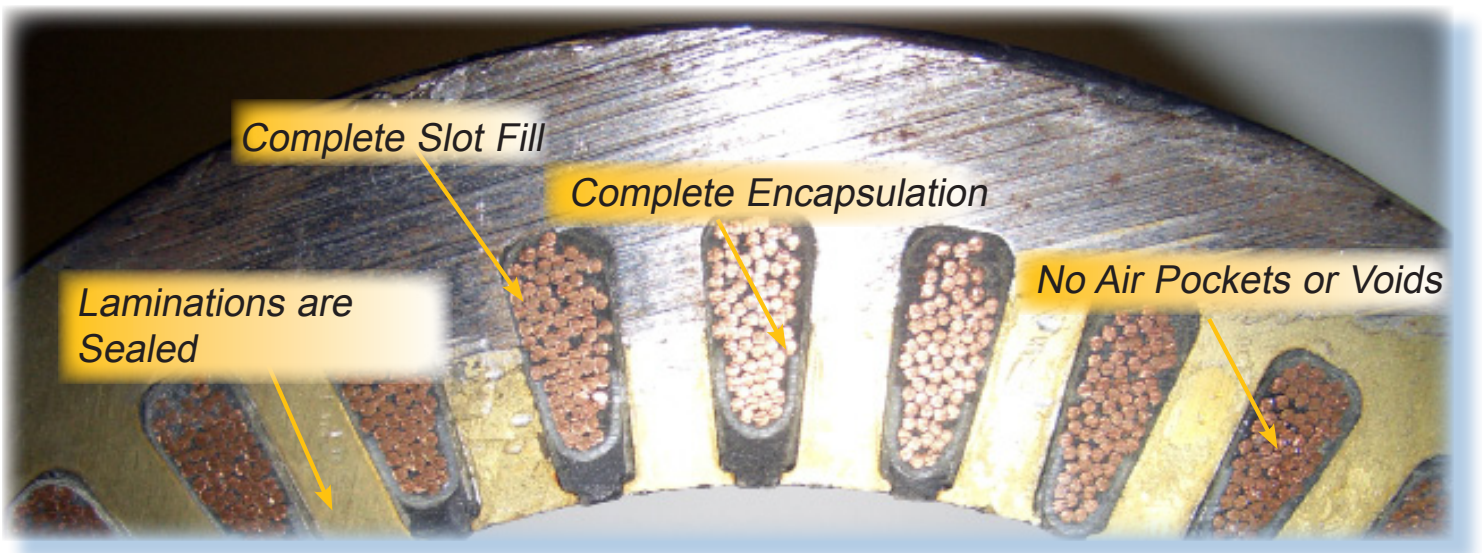


Ultra-Seal Winding

- *Increases Uptime*
- *Seals Out Moisture & Contaminants*
- *Runs At Cooler Temperature*





Valuable Benefits of **Ultra-Seal Winding:**

- Motor runs 15% cooler (vs same motor with standard windings at full load.)
- Motor duty life is significantly increased.
- Motor runs quieter and has reduced vibration.

Ultra-Sealed vs. Encapsulated What's the Difference?

Ultra-Sealing should not be confused with an encapsulated winding. **Encapsulation only involves coating the coil ends.**

However, when **Ultra-Sealed**, the coils are completely impregnated and sealed within high molecular weight thermoset polymer resin.

Standard open drip proof motor stators prior to Ultra-Sealing (right) and after the process (far right).

A closer look at our trademark insulation process:

Ultra-Sealed™ Winding

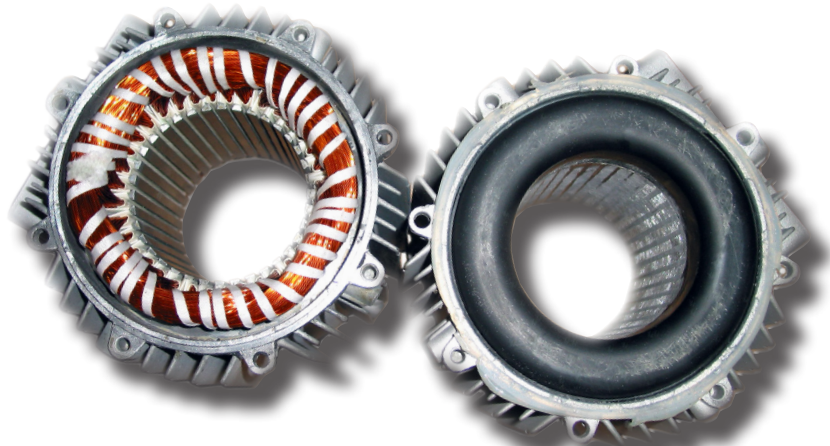
The Ultra-Sealed Winding process creates total protection against moisture.

