solutions, specialized for the following segments:

- District Cooling Plants – DCP’s.
- Energy Transfer Stations – ETS’s.
- Condenser Cooling Towers Plants.
- Boiler Plants.
- Pumping Stations.



FLUCON supports clients through:



- Business Assessment: Analysing the client’s requirements & demands, improving the existed systems, and evaluating the solutions after integration.

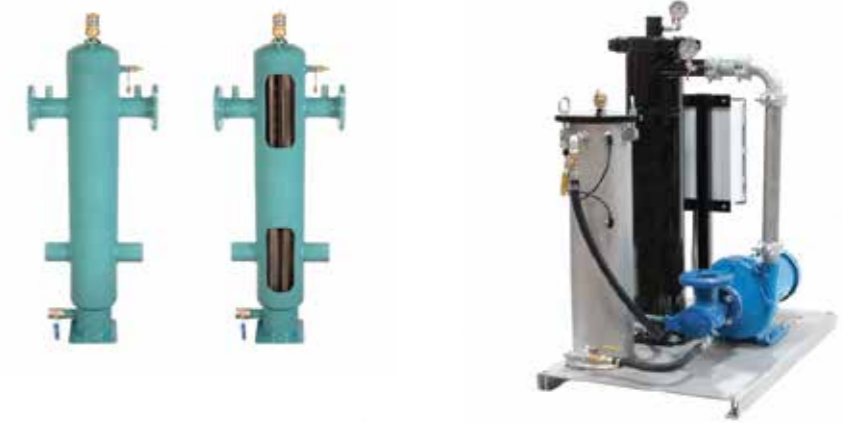


- Engineering Services: Design, Calculations, 3-D Modeling, Hydraulic Simulation & Pipe Supports Stress Analysis.
- Electro-Mechanical Contracting Specialized for Industrial Scale.



- **Onsite Services:**
  - Hydro-testing
  - Flushing & Chemical Treatment
  - Balancing
  - Shutting down Planning and Execution

- **Supply Equipment:**
  - Cooling Towers
  - Heat Exchangers
  - Industrial Water Heaters Tanks & Calorifiers Tanks
  - Thermal Storage Tanks & Buffer Tanks
  - Expansion Tanks
  - Air & Dirt Separators
  - Water Filtration System



Why FLUCON

Why FLUCON



DISTRICT COOLING  
PLANTS



CHILLERS PLANTS



ENERGY TRANSFER  
STATIONS



COOLING TOWERS  
PLANTS



FLUSHING SERVICES

SPECIALTY

SPECIALTY



## DISTRICT COOLING PLANTS – DCPS



In the last decades, the industrial and services sectors were rapidly expanding through building new industrial cities, new airports, new services facilities, new towers and compounds districts. The demands for water, power, and cooling were also increasing to match these requirements.

District Cooling Plant is the solution to cover the increasing demand on cooling with less power consumption compared with the traditional A/Cs, reached up to 30% of power saving compared with the normal A/Cs system.

Besides, District Energy Plants are centralizing the operation and maintenance works which will decrease the logistics and operational cost.

SPECIALTY

SPECIALTY

## CHILLERS PLANTS



For stand alone facilities which need small to medium amount of cooling, it is recommended to build chiller plant with air cooled chillers in order to serve the facility.

Chiller plants are commonly used in Business Centers, Towers, Commercial Buildings, Hospitals, Data Centers, Factories and others.

Chiller plants are optimized to minimize the initial costs, power consumption, and cost of operation & maintenance.

The optimization process starts from understanding the facility requirements, peak loads, and the severity of stopover.

There are many configurations to be considered from design stage for mechanical, electrical and control systems for the chiller plants, such as primary & secondary circuits, constant & variable flowrates, De-Coupler arrangement, sizing of thermal storage tanks, control valves, and process sensors.

SPECIALTY

SPECIALTY

## ENERGY TRANSFER STATIONS – ETS ROOMS



ETS will enhance the performance of DCP and will protect the chillers loop by providing two different circuits. Designing a proper control for ETS will enhance the system efficiency and transfer the required energy.

By installing a flow control valve (temperature controlled), the flow through ETS can be controlled based on the return line temperature going to the plant or the return temperature at the secondary side coming from the served building.

Installing differential pressure transmitter across the chilled water supply and return line of ETS will help to control the flow of secondary pumps installed in the district cooling plant. In case of having many ETS rooms for one centralized DCP, the secondary pumps will be controlled based on the lowest ETS DP.

