Technical Paper

Maintenance and safety operations

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Reliability Centered Maintenance

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Summary

Pumps are the heart of every hydraulic system and drive the process. An unexpected failure of a pump can become costly due to increased cost of unplanned maintenance and the downtime costs of the production process. Therefore reliability and availability of pump systems are a key factor for minimising the operating cost. Consequently, condition monitoring and diagnosis for pumps arouse the interest of plant operators.

Pump diagnostic systems for the detection of pump faults or inadmissible operating conditions are available on the market. However anticipating a failure and predicting the remaining life-time has not yet been achieved by commercial systems. However fault prognosis is a key feature for predictive maintenance as the fuel gauge for the driver of a car.

This motivated ReMain, an ambitious and unique research project, to identify general rules for prognosing the remaining life-time of centrifugal pumping systems.

Within the project 100 pumps in the production plant of Evonik Stockhausen are equipped with a comprehensive set of sensors. Measurements as well as observations from production and maintenance will be collected over 2 years into a unique data base. Experts from different domains will analyse the huge amount of data in order to identify indicators of wear and incipient failures and build predictive models.

15 major German companies operating pumps follow up the project as adjoint project team and ensure the general applicability of the results.

This technical paper describes the methods applied to analyse the data, the conception of the infrastructure and the instrumentation of the pumps with the most advanced sensors available on the market.

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