Gas Metering & Regulating System

The system presented here is composed of some subsystems, such as filtering and heating system, metering system, regulating system, venting system, gas leak alarm system and etc. Of which, the regulating system has the features of “pressure control system ”, adopting the configuration mode of “safety shut-off valve + monitor regulator +self-actuated pressure regulator”. The metering system assembles with the flow computer used for the temperature and pressure compensation of the gas to calculate the flow rate. The venting system adopts centralized venting in principle, the gas leak alarm system can be interlocked with the main valve and venting system. When the leakage occurs in the operation field, the station control system will command the main valve to close and open the venting system to carry on the emergency venting.
High requirements for the regulator in this system: quick opening ability and fast reaction rate (accelerating commander is provided in some situations）. Axial flow regulator is common ,with these characteristics.

System Characteristics

Using axial flow pressure regulator with large flow capacity and good closing performance
Regulating accuracy of ±1%, wide adjustable ratio
Equal percentage characteristic (logarithmic characteristic)
The shut-off reaction time is less than 1s
Automatic shut-off, travel transmission, travel indicator (local and remote) can be provided
Available in two electric heating modes: direct and indirect

Metering & Regulating System Of Self-used

This system is suitable to manned(unmanned) operation or attended natural gas distributing station, metering station, storage and distribution station, regulator station and etc.

High requirements for the heater in the system: special explosion proof performance ,IP code and the manufacturing requirement of the equipment body, adopting direct or indirect electric heater, the safety protection measures of heating speed, heating temperature and dry combustion prevention effect the system safety directly.

