ELECTRIC DRIVES IN EXISTING ELECTRIC MOTORS RU SEC UML. ENERGY PARAMETERS OF THE ENGINE TO DISPLAY ENERGY SAVING MEASURES

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ABSTRACT

The article contains comparative descriptions of asynchronous electric motors of power lines in in-dustrial enterprises with a lot of details about the internal supply of washers in textile inventory and energy-saving measures of rotary motors.

Keywords: magnetic induction, steering wheel, bearing, electric motor, coefficient.

INTRODUCTION

One of the main ways to increase the FIC of induction motors is to use the best modern insulating materials in their design without changing the overall design of the motors. The design of the motor magnetic system should consist of magnetic materials with the least loss of magnetic power. The use of quality bearings increases the life of the motor. Since the eighties of the last century, in the USA, Germany, England, France, Japan and other industrialized countries began to develop and produce asynchronous motors with high FIC and power factors. When developing such fictitious asynchronous motors, the main criterion was to reduce power losses in them. The design of induction motors requires complex, and often overlapping technical solutions to reduce the power losses that occur in its main components.

The unwinding of the stator end due to the large cross-sectional surface of the unwinding is active and as a result, reduce the resistance in the stator winding to reduce active power losses. The disadvantage of this method is that the magnetic induction is higher and the starting current is higher. An increase in magnetic induction leads to an increase in power losses in the motor's magnetic system and a decrease in the power factor. On the other hand, an increase in the magnetic field of an induction motor causes a loss of power in the rotor. If we reduce the number of rolls to the optimum value, the engine will eventually increase in FIC. The use of magnetic bars made of electrical steel sheets with a high content of silicon leads to a reduction in hysteresis power losses. The magnetic resistance of such steel is higher than that of carbon steel. The disadvantage of this technological solution is a slight decrease in the power factor of the engine. Using thinner steels for the axis magnetic core will result in lower power losses from shear currents. For example, Toshiba (Japan) three-phase induction motors produce a new series of high-energy performance, delivery products to consumers. Through the use of high quality and improved electrical and steel materials in the manufacture of asynchronous motors, as well as the use of new technology, the starting and operating characteristics of the motors

have been improved, the stability of the characteristics has been increased, and the geometric dimensions and weight have also been reduced. The length of the motor rod ribs is long and short, and their sequential arrangement has led to the expansion of the heat transfer surface of the frame and the increase in heat transfer. The optimal size of the fins and fan was chosen based on the effect of air flow on the noise level. The season of the stator induction motor crosses the surface sexologist, reducing in the casting of the connection factors by the increase in the achieved improvement in the cut surface of the magnetic core, resulting in the recovered energy losses. The stator winding is the result of accommodating the new technology of the erased filling factor of 10-20%, and as a result, became, the electrical loss decreased by 8%. New season series motors to reduce energy loss for the preparation of masked insulation technology and the outer surface of the rotor part, partly due to power loss parts reached nearly 7% reduction. Table 1 - three phases, double the number of poles, 2R=4 with rated power of 0.75kW and 18.7kW which is standard, and a new series of asynchronous motors, compared with the energy efficiency characteristics. The increase in FIC in these induction motors has been achieved by reducing wind resistance and power loss in the magnetic system. Stator and rotor barrel of high-quality steel; in the rewind stator and rotor in the amount of copper and aluminum; erased resolution and air between the stator and rotor hole size optimal values.
These engines are high energy performance, as well as heating (which results in more life from the engine), the low speed Cobra runs out of power-generated performance associated poor. Of course, compared to standard diesel ones, the price will be higher, but two years during operation due to the economy in electrical energy is fully justified.

Table 1 Comparative characteristics of the energy characteristics of standard and new series of asynchronous motors

Номинальная мощность двигателя кВт	Стандартный двигатель производства		У сезона серии производства двигателей	
	Коэффициент %	cas	Коэффициент %	cas
0,75	76	0,71	81,5	0,84
18,7	89	0,83	91,0	0,86

