

# Technical reformation of bearing of centrifugal pump

## 1 Preface

Bearing-wholesalers company water supply plant single-stage single-suction cantilever horizontal centrifugal pump There are frequent damage to the bearing and transmission shaft, bearing lubrication can not be good guarantee, unreasonable working conditions, unreasonable use of materials and other issues, we carried out a detailed analysis, and carried out a targeted transformation.

## 2 measures taken

### 2.1 Extending the life of the bearing

(1) The same inner diameter of the bearing, as long as the increase in its thrust will improve the operating conditions of the propeller shaft, so we changed the 6309 bearing to 7309 bearings, the thrust increased by dozens of times times, greatly improved the operating conditions.

(2) Improve the accuracy of the bearing grade. The precision grade of the pump bearing is increased from the E-Class (advanced) to the D-Class (or P5 grade, precision grade), and the result is obvious.

(3) The front bearing of the pump is changed from one to two sets, and its carrying capacity is greatly improved.

For different types of pumps and their operating conditions can use one or several methods, after technical transformation of each pump only need to replace one or two times a year, and do not need to replace the drive shaft, and the transformation of a year before the need to replace the bearing 20 times, replace the drive shaft 12 times.

### 2.2 Ensure good lubrication of the bearings

(1) Lubricating the bearing pump with lubricating oil, must replace the lubricating oil once a month.

(2) Technical transformation oil level sight mirror. Due to the original design transparent plastic visual mirror is not easy to observe the oil level, and when the oil temperature is prone to deformation and loss of oil damage caused by the pump, so the original design visual mirror unloading, and with 4#, 6# or measuring homemade silk head to the oil from the carrier, with transparent oil cup display oil level. However, in the production and use, to prevent false oil level and the production of such problems, the practice proves that the effect is good, both to solve the shortcomings of the original sight mirror, and make the oil level easy to observe, easy to control.

(3) Grease-lubricated pumps must be regularly replaced with grease.

(4) The bearing gland is changed from felt seal to sealed with skeleton oil seal.

(5) Install the retaining ring. An old oil seal is installed at the front bearing gland of the shaft to prevent leakage of filler or mechanical seal, and the liquid enters the carrier, causing damage to the pump.

### **2.3 Combined process to match the equipment to the operating conditions**

De-Brine post original design to pump model IH125-100-250, the pump flow 200m<sup>3</sup>/h, head 80m, cavitation allowance 4.5m, rotational speed 2900r/min, motor power 75kW, a total of 3 units. Normal production is often two open. Due to the low water consumption, the pump is usually in a suppressed state, so it is easy to be damaged. So we added a soft basin, adjusted the amount of water, so that the pump and working conditions to match.

### **2.4 Changing the material**

In the analysis of the pump body damage and scrap reasons, found that aluminum or stainless steel pump parts of the damage and scrap is not caused by corrosion, so decided to use pig iron pump parts to replace part of the aluminum or stainless steel pump parts, has achieved satisfactory results.

### **2.5 Other improvement measures**

In the Carbon chemical section of the pump, its pressurized medium contains a high amount of ammonia, so in the process of using the shaft and the impeller from the key to transfer the torque to the rectangular screw transmission, achieved good results. Dalian acid pump Factory production of ammonia pump, its spring-type mechanical seal price is expensive, a set of 350 yuan, we use elastic rubber ring to replace the spring, technical transformation after the mechanical seal set of 36 yuan, its life span even more than the spring-type mechanical seal, has achieved satisfactory results.

## **3 Transformation Effect**

Through the above measures, prolong the service life of the pump, the whole year did not occur due to the pump production phenomenon, reduce the workload, maintenance costs than the previous year, the direct reduction of more than 60,000 yuan, reducing the power consumption, the comprehensive benefits are very considerable.