Such synchronization between ETS's and DCP will guarantee the heat transfer efficiency and DCP performance.

Many service providers ask to measure the heat transfer value for different purposes. FLUCON can provide a full PLC solution with BTU meter and flow measuring devices to calculate and report the actual heat transfer to main DCP.

SPECIALTY

SPECIALTY

## COOLING TOWERS PLANTS



A cooling tower is an effective solution to remove the unwanted heat from system to atmosphere.

Cooling towers may use either water evaporation to remove process heat and cool the working fluid near the wet-bulb air temperature, or in the case of closed-circuit dry cooling towers, it only relies on the air to cool the working fluid to be near the dry air temperature.

There are common applications for cooling the circulating water; such as district cooling plants, and the process water in industrial facilities.

The cooling tower circuit mainly consists of the cooling tower structure, circulating pumps and filtration system to enhance the performance of the cooling tower.

The main factors which leads for the optimum design of cooling towers plants are:

1. Understanding the facility cooling loads.
2. Wet bulb temperature.
3. Foot print of cooling tower structure.
4. Availability of makeup water source for open type cooling towers.

SPECIALTY

SPECIALTY

## FLUSHING & CHEMICAL TREATMENT



**FLUCON** Provides comprehensive and completed solutions for the flushing and chemical treatment works required for chilled and hot water systems.

The flushing and chemical treatment task is considered as pre-commissioning step, to clean and treat the constructed pipelines before operation.

Also, it can be applied after plant operation for running plants if the system was not cleaned and treated well after construction work.

SPECIALTY

SPECIALTY

### Why are Flushing and Chemical Treatment Required?

The purposes of flushing and chemical treatment are:

- Removing all particles which accumulated inside the pipelines during construction works such as steel fabrication particles, welding rods particles, sand, ...etc.
- Treating the pipeline inner surface by removing the existing corrosion / scale, and to keep pipelines inner surface corrosion free during operation



Dynamic flushing is necessary to remove and filtrate the system from the debris and dirt.

Chemical treatment is required to remove corrosion / scale and to keep the system corrosion free.

Accumulated dirt inside the networks, and generating continuous corrosion will effectively harm your system!

SPECIALTY

All system components will be defected due to circulate water with high velocity carrying the solid particles during operation, which cause continuous hitting and then defecting the inner surface of system components.

And even if there is no actual defect on the system, there will be a big chance to lose your system efficiency!

Main component which may be defected:

- Chillers: evaporator and condenser copper tubes will be clogged, defected and causing major leaks.
- Primary & Secondary Pumps: defects on pump impeller and internal pump case surface, which will increase the cavitation and decrease the pump efficiency.
- Heat Exchangers: clogging in heat exchanger plates or tubes.
- AHUs & FCUs: copper tubes will be clogged, defected and cause major leaks.
- Valves: rubber lining inside the valve will be defected and cause leaks.



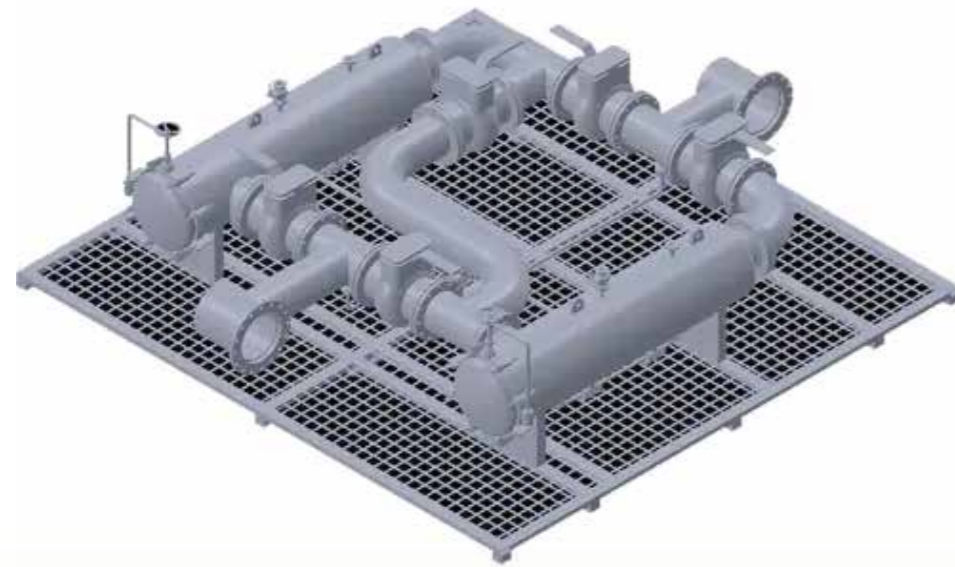
SPECIALTY

**Why is FLUCON is your best partner to do the Flushing Works?**

Most of clients and service providers concentrate on the chemical treatment part, which leads to use proper chemicals to remove the corrosion or scale from system.

