ABSTRACT

***OPTIMIZATION OF MAINTENACE ACTIVITIES AND PROCUREMENT SPARE PART OF STEAM TURBINE BY RELIABILITY CENTERED MAINTENACE (RCM) METHOD AT* STAR ENERGY GEOTHERMAL [WAYANG WINDU] Ltd.**

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A very high dependency on energy for humans occurs due to the increased of population, the quality and standard of living, as well as technology. The world's annual energy consumption is 500 x 10^{15}BTU*/year until now. The majority of electrical energy obtained from coal which is classified as a nonrenewable energy source. In addition coal also the biggest producer of* CO_2 *emissions than other energy sources. This requires the development of alternative energy which is classified as renewable energy sources and green environmental. Geothermal is one of the solutions for these problems. The Geothermal power plant is very suitable to be developed in Indonesia because Indonesia has geothermal potential of the world by* 40% *while the newly utilized only by* 9% *(Source: Ministry of Energy and Mineral Resources in* 2011*).* Star Energy Geothermal [Wayang Windu] Ltd. *is one of the power plants that use geothermal as an energy source which amounts to* 2 *units with installed capacity* 227 *megawatts* (MW).

Since its establishment in 2000*, the preventive maintenance activities at* Star Energy Geothermal *comes from a vendor that is doing Turn Around every* 3 *years, this is certainly not effective to preventing failure and cost efficient. From the research, the steam turbine which is at level* 7 *equipment hierarchy has* 25 *critical items by risk matrix* SEGWWL. *The critical component that will be processed using the Reliability Centered Maintenance to obtain effective maintenance policies according to the characteristics of the failure and cost efficient, as well as to determine the optimal number of spare parts in order to reduce the consequences of the failure.*

Based on the results of data processing carried out on critical steam turbine component, obtained 30 *scheduled on task condition and* 13 *failure finding task. While different time maintenance intervals of each component, adapted to the task are obtained. Total maintenance costs for* 3 *years from the task proposal is for* $ 522,196.88*, which is* 46% *less expensive than the total cost of maintenance existing. Optimal number of spare part is as much as* 1 *lot for the generator side journal bearing, journal bearing MOP side, turbine generator coupling, MOP coupling, casing, rupture discs, rotors, and gland packing.*

Key Words: Geothermal, Equipment Hierarchy, Risk Matrix, Reliability Centered Maintenance, Spare Part.