FAILURE ANALYSIS OF CENTRIFUGAL PUMP P951E IN PT. PETROKIMIA GRESIK

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Abstract

The Pump centrifugal P951E is one of the tool which supporting the production process in PT. Petrokimia Gresik that serves channeling water to division of ammonia for production process. From observation result from the field, it is known that the pumps are often damaged due to rubbing against the casing of the pump impeller. Generally, when such damage occurs, then do the impeller or bearing replacement is ahead of schedule in order to pump replacement that should be able to return to work. This study was conducted to determine the root cause of failure and increases life time by maintaining the reliability of the pump.

To obtain solutions to problems, then use Root Cause Failure Analysis (RCFA) to determine the location, cause, and the failure effect. RCFA method used is vibration inspection and visual inspection of the failure components. Analysis of the root causes of failure conducted by using the concept of Ishikawa or fish bone diagram. After the cause of failure was known, then made a Failure Modes and Effects Analysis (FMEA) for centrifugal pumps P951E.

The results obtained from the RCFA and Ishikawa diagram is failures that occurs in centrifugal pumps P951E and root causes of the failure. That failures such as wear on the impeller, bearing breakage, looseness, unbalance and misalignment. Where symptoms of unbalance and structural looseness damage emerged as the most dominant cause of damage than the other damage symptoms with vibration value 5.2 mm/s.
Improvement and maintenance strategies to maintain the life time of the pump is given in the form of FMEA on any component that has the problem based on the damage that occurs as a solution of the problem.

Keywords: Centrifugal pump, Root Cause Failure Analysis (RCFA), Ishikawa diagrams, Failure Modes and Effects Analysis (FMEA).