We are in FLUCON, considering the chemical treatment is the second easiest part.

**Dynamic flushing and filtration** process is the first essential part, which needs a specialized partner to study the network and propose the comprehensive solution.



SPECIALTY

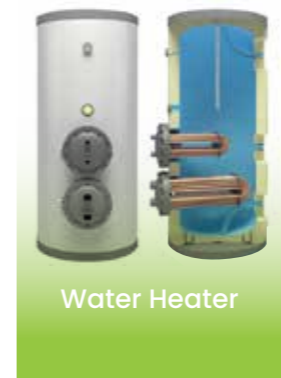
SPECIALTY

**FLUCON team starts the job by:**

- Studying network, to divide it into several loops depending on the system volume and its circuits.
- Generating hydraulic reports for the assigned loops.
- Sizing the required flushing pumps and filtration system.
- Assigning the areas which need bypasses to protect the system equipment.
- Studying the metallurgy of system component.
- Selecting the suitable chemicals.
- Determining the scope requirements onsite to do the job, such as:
  - Volume of water: usually multi times of system water volume is required due to feed and bleed flushing process.
  - Availability of drainage system.
  - Location of flushing and filtration skids.
  - Availability of fresh water storage tanks.
- Generating a method statement before starting the work.



# PRODUCTS

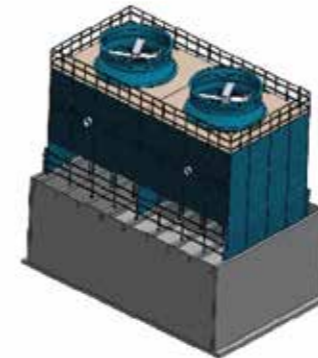


# PRODUCTS



## COOLING TOWERS

A cooling tower is an effective solution to remove the unwanted heat from system to atmosphere.



Cooling towers may use either water evaporation to remove process heat and cool the working fluid near the wet-bulb air temperature, or in the case of closed-circuit dry cooling towers, only rely on air to cool the working fluid to be near the dry air temperature.

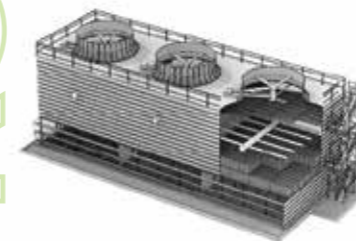
Common applications include cooling the circulating water used in district cooling plants, and the process water in industrial facilities.

The cooling tower circuit mainly consists of the cooling tower structure, circulating pumps and filtration system to enhance the performance of the cooling tower.



The main factors which leads for the optimum design of cooling towers plants are:

1. Understanding the facility cooling loads.
2. Wet bulb temperature.
3. Foot print of cooling tower structure.
4. Availability of makeup water source for open type cooling towers.



PRODUCTS

PRODUCTS

## PLATE HEAT EXCHANGERS

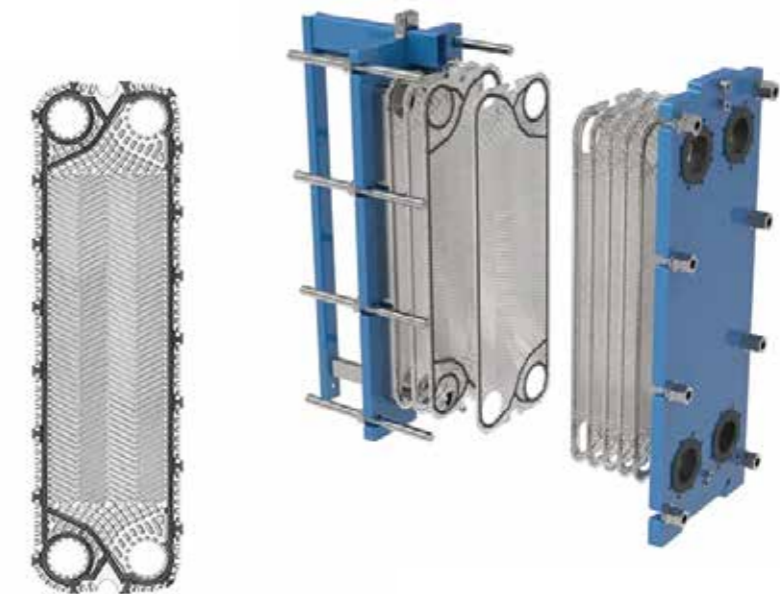
### What is Plate Heat Exchanger?

