

# 12.3 ENERGY EFFICIENT HVAC & ACMV SYSTEM

BUILDING ON FAMILY LEGACY OF  
EXCELLENCE | MUTUAL RESPECT | ETHICS | SAFETY | SUSTAINABILITY | FAIR RETURN



## 12.3 ENERGY EFFICIENCY HVAC/ACMV SYSTEM

We Provide customers HVAC Equipment with the best selection plan, reasonable system configuration, and professional technical consulting and support. Our factory fully implementing modern management, has a professional technical development team and high-quality production, quality, environmental management team, The management team are from the world top 500 enterprises. We also have advanced production equipments and testing equipments, so we basically achieve the management standardization, modernization of production, professional of product testing and comprehensive quality and environmental management system.

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The integrated technology enables to lower the start-up current, and automatically adjust the quantity of refrigeration through the frequency conversion technology to adapt present requirement of refrigeration. BSE's products has reached the highest energy efficiency, and, in particular, the partial load efficiency of the machine's actual operating point has reached an advanced level in the whole industry.





## 12.3 ENERGY EFFICIENCY HVAC/ACMV SYSTEM

### QUESTCHILLER™

BSE QUESTCHILLER™ family chillers are the oil-free, variable frequency and centrifugal water-cooled chillers, including three series of Q1, Q2, and Q3 with both a vertical structure and a horizontal structure and a cooling capacity covering 300kW (85RT) to 4925kW (1400RT).



QUESTCHILLER™ family chillers are the combinations of the most advanced technologies in the world, which allows a new height of the chiller's efficiency. The products are the new generations of the chillers with a distinguished operational efficiency and reliability without obvious reduction in performance. That could be widely used in the newly-built and reconstructed public architectures, such as the guesthouses, the hotels, the schools, the shopping malls and the office buildings etc, or also be used in the industrial cooling and industrial environment control, such as the factory buildings and industrial laboratories.

QUESTCHILLER™ family chillers have the following characteristics:

- Oil-Free VFD centrifugal compressor
- Super high IPLV and COP
- R134a refrigerants, no harm to the ozone
- Oil-Free, an absolute solution to the oil-return problem and a great improvement to the reduction of the cooling capacity
- Low noise and small vibration
- PAC programmable auto-controller
- Small size and light weight
- Tiny start-up current with no strike to the electronic grids
- Intelligent alarming and failures handling



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### I-CHILLER™

BSE I-CHILLER™ Family Oil-Free VFD Centrifugal Modular Unit Chiller/Heat are your smart choices now and in the future. The chiller is in the design of 250kw(71RT)-4200kw(1200RT) and uniform measure of 0.89m(W)x1.2m(L)x1.8m(H).

I-CHILLER™ Modular Units is oil-free, frequency conversion centrifugal chillers/heat pumps in modular units that are applied with all digital oil-free centrifugal compressors. Combined with the high-efficient plate exchanger and the powerful PAC controller, it allows a 40% improvement of the annual operational efficiency than that of the traditional chillers. The single unit only occupies a footprint of 1m<sup>2</sup> with a tiny height of 1.8m and a weight of 1 ton. They are currently the chillers that are the smallest in volume, the lightest in weight, and the least needs in refrigerant charge in the world when outputting the same cold energy.



BSE I-CHILLER™ Family Oil-Free Variable Centrifugal Modular Unit Chillers/Heat Pumps have the following characteristics:

- i) Small size and light weight
- ii) Low noise and small vibration
- iii) Oil-Free VFD centrifugal compressor
- iv) Intelligent alarming and failures handing
- v) Tiny start-up current with no strike to the electronic grids
- vi) R134a refrigerants, no harm to the ozone
- vii) Super high IPLV and COP
- viii) Oil-Free, an absolute solution to the oil-return problem and a great improvement to the reduction of the cooling capacity





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### CLOUDCHILLER™

BSE CLOUD-CHILLER™ family chillers are the oil-free, frequency conversion air cooled chillers, which could be used independently when no cooling water is available, including two types for conventional and free cooling, optional hydraulic module and a cooling capacity covering 200kW (57RT) to 1800kW (512RT).

The integrated part load value(IPLV) of BSE air cooled chillers is 50% more than the traditional ones. This is a great breakthrough for air cooled chillers as it could sharply decrease the operational cost and reduce the carbon emissions. The application of the chillers vibration free, and compared with a screw chiller which provides the same cooling energy, their operational noise is only 60dB.

