

## **Exergy Analysis Subcritical Steam Power Plant System at PT POMI Unit 7**

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*Analysis of exergy in subcritical steam power plant system at PT POMI unit 7 is based on the second law thermodynamics. Exergy are calculated for each state and power plant components which include are Boiler, High Pressure Turbine, Intermediate Pressure Turbine, Low Pressure Turbine, Condenser, Condensate Pump, Low Pressure Heater, Deaerator, Feed Water Pump, and High Pressure Heater. Analysis exergy provides information about exergy rate, exergy efficiency, and irreversibility. Exergy of steam entering system is 3331850,3 kW which is use to produce 562280 kW with the overall exergy efficiency of plant is 44,04%. The sankey diagram show the loss of exergy in each components of power plant. The highest irreversibility occurs in the boiler that is equal to 932224,34 kW, then followed by turbine which is 809152,97 kW, then HPH, Deaerator, Condenser, LPH, and Pump. Optimization has been carried out in an effort to reduce irreversibility and increase the exergy efficiency of boiler. Based on the results optimization carried out by varying the boiler output pressure, the efficient value increases and the irreversibility value decreases at a pressure of 185 bar within the range og the component.*

**Keyword:** *Exergy, Irreversibility, Efficiency, Optimization*