Plate Heat Exchanger is a device that works with principle of two different liquids making heat transfer in them without contacting each other, through a gasketed metal plates.

The standard plate heat exchanger has 4 in-out ports (two of them for the hot side, and the other two ports for the cold side circuit).

The Frame Plate Heat Exchanger is mainly consisted of the following:

- Front and back frames
- Flow plates
- Connections
- Gaskets



PRODUCTS

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# PRODUCTS

# PRODUCTS

### Materials of Construction:

- Plates: SS304, SS316, SS316L and Titanium
- Frame: Carbon Steel and Stainless Steel
- Connections: Carbon Steel, Stainless Steel and Plastic
- Gasket: EPDM and NBR

### Working Pressures:

- 10 Bars
- 16 Bars
- 20 Bars



### Area of Usage, Fields & Industries:

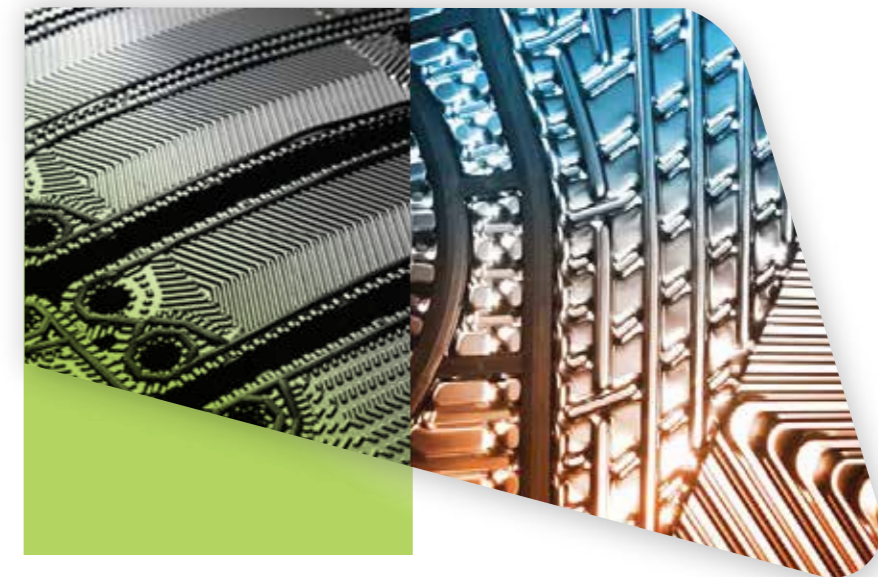
- Chilled water / hot water networks
- Pressure breakers
- Chiller plants
- Energy transfer stations (ETS Rooms)
- District cooling plants (DCP)
- Cooling towers cycles
- Pool heating
- Cooling Rolling Press Oil:
- Cooling Borax Oil:
- Waste Heat Recycle / Recovery
- Food Industries (Milk Pasteurization, Yogurt Pasteurization, Plate Pasteurization Systems)
- Marine

# PRODUCTS



### Advantages of Plate Heat Exchangers:

- Transferring heat with very high efficiency, and we always design flow to be diagonal between the hot and cold side, so efficiency reaches the maximum level
- Occupying very little place, thanks to their compact structure
- Being completely disassembled and clean
- Having a wide range of plates and gaskets
- Always the most economical solution for you
- Designed and presented to match customers' requirements



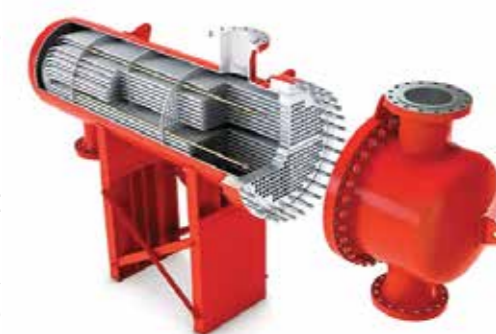
# PRODUCTS

# SHELL TUBE EXCHANGER

## What is Shell & Tube Heat Exchanger?

Shell and Tube heat exchanger transfer heat between two fluids, by running one inside tubes and the other one on the surface of tubes inside the shell body.

