

***Optimization of Vacuum Pressure Direct-Contact Jet Condenser Using Exergy Analysis on Geothermal Power Plant Unit 3 PT. Indonesia Power Kamojang POMU***

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***ABSTRACT***

*Optimization of vacuum pressure direct-contact jet condenser at geothermal power plant unit 3 PT. Indonesia Power Kamojang POMU using exergy analysis where the analysis is carried out based on the second law of thermodynamics. Exergy analysis provides information regarding exergy efficiency and irreversibility on each component. In addition, analysis was also carried out energy which provides information on the amount of energy rate of each component. Energy and exergy rate is calculated at each state and each component of the power plant includes steam receiving header, separator, turbine, main condenser, inter condenser, after condenser and cooling tower. The exergy analysis results show the exergy rate of the production well of 95327 kW which is used to generated electricity of 52882 kW with a system exergy efficiency value of 55,47%. The highest irreversibility occurs at turbine which is worth 12874 kW. Optimization was done by varying the vacuum pressure in the main condenser with direct contact jet condenser type. Optimization results indicated the lower of vacuum pressure at the direct-contact jet condenser will be causes an increase in the power output of the power plant and exergy efficiency also reduce irreversibility value of system. The optimum of vacuum pressure obtained is 0,1 bar where this value is the lowest pressure of main condenser allowed in operation of Kamojang geothermal power plant unit 3.*

**Keywords:** *direct-contact jet condenser, energy, exergy, irreversibility, optimization.*