One, overview

Work often occurs in the machining process of circulating oil temperature high phenomenon, when the oil temperature exceeds a certain temperature, reduce to machining precision, movement is not stable, the processing quality consistency reduced, oil deterioration or damage the working parts and a series of questions. Oil cooling control device (hereinafter referred to as the oil cooler) can well solve the above problems, so that the work can be more efficient for the host.

Oil cooler is divided into independent type (LYD) and immersion oil cooler (LYJ) two series. Independent with pump, can work independently to host the tank, inlet / outlet is connected with the oil tank through. Immersion oil cooler is unworthy of oil pump, the oil tank is installed and working machine. Copper immersion oil under the oil cooler.

Oil cooler is the function of the oil cooling machine, which in a certain range of temperature.

Two, the main structure, working principle and performance

LYD oil cooler is mainly composed of a refrigerating system, oil system and control system. The refrigeration system is a set or two independent sets of compressor refrigeration system, each compressor refrigeration system includes a compressor. Condenser. Condensing fan. Thermal expansion valve. Plate heat exchanger and the refrigerant lines. Oil system including oil circulating pump. Plate heat exchangers and pipe, also according to the actual use of the need to increase the allocation of oil filter. Pressure relay. The indicating lamp. Rotary switch and a button switch.

LYD independent oil cooling machine adopts R22 of forced cooling, with separate circulating pump, can be used for cooling heat exchanger refrigerating system oil liquid is sucked out of the oil cooling machine in the tank to the oil cooler in the tank, and then returned to continuously circulate. Its working principle is: the oil pump to run, so that the oil circuit system of the continuous circulation flowing as heat exchanger evaporator in refrigeration system, at the same time, the temperature of the oil oil cooling temperature controller to detect convection. When the oil temperature is higher than the current detection of digital display temperature control set temperature + set temperature, refrigeration system began to work, when the low temperature liquid R22 refrigeration system into the heat exchanger and the high

temperature oil also flows into the heat exchanger liquid heat exchanger, the high temperature oil temperature drop, to oil cooling purpose. Oil cooled is returned to the oil tank through the oil pump, high temperature oil mixed with the fuel tank, to ensure that the fuel tank temperature is controlled in the specified range. When the oil temperature into the oil cooler at the end of the digital display temperature controller for the current setting temperature, refrigeration system to stop working, until the oil return temperature higher than the temperature display controller again the current temperature and setting temperature, refrigeration system start work again.

Refrigeration system heat exchanger with corrugated metal plate structure, the heat in two different fluid using flow and countercurrent mode, so the heat transfer efficiency greatly, so that the cooling capacity of the cooling system and give full play to.

LYD independent system type oil cooler can also according to customer need for heating oil, heating electric heating.

For the oil temperature oil cooler using NTC sensors to detect the temperature display controller in a number of temperature, the thermostat will measure the oil temperature and the set temperature is compared, automatic control of refrigeration system work. Cooling / heating temperature value set by the user according to the actual requirements directly in the operating panel digital display temperature controller is set, the operation is simple and convenient.

LYD independent oil cooling machine has high / low pressure protection, phase lack protection pump / compressor / fan / overload protection and short-circuit protection / power supply /, compressor delay protection, in addition to increase the allocation of oil filter, use pressure relay, oil flow switch or high oil temperature protection. The above various protection functions are able to provide the corresponding fault display, is convenient for user to judge and deal with failure. Provide passive contact alarm output and main equipment chain, in order to ensure the reliable operation of oil cooler.

Three, installation

(a) location

1, oil cooler should be installed in the ventilation and air clean environment, if installed outdoors, it is best to take rainproof measures conditional. Should beTo ensure the air inlet and the walls or other objects at a distance of more than 1m, the air outlet and the walls or other objects in the distance of more

than 2m, should have to adapt to the surrounding space, in order to carry out maintenance.

2, oil cooler surroundings should not have corrosion gas and inflammable and explosive dangerous goods. The installation position should not be near the heat source or other heating body.

The total weight of 3, and its installed base structure should be able to fully bear the unit of force.

4, set during the transportation and installation process should be protected from the impact of external force excessive turbulence and damage, at the same time strictly tilt and inverted, lifting command center, a steady rise, to prevent sharp movements.

(two) wiring

1, pay attention to current required nameplate and the number of phases (three-phase five wire) supply voltage operating range of AC380 + 10%.

Air switch, 2 in total for the circuit is provided with appropriate capacity.

Wire line 3, total power size should be chosen according to the nameplate current value, do not use too small, in order to avoid danger.

4, the unit must be reliable grounding.

