**RCM on Pump System: Application of Fuzzy Linguistics and Failure Mode Effect and Criticality Analysis Technique**

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**Abstract**

In order to preserve and boost the standard of production outcomes, it is necessary to assess and enhance production performance. Seamless processes is one degree of assessing the efficiency of production. Effective risk management techniques may help to support and sustain the firm production process to operate without interferences. The objective of this research is to identify, rank and recommend maintenance strategy for all the failure modes corresponding to the functional significant components of the pump system. This article offers an investigation on RCM with fuzzy logic and how it compares with the standard technique in order to explain the criticality analysis industrial pumps used in petrochemical industries. Failure mode effect cause and criticality analysis (FMECA) was combined alongside the fuzzy linguistics (FL) scale approach on the theoretical foundation of fuzzy logic. Following that, the risk priority number is calculated using the weighted Euclidean distance algorithm and centroid defuzzification. The results showed the criticality ranking for all failure modes of the pump system based the RPN scores, and suitable maintenance techniques were advised for each failure mode. It also shows that utilizing fuzzy logic with language rules to analyze failure mechanism can result in a more reliable ranking as compared to the conventional FMECA.

**Keyword:** Reliability Centered Maintenance (RCM), Fuzzy Linguistics (FL), Pump, FMEA, FMECA