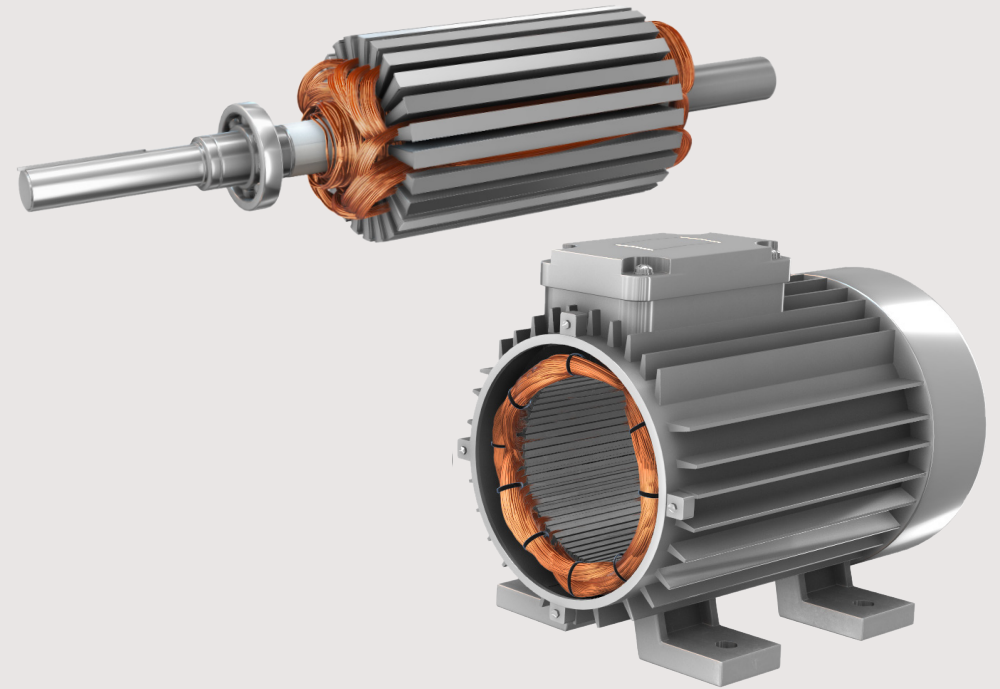




**LOCTITE®**

# CASE STUDY

**LOCTITE Retaining Adhesive  
Helps Improve Electric Motor  
Performance and Extend Lifetime**





## Customer Challenges

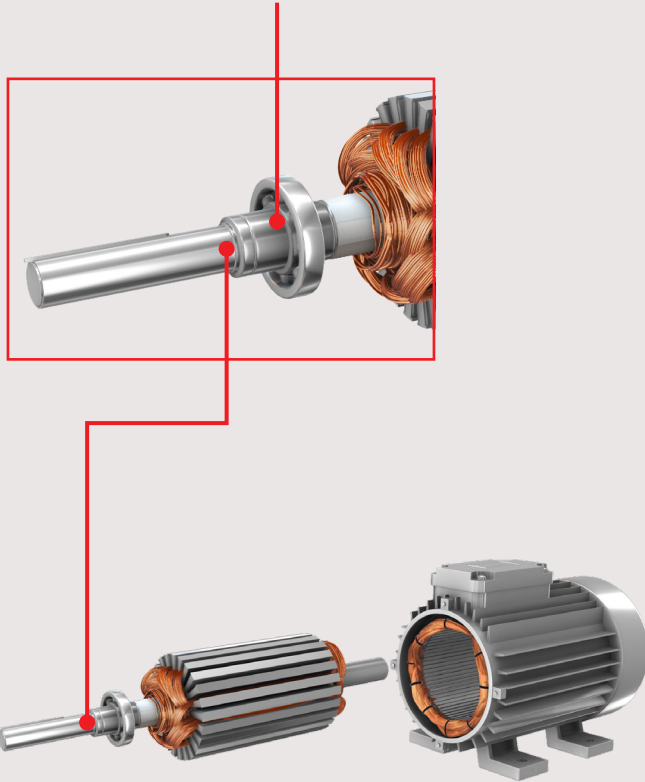
- The customer's electric motors for industrial applications were experiencing premature failures, resulting in warranty claims.
- For the existing design and assembly, the knurled motor shaft was press fit into the rotor and utilized force and tight tolerances to maintain rotor position and function.
- Ultimately, it was determined that motor spin out was the cause of the failures, likely perpetuated by micromovement which led to corrosion.



## Customer Requirements

- Analyze the failure mechanism and develop an efficient and easily implemented solution to better secure the shaft to the rotor.
- The customer required that assembly force not result in any deformation or shaft bowing.
- Any material solution proposed must align with current manufacturing processes, ensure assembly simplicity and cost efficiency.
- Improve long term reliability by eliminating the opportunity for micromovement.

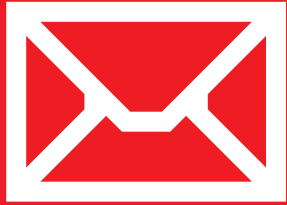
Note: **LOCTITE 648** could be also used as a solution for bearing to rotor applications



## Henkel Solution

- Working with the customer to analyze and understand the electric motor design and the root cause of failed parts, Henkel proposed the use of a retaining adhesive (as opposed to rotor shaft press fit force only) to secure the shaft to the rotor and fill any gaps to reduce micromovement and corrosion.
- **LOCTITE 648** was recommended as the retaining adhesive, as it aligned with the customer's production process, helped raise production efficiency and reduce cost. The adhesive allowed slight changes in the design and tolerances so that the product was easier to assemble and secure.
- LOCTITE 648 is a low viscosity, high strength retaining compound with excellent curing performance and is ideal for bonding cylindrical parts. As it prevents loosening from micromovement vibration, the material helped resolve this issue for the customer.
- Since making minor modifications to the motor's shaft and rotor design and integrating LOCTITE 648 as part of the manufacturing protocol, parts failure has been dramatically reduced and electric motor warranty claims for this issue nearly eliminated.

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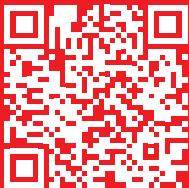
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