



Steam Turbine Diaphragm Dishing Repair

Diaphragm Dishing Can Lead to Costly Repairs

Diaphragm dishing is a known issue on most steam turbines. It occurs because of elevated temperatures and high stresses, which cause the steel to creep over time. Typically, dishing beyond approximately 0.1 inch causes rotor rubbing, which can result in a costly repair. Creep affects the internal microstructure of the steel and cannot be removed through heat straightening or other mechanical repair methods. Heat straightening may allow the diaphragm to be returned to its near original geometry, but the creep damage is still present within the steel, allowing the dishing to continue at the same or even an accelerated rate.

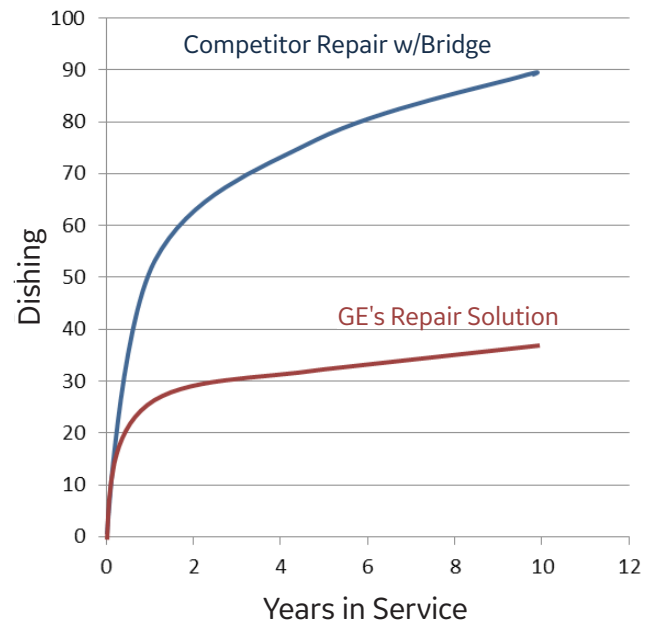
Dishing Repair Study

A study was performed to look at several dishing repair methods and the effect they have on long-term dishing. Using ANSYS and GE proprietary modeling techniques, the study was performed on typical third-stage HP and IP diaphragms from medium-sized turbines. A summary of the results is shown in the figure below.

The results show that GE's Power Services solution can offer just over a 50% reduction in creep over time vs. a bridge repair. Even better results were observed in comparison to pure heat straightening.



Creep Analysis



Features and Benefits

- Helps remove existing dishing and restores original axial alignment
- Reduces cycle time up to 45%
- Creates cost savings up to \$110,000
- Reduces future dishing through enhanced features
- Addresses TIL-1589 (D11)
- Includes a medium cost repair option
- Provides 10-day turnaround on diaphragms**
- Provides GE proprietary technology (patent pending)

For more information, contact your Power Services account manager or visit www.ge.com

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**Assumes material stock availability