- Prevents corrosion
- Improve heat transfer from the coils to the frame
- Enhances winding rigidity

The procedure involves insulating and sealing the winding through a mechanical and pressure process using a special plastic resin.

Advantages (Over traditional insulation methods)

- **Total protection against moisture.** During testing windings have been completely submerged in synthetic cutting fluid for as much as two months without faulting to ground.
- **More efficient cooling.** The high molecular weight thermoset polymer resin is approximately **10 times more efficient** in transferring heat than when a comparable motor uses only air to dissipate heat.



Are coolants and other contaminants causing your motor to fail?

Ultra-Seal Winding is a molding process that encapsulates an electric motor winding to create a solid insulation for cooling that also protects stator windings from severe environments, for example, constant exposure to water or oil.

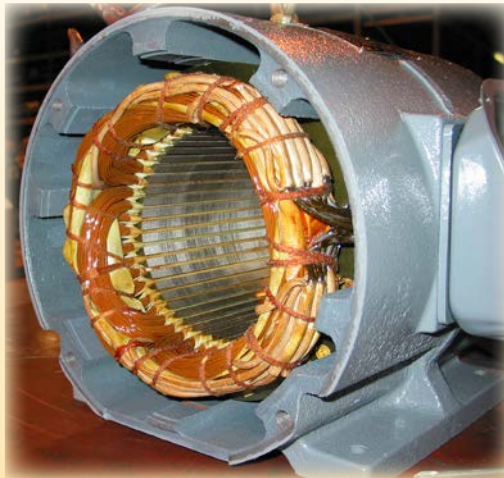
Process Overview:

- A formulated epoxy resin is utilized for winding encapsulation
- Resin changes from liquid to solid state by heat curing in an oven for a period of eight hours after casting into motor stator.
- Prior to casting, all materials (casting resins, motor and fixtures) require preheat cycle, to vendor-specified temperatures, so that resin has proper viscosity to flow through windings easily.

Resin

- Encapsulation resin is a two part (A & B) polyester-based material with a Class F (155°F - 305°C) thermal rating.
- Cured properties include Shore D hardness of 70, with ability to withstand motor cycling without cracking or increasing hardness. This allows cured resin to flex with torsion loads of motor during operation.
- Vendor testing to ASTM guidelines has shown excellent chemical resistance to acids, alkalis and solvents.

The Process: Ultra-Sealing Electric Motors



BEFORE: After our standard rewinding and varnishing operations, the stator is ready to be removed from the motor housing



Stator is placed in a custom mold that conforms to its height and diameter.

After heat curing in an oven the stator is removed from the mold fixture.

The stator is thoroughly cleaned and inspected for any material defects.



The finished stator is placed back in its housing.



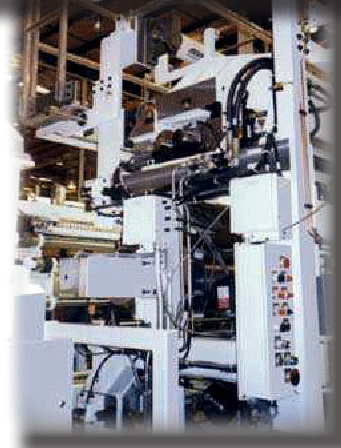
AFTER: the rotor, stator and housing are assembled, ready for final testing.





Industrial Applications for Ultra-Sealed Motors:

- **Machine tool CNCs** - Servo and Spindle Motors
- **Steel Mills:** Continuously wet and hot environments that demand reliable 24/7 uptime
- **Poultry Processing Facilities**
- **Mining Operations**
- **Pulp & Paper Mills**
- **Plastics Injection Molders.**
- **Food Processing**
- **Petroleum Drilling Operations.**
- **Foundry Operations**
- **Irrigation Operations.**



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