CLOUDCHILLER™ family chillers have the following characteristics :

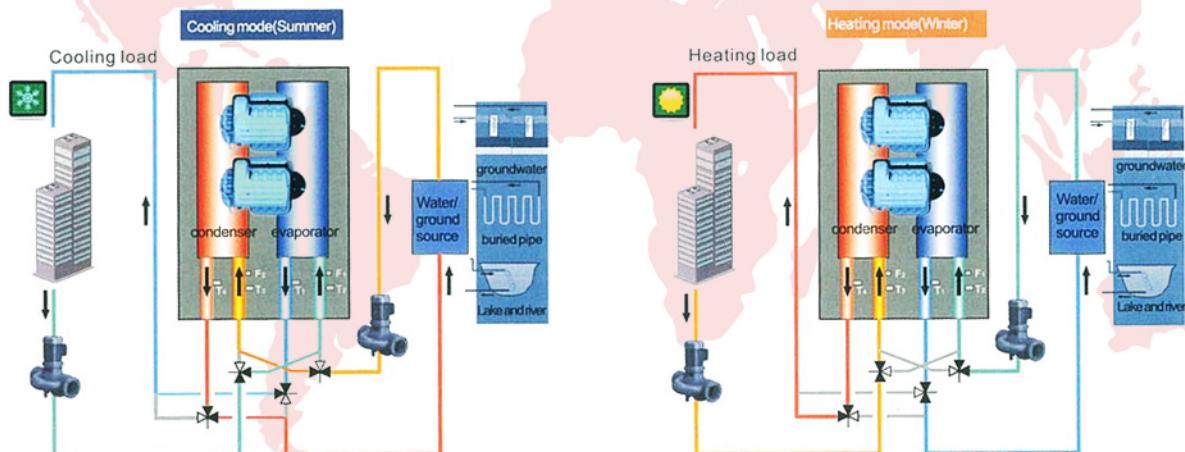
- i) Oil-Free VFD centrifugal compressor
- ii) Super high IPLV and COP
- iii) R134a refrigerants, no harm to the ozone
- iv) Oil-Free, an absolute solution to the oil-return problem and a great improvement to the reduction of the cooling capacity
- v) Low noise and small vibration
- vi) PAC programmable auto-controller
- vii) Small size and light weight
- viii) Tiny start-up current with no strike to the electronic grids
- ix) Intelligent alarming and failures handling





### FIRECHILLER™

Heat pump is a new approach for heating source. With more attentions are paid from all sectors of community to the measures taken in energy-saving, emission-reduction and building energy conservation. The heat pump has been listed as one of the main measures for building energy conservation and the development of renewable energies, which will be greatly promoted for the heating in northern part of China. The heat pump works by power drive, which is to take heat from low-temperature heat sources, such as the surface water, the sea water, the groundwater, the municipal wastewater and also the underground soils, etc., the heating energy of which is taken by the heat pump in the winter and is released back in the summer. Therefore, these sources are able to serve as the cooling sources in the summer for the air-conditioning and then to offer the heat source for the building heating in the winter. The chillers are able to work without the cooling tower system when it is refrigerating to avoid the noise pollution cause by it and the waste of the water resources; and are able to work without the boil water system when it is heating to avoid the discharge of the pollution and achieving a cleaner environment.



According to the statistics, among the buildings with the central air conditioning accounts 55% of the total energy consumption. The energy consumption of the central air-conditioning system is mainly generated in the following three parts : the cooling and heating sources of air conditioning system, the air conditioning unit and terminal equipment, and the transport system of water or air. The cooling and heating source of air conditioning system is the main part of these three parts, which contributes around half energy consumption. In order to reduce the high energy consumption BSE developed the new energy-saving Firechiller™ series oil-free, centrifugal heat pump unit. This unit is applied with the new generation of oil-free, frequency invert centrifugal compressor, direct drive, digital magnetic levitation bearing, permanent magnet motor, etc. When the compressor speed is reduced, the power consumption is reduced significantly; the use of magnetic levitation technology was achieved oil-free operation, which help the maximum degree of reduction of the efficiency of the oil and the attenuation, so that the system is more efficient, while increasing the service life of the unit. The IPLV of Firechiller™ series oil-free centrifugal heat pump unit is more than 9, and the power consumption is reduced by more than 35%. The unit can provide high temperature chilled water in the summer, and it can realize the independant application of temperature and humidity of geothermal heat pump. In addition, the oil-centrifugal heat pump unit with the use of renewable energy sources, such as water source, geothermal source, can make the whole air conditioning system energy efficiency has been further improved, and become a model of energy conservation.



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### ENERGY LOOP® GROUP CONTROL SYSTEM

Energy Loop® Group Control System is self-developed by BSE on the base of the PAC control units with the strong processing powers. Combined with BSE's technologies and experience accumulated for many years and targeted at the temperature, the flow and the pressure of the chillers, the cooling pumps, the condenser pumps and the cooling towers, Energy Loop® Group Control System provides the automatic control, the energy-saving strategies and the overall solutions to fulfill a flexible central group control system that could communicate with chillers.

The chiller plant configured with Energy Loop® Group Control System is able to promote 80% efficiency that of the original one. This group control system is also able to offer the standard communicative accesses to support Modbus communication protocol. All Testing data are able to be transferred remotely through WIFI/3G network, and then are applied in the remote control. The users are allowed to check the instant data of the group control system on their office computers or mobile phones easily.

