
SCREEN DAMAGE

INSPECTION SCREEN LEFT ON TURBINE DURING START-UP WIPED BEARING

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Case Study

SYNOPSIS

Flushing provider left a flange slip screen in place in front of Turbines HP T5 Bearing.

Procedures did not list inspection point or verification of removal.

Screen plugged with contamination, starving bearing of oil and causing \$1.2M in damage and downtime.

Utilizing easy to identify PLI-Screens and inclusion of reinstatement steps in procedures can prevent unnecessary damage and lost time.

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INTRODUCTION

During a power generation plant start up activities the Steam Turbine tripped due to high vibration on the HP bearing. Disassembly and inspection of the bearing showed the HP T5 bearing had been wiped and a fine mesh screen installed on the orifice strainer, resulting in oil starvation to the bearing, and subsequent failure.

The fine mesh screen was installed in the T5 bearing orifice strainer during required turnaround flushing activities and was not removed prior to startup. The checklist for tracking fine mesh screens included only LP train T1-T6 and HP train T1 and T2. A final check of the T5 bearing orifice strainer was only for orientation. It was not expected that a fine mesh strainer was installed and flange slip screen fine mesh screens can be difficult to identify visually.

IMMEDIATE ACTIONS

The T5 bearing was shipped to vendor to be re-spun. The Turning Gear and T5 oil deflectors were shipped to vendor to be re-toothed. The H2 seal casing required replacement.

IMPACT

This event resulted in significant cost due to rework and repair of the T5 bearing, both oil deflectors and the H2 seal casing. The outage was delayed by 14 days.

THE ESTIMATED TOTAL COST OF POOR QUALITY (COPQ) FOR THIS EVENT IS \$1,200,000.



Damage due to loss of lubrication



PREVENTATIVE ACTIONS

Inclusion of a reinstatement checklist and verification signatures utilized in tracking removal of oil flushing inspection screens in every flushing activity will prevent these incidents from taking place. Concurrently, utilizing easily identifiable PLI-Screens will allow verification at a glance (See Figure 1 below). The Flush Company Lead should perform a final walk through with OEM and Site Representative when completing the High Velocity Lube Oil Flush.

THIS SHOULD BE TRACKED AS A HOLD POINT ON THE FLUSHING PROCEDURES BEFORE THEY CAN BE CLOSED OUT AND RECEIVE THE FINAL SIGNATURES OF COMPLETION.

At RIG we pride ourselves in customizing process and procedures to meet each facilities and equipment manufacturers needs. Including approvals of procedure prior to starting work and verification points throughout execution of the flushing activities.

RIG PLI-SCREENS ARE EASILY IDENTIFIED WITH GREEN GARLOCK MATERIAL AND HANDLES THAT EXTEND BEYOND THE FLANGES.



Figure 1. PLI-Screens

PLI-Screens are made with a 3-gasket, 100 Mesh (or OEM required media), and 40 Mesh screen bound together for durability. PLI-Screens include options of hole punched handles in both 2" and 5" for ease of installation, removal, identification and storage. PLI-Screens are available in any flange sizes and ratings.

For more information on high velocity oil flushing or other Lubrication related services please visit www.RIG.com or call 800-770-4510.



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