

# **LAPORAN PENELITIAN**

## ***“Waste Heat Recovery of Tura Geothermal Excess Steam Using Organic Rankine Cycle”***

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## Waste Heat Recovery of Tura Geothermal Excess Steam Using Organic Rankine Cycle

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### Abstract

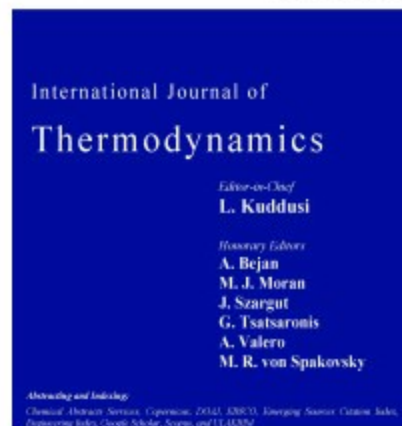
A developing geothermal utilization is one of many Hungarian government efforts to generate electricity and heating applications from renewable energy sector, and to reduce fossil fuels usage due to the impact on the environment. Geothermal utilization for electricity generation has been implemented in Tura region and it is become the first geothermal plant in Hungary that producing electricity around 27 MW. The excess steam from Tura geothermal power-plant still has a potential energy that can converted to electricity and the objection in this study is implemented a heat recovery from excess steam through organic Rankine cycle (ORC) from the point of view energy and exergy analysis using different working fluids. The calculation result shows the Propane is produce the highest energy around 41 kW and the efficiency at 10.3%, while R125 produce the lowest energy around 10.25 kW and the efficiency at 8.17%. Moreover, based on the environmental analysis it is also found that R134a working fluid can be considered as environmentally and sustainability ORC's working fluid, compared to other working fluids, in this study.

### Keywords

generate electricity, reduce fossil fuels, energy and exergy analysis, different working fluids

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