



## *Equipment Repair Case Study*

**Situation:** Turbine Driven Armature Repair  
A Vancouver, BC Thermal Generating Station

**Challenge:** Evaluate & repair the failure, quickly 24/7 at Tristar's Delta facility.  
The Generator assembly was sent to Tristar to evaluate damage caused to the turbine driven armature. This damage occurred due to a lubrication system malfunction; the nature of the malfunction was restricting adequate oil flow to critical areas of the shaft. The lack of oil flow created extreme heat in several sections of the shaft. The unit was disassembled to assess the extent of the damage and the level of repair required to return the unit to operation. Based upon the customer's time constraints, the work was carried out on a 24/7 repair schedule.

**Evaluation:**

- Inadequate oil supply had caused the armature to overheat. The unit continued to run at an operating speed of 3700rpm until bearing failure occurred.
- The initial inspection indicated that the heat-affected sections of the shaft were located at the bearing seats. Further examination revealed that these areas had hardened.
- While Tristar's repair team conducted a complete inspection, including N.D.T. and run out checks, a team of engineers were flown in from the manufacturer's head office.



**Solution:**

- The repair team of Tristar technicians, the customer's representatives and the manufacturer's engineers created and implemented a safe, quality repair plan for the damaged armature.
- The shaft bearing diameters were machined to the new sizes supplied by the manufacturer.
- New armature bearings were supplied by the manufacturer.
- The shaft was machined on the large lathe to the new specifications.
- The unit was balanced to ensure that the vibrations levels were within design specifications.



**Benefits:** The failure and resulting analysis led to design changes in the working unit with heat and flow sensors being installed on the armature assembly. Service updates within the customer's organization and customer base outlining problem and the repairs required.

**Conclusion:** Unit was re-assembled, by Tristar's personnel, to design specification and returned to full operation at the Vancouver Thermal Generating Station.

**For more information or other case studies:**  
Please call 1-800-663-5606 or visit [.tristarind.com](http://www.tristarind.com)

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