Exergy analysis of gas turbine power plant 20 mw in Pekanbaru-Indonesia

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Abstrak

The performance of a 20 MW gas turbine power plant was described by using the exergy analysis and data from the plant’s record books. The first and second laws of thermodynamics, as well as the mass and energy conservation law, were applied in each of the components. The results show that more exergy destruction occured in the combustion chamber up to 71.03% or 21.98 MW. Meanwhile, the lowest exergy occured in the compressor at 12.33% or 3.15 MW. Thermal efficiency of the gas turbine power plant, according to the first law, was 33.77%, and exergy efficiency was 32.25%.