Parametric Fault Diagnosis of an Active Gas Bearing - DTU Orbit (28/07/2019)

**Parametric Fault Diagnosis of an Active Gas Bearing**

Recently research into active gas bearings has had an increase in popularity. There are several factors that can make the use of gas bearings favourable. Firstly gas bearings have extremely low friction due to the usage of gas as the lubricant which reduce the needed maintenance. Secondly gas bearings is a clean technology which makes it possible to use for food processing, air condition and applications with similar requirements. Active gas bearings are therefore useful for applications where downtime is expensive and dirty lubricants such as oil are inapplicable. In order to keep as low downtime as possible it is important to be able to determine when a fault occurs. Fault diagnosis of active gas bearings is able to minimize the necessary downtime by making certain the system is only taken offline when a fault has occurred. Usually industry demands the removal of any sensor redundancy in systems. This makes it impossible to isolate faults using passive fault diagnosis. Active fault diagnosis methods have been shown able to isolate faults when there is no sensor redundancy. This makes active fault diagnosis methods relevant for industrial systems. It is in this paper shown possible to apply active fault diagnosis to diagnose parametric faults on a controllable gas bearing. The fault diagnosis is based on a statistical detector which is able to quantify the quality of the diagnosis scheme.

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