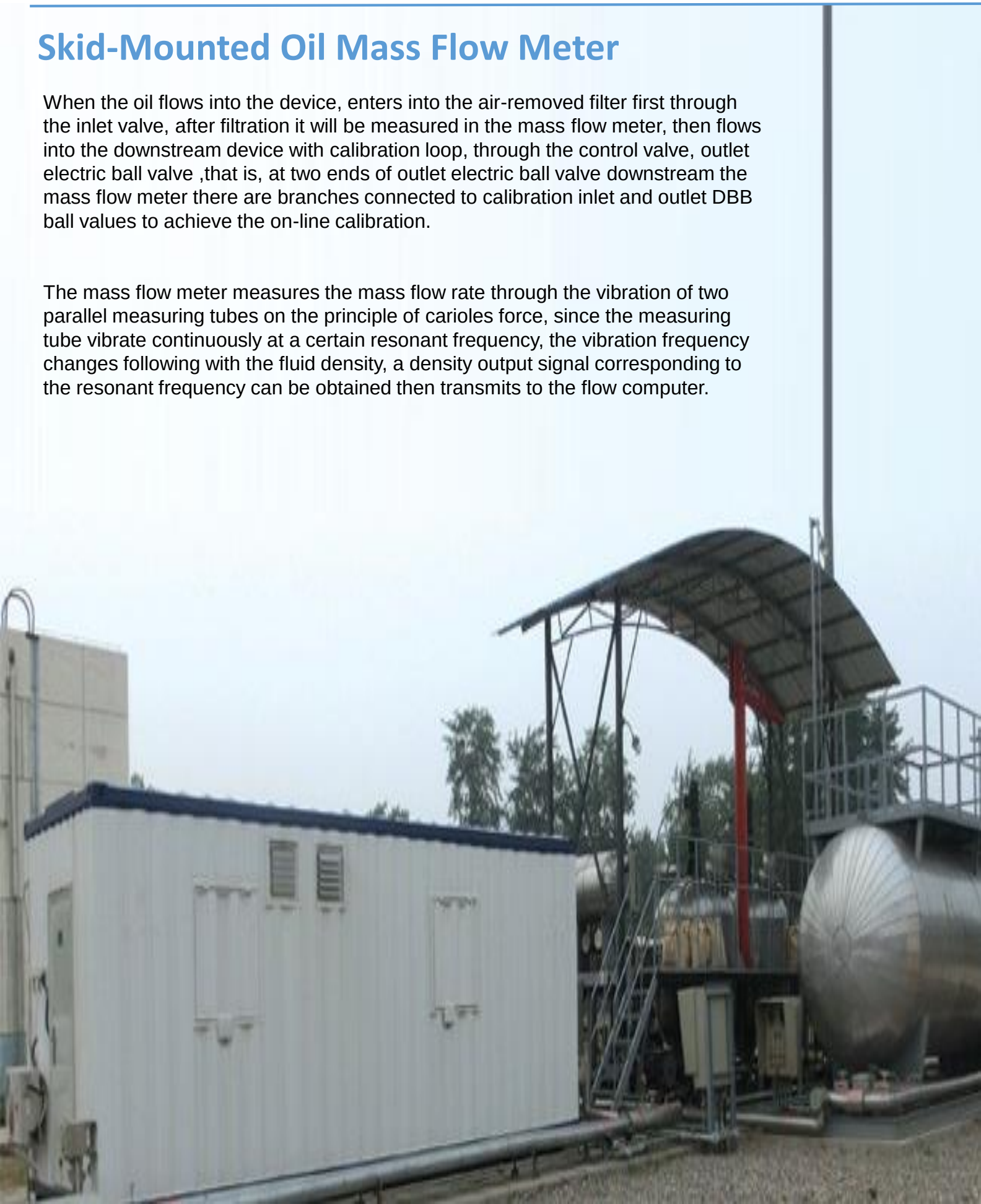
System Characteristics

Available in two electric heating modes: direct and indirect
Using intercepting pressure regulator valve with pressure stability and good closing performance at low flow condition
Adopting the safety protection measure of dual safety shut-off valves
Regulating accuracy of ±1%, wide adjustable ratio
Equal percentage characteristic (logarithmic characteristic)
The shut-off reaction time is less than 1s
Automatic shut-off, travel transmission, travel indicator (local and remote) can be provided
Using special flow meter in low flow situation

Skid-Mounted Oil Mass Flow Meter

When the oil flows into the device, enters into the air-removed filter first through the inlet valve, after filtration it will be measured in the mass flow meter, then flows into the downstream device with calibration loop, through the control valve, outlet electric ball valve ,that is, at two ends of outlet electric ball valve downstream the mass flow meter there are branches connected to calibration inlet and outlet DBB ball values to achieve the on-line calibration.

The mass flow meter measures the mass flow rate through the vibration of two parallel measuring tubes on the principle of carioles force, since the measuring tube vibrate continuously at a certain resonant frequency, the vibration frequency changes following with the fluid density, a density output signal corresponding to the resonant frequency can be obtained then transmits to the flow computer.



Pressure Control System

Pressure control system consists of safety shut-off valve, monitor regulator and active regulator. These three devices are in series regulation mode from upstream to downstream respectively. The whole system will be integrated as a skid ready for installation. The overall test for each component and the whole system have been carried out before delivery. The system presented here has the characteristics of safety, reliability, good property, easy installation and simple operation.

Operating principle: under normal condition, safety shut-off valve and monitor regulator are in fully open position, and active regulator controls downstream pressure. If the active regulator fails on pressure control, monitor regulator starts to control downstream pressure automatically, when the monitor regulator fails on pressure control, safety shut-off valve quickly and automatically close the trim to shut off gas flow to protect the whole system.

System Characteristics

- Using axial flow pressure regulator with large flow capacity and good closing performance
- Regulating accuracy of ±1%, wide adjustable ratio
- Equal percentage characteristic (logarithmic characteristic)
- Self-carried pilot, filter
- The active regulator with the characteristic of “fail to open” , but the monitor regulator “fail to close”
- The shut-off reaction time is less than 1s
- Automatic shut-off, travel transmission, travel indicator (local and remote), pilot electric heater, flow-limiting, and pressure limiting and remote control can be provided
- Overflow shut-off and interlocked with prepayment IC card gas meter can be realized
- A variety of configuration types are available upon request ,such as “safety shut-off valve + monitor regulator + control valve”, “safety shut-off valve + control valve + active regulator control”, “safety shut-off valve + safety shut-off valve + active regulator control “and “safety shut-off valve + safety shut-off valve + control valve”.
- The flow and pressure restricting system can be matched to,(interaction with SCADA system is available), to realize distributing flow limit and imbalance gas supply control.