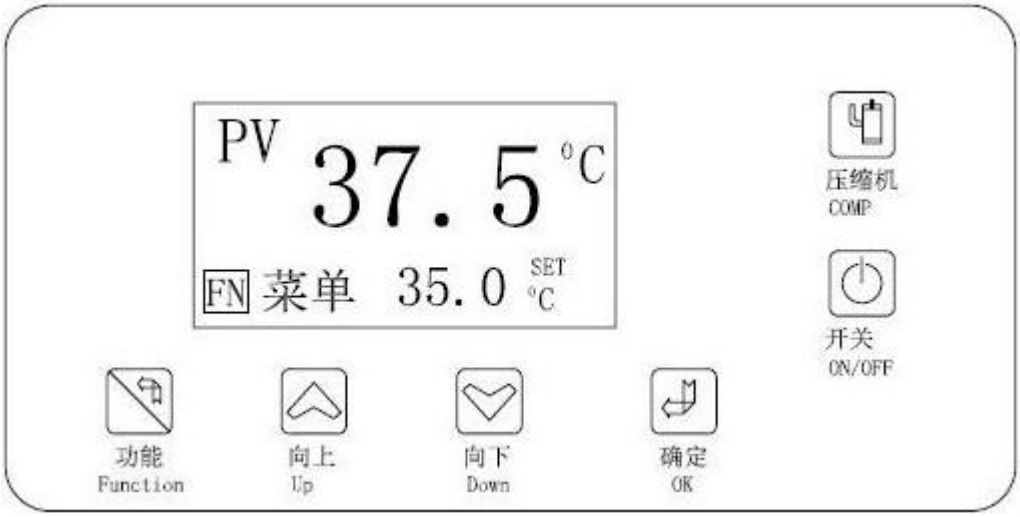
Note: the instructions for use with electrical schematic and wiring diagram

(three)

1, pipe diameter should be based on the oil cooler pipe joint size configuration, should minimize the pipeline elbow. Oil inlet should be as close as possible to the oil cooler should be as close as possible to the work object. In order to reduce the pipe length, reduce pressure drop.

2, in order to reduce the vibration of working pipeline, recommend the use of plastic tube containing steel wire strengthening the oil inlet and outlet, or import shock hose oil outlet in the hard pipe and oil cooler, or with oil filter oil system, in order to facilitate cleaning oil filter, suggested in the filter are arranged at each end of a valve.

Four, methods of operation



1, the operation panel: (a) the temperature display:

PV ℃: display liquid temperature current.

SET ℃ display the current temperature.

(b) operation indication lamp:Pump: pump group PUMP lighting in operation

Compressor compressor operation in COMPRESSOR:: lighting

Remote REMOTE: lighting remote control.

(c) the temperature setting button

Press the up or down arrow to set the required temperature, press the OK button to confirm after setting.

(d) the malfunction indicator lamp

When the cooling machine appears abnormal conditions and stop functioning, fault indicator light, and follow the instructions Chinese fault display to exclude.

(E) function keys

Function of FUNCTION: on entering the function menu, and in accordance with the Chinese display function to set.

2, oil cooler operation: (a) the oil cooler is provided with a power switch dedicated, open the energized by themselves after a few seconds the PV display the actual temperature, press the PUMP key work pump, pump, pump and compressor indicator lights, flashing lights; when the temperature is higher than the set temperature refrigeration + detected back differential temperature, cooling system to work, the temperature gradually decreased, until the temperature reaches the setting - temperature, stop refrigeration refrigeration system. Compressor indicator lights, show that the compressor is waiting for.

(b) when the main interface of alarm, just press the OK key, check the current fault, the fault will be shown in the main interface. After the fault is eliminated and the rotary switch to electric can eliminate alarm status, also shows the main interface of the actual temperature.

The set temperature, heating temperature controller 3

Oil cooling a opportunity, with heating function has a dedicated cold hot conversion switch. Display the temperature sensor board shows the oil return temperature value of the temperature controller under normal conditions.

B, and the heat transfer switch is in the closed position, the controller will automatically enter the heating state. Temperature and temperature difference with the same set of refrigeration.

Five, the electric control principle

Oil cooler control circuit is mainly composed of an air switch, digital temperature controller, temperature sensor, AC contactor, thermal relay, intermediate relay, composed of high and low voltage protection device and rotary switches.

Electrical schematic diagram shown in figure this system, map:

QF air switch, is used to control the pump / compressor / fan main power supply and control circuit. When the main circuit and control circuit fault occurs, the air switch will trip.

KM pump / compressor / electric heater of AC contactor

XJ - power phase sequence relay, phase protection used to control total power phase sequence and open.

The total control of the rotary switch ST oil cooler, oil cooler is used to control the start stop.

Output contact TC refrigeration digital display temperature controller or the heating of a digital display temperature controller, used to control the heating / cooling system is off, the refrigeration system is reasonable and reliable, the set temperature staggered to have two sets of refrigeration system in the setting of refrigeration temperature, ensures the refrigeration system load under the condition of low only a set of refrigeration system and achieve the purpose of economic operation in the heat.

HP, LP refrigeration system of high / low pressure switch, is used to detect the refrigeration system of high / low pressure, when the cooling system working pressure is too high or too low, high / low pressure switch, high / low pressure protection, processing method, see the specific "common faults and processing method".

Condensing pressure switch HP2 refrigeration system, used for pressure testing of the refrigeration system, when the high pressure low pressure cooling system when condensing pressure switch, fan stops working, to ensure high pressure at any temperature (10~~40 ℃) can normal work.

