



## Summary

<b>Industry:</b>	Rail
<b>Application:</b>	Traction Motor
<b>Actual Saving:</b>	Increased reliability
<b>Payback Period:</b>	Not applicable



## Train Reliability Back on the Rails

### ISSUE

Reliability problems with the traction motors on the channel tunnel freight trains risked affecting service levels so ERIKS engineers were asked to investigate the problems. The trains often operate in very damp and dirty conditions resulting in the motors never having the time to dry themselves out correctly. The motors are also inverter fed which increases the potential for voltage spikes. The failure mode was found to breakdown between phases on the stator winding connections. We also found that the motors had very low insulation resistance readings.

### SOLUTION

ERIKS engineers stripped, redesigned and re-insulated the connection rings with materials compatible with our Class H 180°C Epoxy VPI (Vacuum Pressure Impregnation) The VPI system provides improved protection and excellent damp/moisture protection including increased mechanical strength. This solution retained the original high temperature silicone insulation system within the coils especially in the core where higher temperature protection would be needed, with ERIKS Epoxy VPI system on the connection rings where the temperature would be lower and required increased environmental protection to prevent the failures.

### OTHER BENEFITS

- Increased reliability
- Better environmental protection
- Material compatibility with the elements

### FURTHER COMMENTS...

EWS tested the first repaired traction motor noting the improved reliability. They have subsequently sent all other traction motors for the same modification (over a 3 year period) and have not suffered a repeat of the early failures.

### MORE INFORMATION

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