Mobile Injection, Dissolution & Dilution System

The equipment mainly comprises Dissolution and Dilution System, Heat Medium Heating System and Control System. They complement one another; coordinate work to achieve the function of heating, dilution and mixing.

Dissolution and Dilution System comprises Dilution Kettle, Blender, Process Pipeline and valves. Its function is mixing drag reducer with crude oil, stirring and dilution.

Heat Medium Heating System comprises Electrical Heater, High Temperature Media (HTM) Pump, Expansion Tank, Process Pipeline, Valves and other detecting instruments. Its function is getting heat from Electrical Heater for HTM and providing Heat-Exchange Equipment with heat.

Control system is set for operators, so they can monitor the whole process of heat treatment. It adopts PLC and HMI to achieve the function of signals collection, display and controlling.

Turbine / Ultrasonic Metering System

This system is composed of some subsystems, such as filtering system, metering system, flow ratios system, gas chromatograph analysis system, on-line calibration system, venting system, gas leak alarm system and etc. The accuracy of the filtering system is much more strict comparing to in other situations, besides gas turbine flow meter or gas ultrasonic flow meter, straight pipe meeting the requirement and suitable flow computer for temperature and pressure compensation calculation are used in the metering system. On-line type gas chromatograph detects the gas components. Two or more flow meters series to achieve intercomparison, what is flow ratios. According to processing requirement ,on-line calibration system reserves on-line calibration port in the system. Gas leak alarm system can be interlocked with the main valve and venting system. When the leakage occurs in the operation field, the station control system will command the main valve to close and open the venting system to carry on the emergency venting.

High requirements for the flow meter, straight pipe, gas analyzer and flow-straightening vane in the system. And, the upstream and downstream shut-off valve of the flow meter are critical, requiring zero leakage. Technical level of the manufacturer and installation accuracy affect the accuracy of the metering system directly. The above mentioned rules are the basic requirements to ensure the accuracy of the metering system.

System Characteristics

- Using gas turbine flow meter or multi-path gas ultrasonic flow meter as the mainstream gas flow meter
- The accuracy of the meter is better than ±0.5%,while the accuracy of the metering system is better than ±1%
- Adopting the plate or tube flow-straightening vane
- Finish machining of the straight pipe inner boring
- Zero leakage in the metering system
- Transmission, remote control, automatic switching and flow centralized management can be realized

Skid-Mounted Pressure Reduction Metering Station

The configuration mainly includes inlet block valve, filter, shut-off valve, regulator, safety relief valve, flow meter, outlet block valve and etc. It integrates the functions of regulating, metering, monitoring, telemetering/remote control(SCADA system),peak shaving, noise elimination (muffler is separately provided), odorizing, heating, and safety protection. It has the characteristics of compact structure, safety gas supply, complete functions, low investment and etc. Engineered and manufactured to incorporate the client's specific requirements.

System Characteristics

- Over pressure/ low pressure shut-off valve, safety relief valve, gas leak alarm system, and other safety measures are provided
- Compact structure, the equipment can be supplied in a skid-mounted mode or divided into several modules. Installation and testing are on site, easy maintenance
- Adopting 120% flow design, automatic switching between the master line and slave line can be realized, ensuring continuous gas supply and high reliability in the down stream
- Excellent expansibility, according to the user's requirements, the following functions can be added: noise elimination, monitoring, telemetering/remote control, SCADA system, heat tracing and etc.
- Regulating accuracy of ±5%(±2.5%)
- Insulation joints are installed in the inlet and outlet to protect the underground gas pipeline

Skid-Mounted CNG Pressure Reducing Station

Based on the CNG station's construction scale and feature, there are two configuration choices for Skid-Mounted CNG Pressure Reducing station: with gas storage equipment or without. In general, Skid-Mounted CNG Pressure Reducing station: with gas storage equipment should adopt three-step regulating mode, and set up gas storage equipment after the second step regulating device. But CNG station without gas storage equipment only adopt two-step regulating mode.