The standard tubular heat exchanger has 4 in-out ports (two of them for the hot side, and the other two ports for the cold side circuit).



- Straight or U bend tubes enabling heat transfer
- Shell manufactured from tube or bended plate
- Face plate by which the tubes are fixed on
- Baffles directing the flow outside the tube but inside the shell and supporting the tubes
- Nozzles enabling the exit and entrance of shell side fluid
- Heat and head nozzles enabling the exit and entrance of tube side fluid
- Carrying legs enabling the assembly of heat exchanger on any base

PRODUCTS

PRODUCTS

# PRODUCTS

### Materials of Construction:

Depending on the process requirement and application, the following materials can be used in manufacturing the heat exchanger parts:

- ST37
- ST35.8
- AISI304
- AISI316
- AISI316L
- Copper
- Titanium

### Working Pressures:

- 10 Bars
- 16 Bars
- 25 Bars
- 40 Bars
- 60 Bars
- 100 Bars



# PRODUCTS

### Materials of Construction:

Depending on the process requirement and application, the following materials can be used in manufacturing the heat exchanger parts:

- ST37
- ST35.8
- AISI304
- AISI316
- AISI316L
- Copper
- Titanium

### Working Pressures:

- 10 Bars
- 16 Bars
- 25 Bars
- 40 Bars
- 60 Bars
- 100 Bars



**Area of Usage, Fields & Industries:**

- Oil coolers
- Heat treatment
- Chemical applications
- Chilled water / hot water networks
- Pressure breakers
- Cooling Rolling Press Oil:
- Cooling Borax Oil:
- Waste Heat Recycle / Recovery
- Food Industries (Milk Pasteurization, Yogurt Pasteurization, Plate Pasteurization Systems)
- Marine



PRODUCTS

PRODUCTS

## INDUSTRIAL WATER HEATERS TANKS & CALORIFIER



### What is the Industrial Water Heater Tank & Calorifier?

The central water heater tank is a heat exchanger storage tank that is used to heat up the desired liquid.

It's called a calorifier tank when the source of heat is another liquid generated from boilers, solar system,... etc.

And it's called an electrical water heater tank if the source of heat is the electricity (electrical resistances).

These centralize water heater tanks can be supplied in several types:

- Water Heater Tank with Single Serpentine Type (Or Called with Fixed Internal Heat Exchanger)
- Water Heater Tank with Double Serpentine Type (Or Called with Two Fixed Internal Heat Exchangers)
- Water Heater Tank with Tube Coil
- Electrical Heater Type



PRODUCTS

PRODUCTS



Electrical type can be combined with other types as backup power.

**Materials of Construction:**

- Body: Carbon Steel and Stainless Steel AISI 316
- Internal Coating: Glass Lined Enameled, Pickling and Passivation
  - External Coating: Highly Rigid Polyurethane Foam, Flexible Polyurethane Foam, Polystyrene Graphite and Polyester Fiber
  - External Sheet: Electrostatic Powder Paint and Artificial Leather

**Cathodic Protection:**

Our industrial water heaters tanks are supplied with cathodic protection anodes.

- Magnesium Anode
- Titanium Anode



**Capacities:**

200 Liters and up to 10,000 Liters

**Area of Usage:**

- Airports
- Malls
- Hospitals
- High Rise Buildings and Towers
- Business Centers
- Complexes and Compounds
- Sport Centers
- Industrial Facilities and Factories

PRODUCTS

PRODUCTS

## THERMAL STORAGE AND BUFFER TANKS

### What is the Thermal Energy Storage (TES) Tanks?

Thermal Energy Tanks are used as thermal batteries, which will be charged with chilled water in peak-off periods and supply chilled water during high demand peak periods.



### Materials of Construction:

- Body: Carbon Steel and Stainless Steel AISI 316
- Internal Coating: Glass Lined Enamelled, Pickling and Passivation
- External Coating: Highly Rigid Polyurethane Foam, Flexible Polyurethane Foam, Polystyrene Graphite and Polyester Fiber
- External Sheet: Electrostatic Powder Paint and Artificial Leather

### Capacities:

200 Liters and up to 10,000 Liters

### Area of Usage:

Usually use in Chiller Plants which serve:

- Airports
- Malls
- Hospitals
- High Rise Buildings and Towers
- Business Centers
- Complexes and Compounds
- Sport Centers
- Industrial Facilities and Factories



PRODUCTS

PRODUCTS

## EXPANSION TANKS



### What is the Expansion Tanks?

The Expansion Tank (also called pressure tank, pressure vessel and expansion vessel, bladder tank) is a steel tank with bladder (membrane) inside, which is used to maintain the system pressure in certain limits.

