

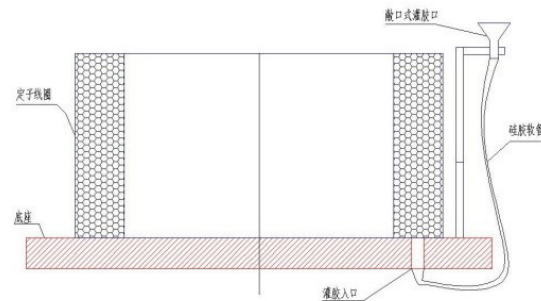
INDUSTRIAL SERVO MOTOR STATOR ENCAPSULATION



Before Sealant Filling



After Sealant Filling



Sealant Filling Method

APPLICATION:

Servo motors are an industrial control product attracting more and more popularity. They provide technical advantages such as feedback control, high precision, and reliability. Manufacturing of servo motors is therefore more complicated than normal ones. Taking the insulation encapsulation process of stator coils as an example where dip coating may be enough for normal motors, servo motors require general encapsulation of the motor stator to achieve satisfactory heat dissipation and good resistance to environment factors. This application story describes the process of sealant filling for regular servo motors under atmospheric pressure.

PRODUCT SUPPLIED:

- 9450 Single Acting Piston Metering System
- Proportioning System

CHALLENGE:

Mixing a two-component epoxy sealant accurately at a specified ratio while maintaining a set temperature and fluidity. Next, fill the coil gaps with the sealant from the bottom of the coils. The sealant is fed through the bottom due to the gaps between coil turns are small. Injection from other parts will likely lead to air entrapment and consequently incomplete filling. As this sealant is of medium-temperature filling type, it has poor fluidity at ambient temperature. Component A needs to be heated to 122°F and then mixed with component B. A preheating process is also required for work pieces prior to encapsulation to maintain fluidity of the sealant fluid inside the product. Design of the tooling structure is a major challenge, including structural design for bottom sealant entrance mould core in the middle of the stator.

SOLUTION:

Due to the large amount of sealant required for a single motor, EXACT recommended the 9450 Single Acting Metering and Proportioning system to the customer. The 9450 SA has 945 cc displacement, the largest in the industry, with one 30 second positive pressure recharge from the supply and can typically fill 12x100cc parts per cycle. For this specific application, three to six working pieces can be filled in a single metered stroke, leading to fewer reciprocating cycles of the metering piston, lower wear, and longer service life of the system sealing components.

RESULT:

The positively controlled A/B reversal valve ensures a stable on ratio sealant proportion during the entire meter cycle. The simple metering system design also helps guarantee system reliability and satisfying flow rate demands for each dispense. The system is very rugged and reliable for this kind of high demand application.



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