



## **RELIABILITY AVAILABILITY AND RISK ANALYSIS STEAM TURBINE APPLICATION IN SUGAR PLANT**

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### **ABSTRACT**

*Steam turbine in sugar plant already used as prime mover for exchanged the earlier model was steam engine. In fact, the operation of steam turbine in milling season many failures occurred and have not been predicted before so that the system have low in operation.*

*In this research, steam turbine would be analyzed their system reliability and its availability during milling season. The model of its reliability has been constructed from many failure mode data that are taken for 4 years (2004 - 2007). Weibull rank regression is used for analysis, with the results of 2 (two) weibull parameter, consist of number shape parameter  $\beta = 3,3255$ , scale parameter  $\eta = 2240,31$  average MTBF - 2010,37 hours, meanwhile the number of availability = 98%.*

*Interpreting number of those weibull parameters indicated that the steam turbine failure characterized as wear out model with failure rate increasing to mission time. The reliability system follows variable failure rate in bath tub curve failure region. Many effort for maintenance action should be done regularly to reduce many failures mode data in steam turbine operation involving the predictive action using each number of MTBF components.*

*Qualitative risk analysis obtained 6 failures probability with the frequency of event 30 times (90%) resulting from medium, serious and high risk, so these failure probability occurrence should be reduced and controlled including the impact of failures in milling season suitable with the risk of management decision level.*

**Key words** : Availability, MTBF, Milling, Maintenance , Reliability, Risk, Weibull Parameter