These expansion vessels are used in chilled and hot water closed systems.

The pressure tanks (pressure vessels) are usually supplied pre-charged by air for about 3-4 bars.

PRODUCTS

PRODUCTS

# PRODUCTS



**Materials of Construction:**

- Body: Carbon Steel and Stainless Steel
- Bladder (Membrane): EPDM, BUTYL

**Orientation:**

- Vertical
- Horizontal

**Capacity:**

500 Liters up to 10,000 Liters

# PRODUCTS



**Working Pressure:**

- 10 Bars
- 16 Bars
- 25 Bars

**Area of Usage, Fields & Industries:**

- HVAC Projects
- Chiller Plants – District Cooling Plants
- Energy Transfer Stations – ETS Rooms
- Chilled water & hot water networks
- Boilers systems

## AIR & DIRT SEPARATORS



### What is Air & Dirt Separator?

Air Separator, Dirt Separator and Air / Dirt Separator are used for preventing the system from damages which can be done by the air (and or dirt) existing in the system such as corrosion, cavitation and clogging.

### It can be supplied as:

- Air Separators: for systems which have the possibility to get air inside during the operation.
- Dirt Separators: for systems which have the possibility to get air inside during the operation.
- Air & Dirt Separators: for systems which have the possibility to get air & dirt inside during the operation

The inlet and outlet connections can be supplied:

- Axial connections
- Tangential connection

PRODUCTS

PRODUCTS

# PRODUCTS



**Materials of Construction:**

- Body: Carbon Steel and Stainless Steel
- Strainer: Stainless Steel

**Sizes:**

Starts from DN50 and up to DN800 (Bigger sizes can be customized)

**Working Pressures:**

- 10 Bars
- 16 Bars
- 25 Bars

**Area of Usage, Fields & Industries:**

- HVAC Projects
- Chiller Plants – District Cooling Plants
- Energy Transfer Stations – ETS Rooms
- Boilers systems



# PRODUCTS

## FILTRATION SYSTEM

Our experience was put into place to fit in a very critical applications, provides the reliable solutions to keep the client's systems healthy and more productive.

For Cooling Towers Plants, we provide complete solutions through the Sweeper System, which enhances the cooling tower performance.

Sweeping system removes solids that clog spray nozzles and other small orifices.

This helps to:

- Maintain original nozzle which is designed for efficient spray coverage
- Prevent wear abrasion and clogging – reducing frequency of nozzle replacement
- Maintain overall product quality through cleaner nozzles, reducing the need to scrap product due to quality.

### Area of Usage:

- Chilled and Hot Water Systems
- District Cooling Plants
- Cooling Towers Plants.
- Heat Exchangers Applications



# PRODUCTS

# PRODUCTS

## **FOULING**

Suspended solids (dirt, silt, sand, airborne particulate matter and corrosion byproducts) in cooling tower water form deposits and collect on heat transfer surfaces, cooling tower fill, cooling tower basins, and spray nozzles. Collection of suspended solids in heat transfer equipment results in scale and fouling—thereby leading to loss of heat transfer efficiency, increased maintenance, and decreased equipment life.

## **BIOLOGICAL ACTIVITY**

Evaporative coolers and cooling towers offer a warm, moist environment for biological activity to grow and multiply. Biological activity (algae, legionella, slime and biofilms) contributes to fouling of heat transfer surfaces (including tower fill), corrosion in all parts of the cooling tower system and creates health hazards.





# PRODUCTS

# PRODUCTS

## **CORROSION**

Corrosion in cooling tower basins is caused by suspended solids that are build up at the bottom of the basin. These settled solids do not only provide a breeding ground for biological growth but also corrode the basin floor, thus increasing maintenance costs and reducing life of the tower basin.

## **Benefits of Filtration System**

Our filtration technology is built on the basis of Non-Barrier filtration approach to remove solids, as this type of design eliminates the risk of clogging, and provides a high reliability in the operation.

Its a highly detailed design which can reach to as low as 25 Microns removal.



# PRODUCTS

# PRODUCTS



## **CORROSION**

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