Overview

The marine air conditioner is developed from meeting the needs of national defense construction. It is an indispensable environment optimization equipment for all kinds of ships. It provides a comfortable working and living environment for the ship’s staff, and also provides various electrical equipment and precision instruments used in the ship. Provide a suitable working environment. The marine air conditioner must not only adapt to harsh environments such as salt fog, mold, and humidity on the sea, but also adapt to irregular motions such as boat sway and tilt. It is an important device used to ensure the normal operation of personnel and equipment. The operation of the marine air conditioner directly affects the normal work of the personnel and equipment on the ship, which in turn affects the overall combat effectiveness of the ship. Therefore, the general design guiding ideology is to put reliability and maintainability first in the premise of satisfying performance indexes and external dimensions. Therefore, it is of great strategic significance to research and manufacture marine air conditioners used in the marine environment to improve the production and living conditions on ships.

1. System accessories

The main components of the refrigeration system include drying filters, oil storage tanks, gas-liquid separators, solenoid valves, sight glasses, pressure gauges, shock absorbers, high and low pressure protectors, etc., used to better monitor the operation of the system and protect the operation of the system Safety and reliability. Among them, the installation of marine air conditioner accessories such as sight glass, try to use threaded connection to avoid welding. The solenoid valve of the marine air conditioner must be equipped with a manual remote control rod.

2. Selection of fan and motor

Marine fans and motors still need to consider factors such as anticorrosion and anti-tilt. The impeller of the marine air conditioner fan requires strict dynamic balance correction and overspeed test. The material of the impeller is made of anti-corrosive aluminum alloy, and the whole shell is welded to meet the strength of the ship. Insect repellent seems to be required.

In addition to the selection of marine motors, in addition to the ship's periodic lateral tilt up to 45 degrees, the motor is required to work reliably, and it can still work without damage when the horizontal tilt and vertical tilt reach 15 degrees, and it must also be equipped with a filter To prevent electromagnetic interference.

3. Marine duct design

The main characteristics of the circulating air piping system are small space, large heat generation, and very limited space on the ship. In the design of air ducts, the issues of vibration isolation, shock absorption and noise reduction of the air ducts should be fully considered to minimize the resistance loss, the air volume should be adjusted and the actual space layout of the ship. In order to reduce the vibration transmission during the operation of the dedicated air conditioner, a small piece of soft joint should be connected between the rigid air pipe and the air inlet and outlet interface of the air conditioner.

4. Design of cooling sea water pipeline

The ship's cooling water uses highly corrosive seawater, and the sea cement sand content is relatively high. Generally, the cooling seawater flow is designed according to the temperature difference of 4℃. The flow velocity of the water in the pipe is
designed according to 1 ~ 1.5m/s, and the fluctuation range of the cooling seawater temperature is -2 ~ 32℃. Valves, in order to reduce vibration transmission and facilitate docking, hose connections should be used between the pipeline and the air conditioning interface.

5. Design of cooling sea water pipeline

Frames and leaking parts should be painted and anti-corrosion, and electrical components should be anti-corrosion materials and anti-electromagnetic interference.