

LOCTITE*Adhesives for more
reliable assemblies***APPLICATION CASE HISTORY****No. 212**

Quick Metal® Repairs Gear Box Input Shaft; Saves Paper Mill Million Dollar Shutdown

Loctite Manufacturing Reliability Gives Maintenance Team The Know-How

An upper Midwestern paper mill operates several multi-fuel boilers for power and steam generation; the primary fuel being coal. Natural gas is also used to fuel the boilers when the coal supply is exhausted or interrupted. The switch-over process from coal to natural gas is expensive due not only to the cost of the fuel, but also since it requires the shutdown of parts of the paper manufacturing operation.

Problem:

The paper mill experienced a failure of a grid-type coupling hub on the main drive of their coal conveyor. The problem was found to be a wallowed keyway and spinning of the coupling hub on the gearbox input shaft. Since there wasn't a spare gearbox for this conveyor drive in the plant, the maintenance team determined that there were only several operating hours worth of coal left in the bunkers to feed their boilers. After that, the paper machines would be shut down in order to switch over to natural gas.

Solution:

A millwright who had been attending the Loctite Manufacturing Reliability Training Process at the plant suggested a method of repair for the coupling to gearbox input shaft that he'd learned in one of the training sessions.

Loctite® Quick Metal® Retaining Compound is a creamy, non-running adhesive that can be used between machinery parts to repair worn areas and restore correct fits. It fills gaps up to .020" and has a temperature range of -65° to +300°F.

As the shaft was worn substantially more than 0.040" diametrically, the millwright decided to make a "Loctite Sandwich" constructed of shim stock and Quick Metal. The coupling hub was then reinstalled.

Results:

The coal conveyor was back in operation before the bunkers were completely emptied of coal. The machine shop manager said that this saved the paper mill substantial outage on the paper machines and allowed them to run the coal conveyor on a 24 hour-a-day basis, 7-days-a-week, until they could get a new gearbox and install it during a scheduled shutdown. The cost of downtime for this paper mill can exceed \$50,000 per hour, avoiding a shutdown that could cost a million dollars.



Coupling hub repaired with Loctite Quick Metal.

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