K control relay, is the executive components to implement each function.

HL indicating lamp, used to display the fault (red) or condition (green).

T 220V/12V transformer, used to provide power, to the digital temperature controller: the red light, indicate fault occurrence, treatment methods refer to the "common faults and processing method".

six, the matters needing attention and daily maintenance

1, every time before starting the first check whether the supply voltage in the range specified in the nameplate, if not must wait for the power supply voltage is normal before the start-up.

2, after the main power should also open the oil cooler, the bad situation in order to avoid the unit to work on possible. To extend its service life.

3, when the filter net is dusty, should will filter out with a vacuum cleaner suction or below 40 ℃ warm water and neutral detergent. Dry moisture and dried in the shade, and then put back. Fin condenser air-cooled unit should be kept clean, when is dusty must brush or with compressed air blowing, to keep the condensation effect is good.

4, the unit may not be running without oil or without oil case. If oil or poor oil pump is not running, to check the reasons for troubleshooting before operation.

5, unit condenser fan air suction and air outlet are not obstacles blocking, condenser fan should be checked regularly.

6, the blower and pump must be regularly checked for insulation, in order to ensure the reliable use.

7, set the working environment temperature of 10~45 ℃ ambient temperature over 45 ℃ should stop using.

8, unit surface dirty, should use neutral detergent or soapy water wash.

9, long-term placement re before use or in use for a long period of time (about half), should check whether the heat exchangers of dust or dirt clogging.

10, circulating oil temperature not oil cooler is lower than 20 ℃, will make the oil viscosity increase oil temperature is too low, resulting in pump current and increase the pump noise increasing discord factors.

11, maintenance should get the manufacturer licensed professionals.

Seven, **common** faults and processing methods

NO	Failure phenomenon	The causes of	Processing method
1	Power failure	1, three-phase power phase sequence reversed 2, the three-phase power supply voltage unbalance or lack of	1, power will be arbitrary three-phase power source of two relative 2, check the three-phase power supply voltage and to exclude
2	Cooling system does not work	1, high voltage protection 2, low voltage protection	1, check the filter is clogged and clear 2, check the compressor circuit whether leakage fluoride
3	Temperature controller to display properly, cooling pump and compressor not working or refrigeration	1, cooling pump thermal protection 2, compressor thermal protection Low voltage protection 3, refrigeration system	Main line 1, manual reset cooling heat pump and check whether the loosening of the relay fan 2, manual reset compressor thermal relay and check whether the loosening of the compressor main circuit 3, notify the manufacturer processing
4	Display controller for high voltage protection	1 high pressure protection, refrigeration system	11, check the ventilation refrigeration machine, filter and condenser surface cleanliness, should clean the filter regularly, if the surface of the condenser with more dirt should be cleaned

5	After startup, cooling machine liquid circuit leakage, spray	1, the liquid loop does not seal 2, high pressure liquid loop 3, liquid system loop pressure greater than 2Mpa	1, check for leaks and fastening 2, liquid inlet valve is closed or blocked and loop, re open or cleaning 3, use high pressure cooling pump
6	Fault display: Probe of short circuit or open circuit	1、 broken or bad contact probe 2, controller failure	11, confirm the distribution, the range setting should be within 25 - 50 ℃
7	Oil temperature does not reach the set temperature, the refrigeration system does not stop.	Load exceeds capacity Poor heat dissipation Refrigerant leakage Temperature controller failure	The cooling machine replace the cooling capacity is relatively large Improve working environment, making good ventilation conditions Failure of the cooling of the cooling system, please contact the repair personnel

Eight, the technical parameter table

Model	LYD90PA
Refrigerating capacity(Kcal/h)	19000
Power	3PH/380V±10%/50Hz
Capacity (KW)	5
Electric current(A)	10
Pump flow(L/Min)	40
Pump power(KW)	1.5
Refrigerant	R22
Tubing specifications(Flange connection)	DN 32×DN25
Appearance size(W×T×H)	630*670*1100
Weight(kg)	150

Nine, set the parameters

NO	Setting content	Factory setting
1	Refrigeration temperature setting value	35℃
2	Temperature difference	＋4℃
3	Refrigeration temperature limits	50℃
4	Refrigeration temperature lower limit	28℃
5	Compressor current setting value	6A
6	The pump current setting value	3 A
7	Fan current setting value	1A
8	Compressor shutdown delay time	3min
9	High pressure set value	26kgf/cm2
10	Low pressure set value	0.2kgf/cm2

Ten, the electrical principle diagram (attached pages)

Product qualification certificate

Product Name: Oil cooling machine

The product model:

Factory no.:

This product design, in accordance with the relevant technical standards for manufacturing.

This product through the test run and factory inspection, the performance parameters are in conformity with the relevant technical requirements and regulations. After the approval of the company quality assurance department, the products are qualified products can be delivered to users.

The product from the purchase date of delivery within one year, damaged the normal use, the company is responsible for free repair. More than a year, the company shall charge repair.

JIANGSU TOP REFRIGERATION TECHNOLOGY CO.，LTD

The quality assurance department

Quality supervisor:

2018 Oct