System Characteristics

- Adopting direct action regulator to assure the system high stability, reliability and fast respond;
- Adopting mode of 1 for use and 1for standby, with shut-off and relief device;
- Meeting the needs of different scale CNG station;
- Skid-Mounted CNG Pressure Reducing station could integrate the following functions, including station control, metering, odorization, controlling remotely, etc.;
- The design of the whole Regulating and Metering equipment accords with GB50028.
- Protective Box and ESD Fire Leak Alarm System are configurable.
- Typical Cases: Renqiu CNG Pressure Reducing Station, Hejian CNG Pressure Reducing Station

City Gas Gate Station/Storage & Distribution Station

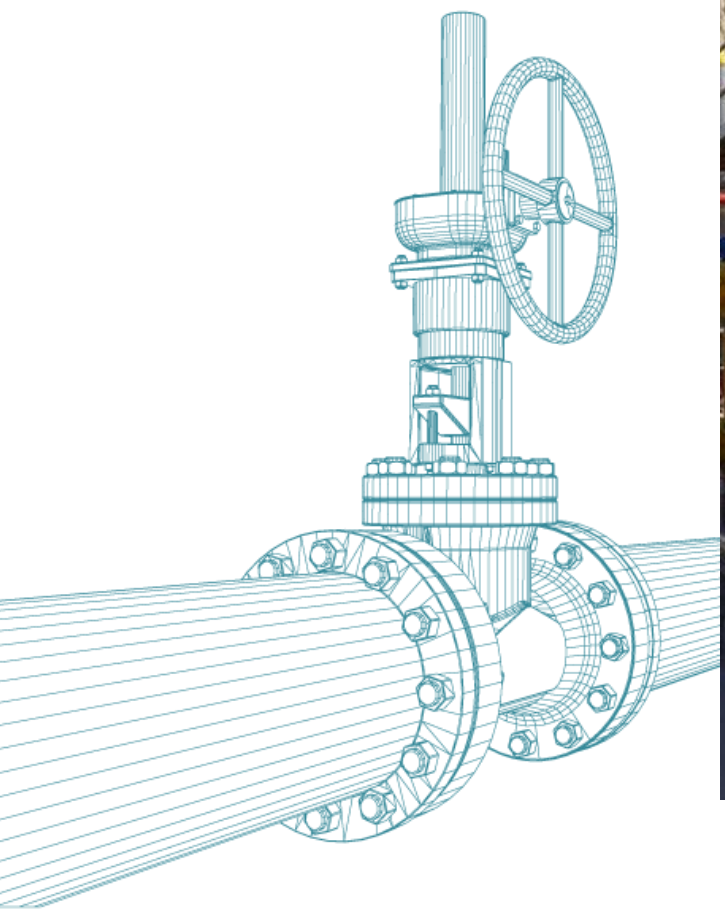
The configuration mainly includes inlet block valve, filter, shut-off valve, regulator, safety relief valve, flow meter, outlet block valve and etc. It integrates the functions of regulating, metering, monitoring, telemetering/remote control(SCADA system),peak shaving, noise elimination (muffler is separately provided), odorizing, heating, and safety protection. It has the characteristics of compact structure, safety gas supply, complete functions, low investment and etc. Engineered and manufactured to incorporate the client's specific requirements.

