Customer Testimonial

L-X® Heavy Duty Chemical Supplement (2300)

U.S. Power Plants

Pedestal Bearing on Steam Turbine

- ***Releasing stuck turbine pedestal bearing***

Customer Profile

There are currently over 1,000 coal fired steam-electric power generating stations in the United States. These stations supply more than 60 percent of the current megawatts delivered to homes and businesses in the U.S.

Application

Pedestal bearings on steam turbines.

Challenge

An essential component in steam and gas turbine power plants are the turbine pedestal bearings. These grease lubricated plain bearings support the entire weight of turbine journal bearings, the turbine shaft and blade assembly (the rotor), and the turbine shell. The turbine pedestal bearing's function is to allow for thermal expansion, permitting the turbine shell to easily slide and follow the turbine rotor as the turbine assembly expands and contracts. With steam temperature exceeding 1000°F (538°C), this expansion can be more than 1/2 inch at both axially and radially.

Clearances between the turbine rotor and the turbine shell are relatively tight and any binding of the shell in relation to the moving rotor could result in contact and catastrophic damage. Turbine assemblies are provided with sensors which warn of binding and can trigger an automatic shutdown.

A common cause of such shut downs is stuck or frozen pedestal bearings. Pedestal bearings can stick when the pedestal grease is old and becomes hardened and caked.

Releasing the frozen bearing requires regreasing, forcing away and replenishing the hardened grease. Hardened grease can be very difficult to displace as delivery lines and passage ways can also be clogged with the hardened grease.

LE Solution

LE has developed a very effective, simple procedure to soften and release caked grease allowing regreasing and freeing of the impinged bearing.

1. Using LE L-X® Heavy Duty Chemical Supplement (2300), hand pump using a grease gun, a reasonable amount of L-X® into the bearing. (Example: 800 mgw turbine pedestal bearing may take as much as three gallons to achieve desired results.) Allow L-X 2300 to soak and soften caked grease for 24 hours. L-X 2300's blend of high quality lubricating oil and carbon deposit softening solvents safely begin to soften and dissolve hardened grease while providing protective lubrication.
2. Follow L-X 2300 with new pedestal grease. LE recommends Almaplex® Industrial Lubricant (1275),

NLGI 2, for turbine pedestal bearings. Almaplex 1275 demonstrates excellent service life in this application. It has excellent pumpability and mobility within the bearing. It is designed specifically to resist oil loss and caking.

LE customers report very favorable results in pedestal bearings of all types and sizes.

Results

A power plant can earn an average of $50 per megawatt hour. When energy demands are at a peak and demand is high, they can earn as much as $200 per megawatt hour. An 800 megawatt power plant in a forced outage due to a stuck pedestal bearing could lose $160,000 an hour or $3,840,00,000 a day.

Thank you to John Hayes, LE lubrication consultant (pictured), for providing the information used in this report. John is currently servicing 14 different power generation stations, and is working with 5 other LE lubrication consultants with as many as 12 more plants.

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