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Reliability Engineering Management in the Petrochemical Environment: The Air Separation Unit

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Abstract

In the Coal to Liquids (CTL) process a key processing unit, the “cold box", is fundamentally responsible for air extraction and separation. The cold box is critical in the Sasol Chemical Industries (SCI) environment, due to the importance of oxygen in several processes. Due to the criticality of the equipment, it becomes necessary to streamline the maintenance process utilized on the cold box.

Irregular and unplanned maintenance can lead to unforeseen events and may have safety and environmental implications. The maintenance philosophy that is followed to maintain the equipment is of utmost importance. Sasol conducts maintenance on their cold box with a black box approach, which makes it difficult for the maintenance team to predict failures, resulting in significant losses. The study investigates the potential benefits of an alternative maintenance strategy. The key focus of the research includes an evaluation on the impact of an alternative maintenance approach has on the reliability and stability of the equipment. The research approach includes a global literature study providing potential options for improvements. The viability of these options were tested via a questionnaire conducted with current plant personnel. The results of the respondents indicated that proactive maintenance and all aspects thereof is the key to success for improving the reliability of the cold box