

Announcement of Development of High Power Density, High Efficiency Next-Generation Motor

ELEMEC Co., Ltd. (hereinafter referred to as "ELEMEC") has newly developed a high-power-density, high-efficiency motor (hereinafter referred to as "XPEAC[®] motor") using a unique cooling method. This newly developed motor will be manufactured and sold under the brand name "XPEAC[®]*1" in the future.

While improving the efficiency of motors, which are said to account for more than 50% of total electricity consumption, is an effective means of achieving carbon neutrality worldwide, the efficiency of conventional motors has reached the upper limit structurally and technologically, and significant performance improvements cannot be expected. In order to overcome this situation, ELEMEC has newly developed an "XPEAC[®] motor" with a new structure. In the future, we will popularize this XPEAC[®] motor and contribute to solving these issues.

Features of XPEAC[®] Motor

● High power density

By adopting a patented powerful cooling mechanism*2 a continuous power density of 20 kW/kg and a continuous current density of 50 A/mm² or more are achieved.

<Example of use> In the case of continuous output 100kW type

Conventional motor (high-efficiency type) : Product weight about over 30kg

XPEAC[®] motor : Product weight less than 5kg

● High-efficiency drive in all operating areas

Continuous high-efficiency operation is possible while keeping the coil and magnet temperature in a low temperature state at all times, and the motor temperature can be kept below 50-60°C even at high output, greatly reducing the torque drop rate caused by magnet demagnetization, increase in coil resistance, strain of stator shape, etc. There is no need to use high-heat-resistant grade magnets, and it can be manufactured with specifications with an average efficiency of 95% or more and a maximum of 98% or more*3.

● Resource saving of components

The amount of rare and heavy rare earths used in the rotor, copper for the coil, electrical steel plate for the stator, aluminum for the housing, etc. can be reduced, and the resource consumption can be reduced to 1/2-1/10 or less compared to conventional motors with the same output.

● Lower operating temperature

The motor temperature can be kept low in the entire operating range, and even at high output, the temperature rise can be suppressed to the outside air temperature +5-10°C or less depending on the conditions, and the deterioration of each component due to the temperature rise can be greatly reduced. In addition, high-heat-resistant insulating materials and grease are not required. Since the constant operating temperature is low, problems such as coil burnout during high-load operation do not occur.

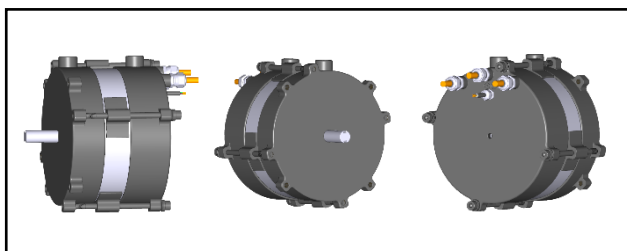
※1 Excellent Power, Efficiently, All-Aspects, Compact and Cool

※2 While conventional motors are solid coils, XPEAC[®] motors use hollow coils to directly contact the coolant inside the coil to establish a very efficient method of cooling the motor core.

※3 Efficiency figures shown are based on prototype specifications. Motor specifications for custom-made and mass-produced products vary depending on design conditions.

[References]

XPEAC[®] Motor 3D Image



[Contact]

● ELEMEC Co.,Ltd.

URL : <https://www.ele-mec.co.jp/>

Mail : ask@xpeac.com

TEL : 044-567-0922

Reception hours : Weekdays 9am-6pm

【XPEAC[®] Special Site】

URL : <https://xpeac.com/>

XPEAC[®]
High Power Light Weight Efficiently Motor