Currently produced in the French company FNBB, TNBB, RNBB Hip, TNCB, PNCB series of induction motors and Holkin (Germany) and Brown Beverly production according to the DKOK solid yard and other series of induction motors, attack as universal ailerons (USA) pattern ailerons mechanical engineering are produced by leading companies in the field of asynchronous motors and power rates compared to the standard in asynchronous motors are higher than 7-8% and 18-21%, respectively. Determination of the efficiency of the new series electric motor at the enterprise. Losses in electric motors are compared with the total losses in transmission and distribution of electricity. Therefore, energy saving measures on the engines of the whole enterprise can be very cost-effective. This is, first of all, the replacement of batteries. Replacing low power motors, replacing low power FICs with modern equipment, changing mains voltage and reactive power compensation. Industrial enterprises face these challenges almost daily. The solution of these problems requires the performance of certain technical and economic calculations. In most cases, such calculations are made without any verification. High FIC engine replacement analyzes can be calculated using the following expression:

$$\Delta P_a = P\frac{1-\eta}{\eta};$$

Here, R and η are the electric motor load and coefficient. Active energy losses compared to an efficient engine option. Most engines in factories do not run at full load. In this case, the load capacity is 50-60% less than the motor power if the aim is to change. With variable buoyancy, engine power is often selected based on the calculated maximum load. If the maximum peak load is 2 times greater than in specific methods be recommended. For example, active power and reactive power consumption will be greatly reduced. Additional electrical power, which is defined as follows:

$$\Delta W_э = (\Delta P + k\Delta Q\ ) \cdot \Delta t;$$

Here, ΔR and ΔQ Motor active and reactive energy losses, kW difference; quart; Cousteau equipment "star" circuit annual working hours, clock motors-rewind "delta" circuit "star" circuit may be unfamiliar decrease in active power losses over the following:

Reducing the consumed reactive power:

$$\Delta P_a = \frac{P}{\eta_\Delta} - \frac{P}{\eta_Y} = \frac{P}{\eta_\Delta} \cdot (\frac{\eta_Y - \eta_\Delta}{\eta_Y});$$

Reducing the total active power:

$$\Delta Q = \frac{P}{\eta_\Delta} tg\varphi_\Delta - \frac{P}{\eta_Y} tg\varphi_Y;$$

$\Delta R_\Sigma = k \cdot \Delta Q + \Delta P$

Where K is reactive power quartz, active electrical losses corresponding to kW/qt. Additional capacity Electric Motor Diamond Forming Effect:

$$\Delta W_э = [(\Delta P_1 - \Delta P_2) + k(\Delta Q_1 - \Delta Q_2)] \cdot t$$

$\Delta W_e = \Delta R_\Sigma \cdot \Delta\, t.$

Here, then D from R 1 and R 2 D is the interstate share of convertible and engine power, kW; D Q 1 and D Q 2 - reactive waste, qt; Cousteau annual working hours, equipment hours. In order to reduce the power loss for our company, the standard series of asynchronous motor made by foreign firms according to the new series of induction motors. We calculate the energy consumption after the modernization of the electric motors of the production facilities in the following order. We evaluate the total losses in three-phase DSOR asynchronous motors manufactured by Helmke, Germany. The technical parameters of the engine will look like this: P n = 7.5 kW, co = 0.855, n e = 0.13, within one year from the engine D t = 7500 hours, E = 0.894; Reduction of active power losses occurs as follows.

$$P_a = \frac{P}{\eta} = \frac{7{,}5}{0{,}894} = 8{,}39\ \kappa Bm;$$

Reducing the consumed reactive power:

$$Q = \frac{P}{\eta} tg\varphi \ = 7{,}5(0{,}61/0{,}894) = 5{,}09 кВар;$$

Reducing the total active nutrition ng:

$$P_S = k \cdot Q + P = 0{,}13 \cdot 5{,}09 + 8{,}39 = 9{,}05 \text{ кВт}.$$

Where K is, and the quartz reactive power of the installation, to "r" is the active energy loss, kW/qt.

Fiber Capacitor Power Consumption Diesel Year Power Supply:

$$W_e = P_S \cdot t = 9{,}05 \cdot 75\ 00 = 67881 \text{ кВт} \cdot \text{часов / год}.$$

Taking into account the fact that the number of such engines in the enterprise is 8, the total power consumption is 72.41 kW, and the energy loss is 543,048 kWh. Thus, if a company uses new asynchronous motors manufactured by foreign firms for industrial equipment, this will reduce its energy consumption by 84.15 kW and consumed electricity by 585,180 kWh.

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