

Hydraulic Pump Condition Monitoring for Ductile Iron Plants

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Abstract

Centrifugal Casting Machines (CCMs) are used for casting ductile iron pipes at Tata Metaliks. These machines are operated using hydraulic systems. Main traversing cylinder (MTC) of these machines is a very critical component and is directly affected by any issue in the hydraulic system, especially pump failure. There are 5 hydraulic power packs at the CCMs having 22 swash plate operated pressure compensated piston pumps of which 13 pumps are used for MTC operation.

Failure of hydraulic pumps at the power packs used to be a critical problem at Tata Metaliks. To address the issue, the pumps and power packs were fitted with sensors to detect case drain flow, oil temperature, system pressure, TAN number and oil level.

The data was pushed onto a SCADA system to generate actionable insights. All major KPIs were mapped onto real time alerting mechanisms. This enabled us to changeover the pumps adaptively, thereby avoiding critical pump damage, which used to render the pumps useless earlier. These pumps were then removed and overhauled; lapping was done on the valve plates. The pumps could then be taken back on line. This initiative enabled us to extend the pumps' usable life beyond the earlier observed life.

Keywords

Failures, monitoring, anomalies, contamination, SCADA

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Biographies

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