System Characteristics

- Over pressure/ low pressure shut-off valve, safety relief valve, gas leak alarm system, fire ESD emergency venting system, excess gas limit and other safety measures are provided
- The leave factory preassembly and performance test shall be done and all control points will be settled up according to the user's requirements, the equipment can be supplied in a skid-mounted mode or divided into several modules. Installation and testing are on site, easy maintenance
- It is suitable for natural gas, manufactured gas, LPG or gas mixing and etc. Easy to replace the gas type
- Adopting 120% flow design, automatic switching between the master line and slave line can be realized, ensuring the continuous gas supply and high reliability in the down stream
- Excellent expansibility, according to the user's requirements, the following functions can be added: noise elimination, monitoring, telemetering/remote control, SCADA system, heat tracing and etc.
- Regulating accuracy of ±2.5% (±1%)

Gas Gathering Skid

Is made up of the ball-tube, liquid Flash tank, gas tank, flow meter (orifice, Vortex precession), electric heaters, electric three-way ball valve, ball valve, safety valve, self-operated pressure regulating valve equipment consisting of natural gas set integrated device.



Filter Separator

Gas filtrating is high-precision filtrating separator must be installed in front of the critical equipment. We have developed high accuracy filtrating separator, drawing lessons from domestic and international advanced technologies and experiences.

Product Characteristics

- Quick opening closure structure, easy installation and simple maintenance
- Vertical, horizontal, single-stage, multi-stage type are available
- It is suitable for natural gas, LPG, city gas, mine drainage gas and etc.
- High filtering precision, up to 5μm
- Small resistance, large flow capacity and high separating efficiency
- Filter element can be cleaned and replaced easily, service life is greatly extended
- The differential pressure gage with local indicating is equipped, remote monitoring is available
- It integrates the functions of sap cavity local indicating and remote monitoring
- Automatic drain function

Gas Scrubber

Elite have designed and supplied many gas scrubbers and absorber systems to a variety of chemical and process industries.

Elite an design and supply all types of **gas scrubber**, either as ‘end-of-pipe’ pollution control or as a gas cleaning stage within a process. Gas scrubbers are all designed to ensure a good contact and mixing between gas and liquid, usually for Absorption, Odour Control or Particulate removal. Desorption and Distillation are also mass transfers done in columns.
Typical applications for Begg Cousland Gas Scrubbers in industry include removal of caustic or acidic products such as hydrochloric acid, ammonia, fluorine and sulphuric acid from process exhaust gases.

Removal of these harmful contaminants can lead to a reduction in general air pollution as well as reducing the impact of acid rain. In the case of extremely harmful emissions, e.g. Chrome VI, we have the most efficient scrubbing technology and equipment for the job.

Pig Launcher and Receiver

Pig launcher & receiver are important parts of pigging equipment on long distance pipeline, which is installed on both ends of pipeline to launch or receive the pig. It mainly consists of quick opening closure, barrel, reducer, and saddle support.

Pig launcher & receiver shall assemble vent valve, safety valve and pressure gauge and other parts.

Characteristics and Parameters

- Quick opening closure structure, convenient for rapid on-off of the launcher & receiver
- Simple structure, easy operation, particularly well suited to daily maintenance of the pipeline
- Pigging indicator can be equipped, indicating the launching and receiving process
- It is suitable for natural gas, crude oil, oil products and etc.
- Operating pressure: 1.6Mpa,2.5Mpa,4.0Mpa,6.4Mpa,10.0Mpa

Pressure Vessel

Pressure Vessel is an important equipment in gas transmission and distribution system.

During the gas transmission and distribution, flow meter, regulator, and valves require protection against the damage potential of solid impurities and liquid impurities.

Product Characteristics

- Quick opening closure structure, easy installation and simple maintenance
- Vertical, horizontal, single-stage, multi-stage type are available
- It is suitable for natural gas, LPG, city gas, mine drainage gas and etc.
- High filtering precision, up to 5μm
- Small resistance, large flow capacity and high separating efficiency
- Filter element can be cleaned and replaced easily, service life is greatly extended
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Heat Exchanger

Heat exchanger is an important heat exchange equipment in petrochemical application situation.
Fixed plate type, floating head type and model U tube type are available upon request.