

Flexible Coupling between Gearbox and Pump (High Speed Machine)

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Abstract : This paper present failure occurred on flexible coupling installed at oil anf gas operation. Also it presents maintenance ideas implemented on the flexible coupling installed to transmit high torque from gearbox to pump. Basically, the machine train is including steam turbine which drives the pump and there is gearbox located in between for speed reduction. investigation are identifying the root causes, solving and developing the technology designs or bad actor. This report provides the study intentionally for continues operation optimization, utilize the advanced opportunity and implement a improvement. Objective: The main objectives of the investigation are identifying the root causes, solving and developing the technology designs or bad actor. Ultimately, fulfilling the operation productivity, also ensuring better technology, quality and design by solutions. This report provides the study intentionally for continues operation optimization, utilize the advanced opportunity and implemet improvement. Method: The method used in this project was a very focused root cause analysis procedure that incorporated engineering analysis and measurements. The analysis method extensively covers the measuring of the complete coupling dimensions. Including the membranes thickness, hubs, bore diameter and total length, dismantle flexible coupling to diagnose how deep the coupling has been affected. Also, defining failure modes, so that the causes could be identified and verified. Moreover, Vibration analysis and metallurgy test. Lastly applying several solutions by advanced tools (will be mentioned in detail). Results and observation: Design capacity: Coupling capacity is an inadequate to fulfil 100% of operating conditions. Therefore, design modification of service factor to be at least 2.07 is crucial to address this issue and prevent recurrence of similar scenario, especially for the new upgrading project. Discharge fluctuation: High torque flexible coupling encountered during the operation. Therefore, discharge valve behaviour, tuning, set point and general conditions reevaluated and modified subsequently, it can be used as baseline for upcoming Coupling design project. Metallurgy test: Material of flexible coupling membrane (discs) tested at the lab, for a detailed metallurgical investigation, better material grade has been selected for our operating conditions,

Keywords : high speed machine, reliabilty, flexible coupling, rotating equipment

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