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An Approach to Electricity Production Utilizing Waste Heat of a Triple-Pressure Cogeneration Combined Cycle Power Plant

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Abstract : This research investigates the points with heat recovery potential in a triple-pressure cogeneration combined cycle power plant and determines the amount of waste heat that can be recovered. A modified cycle arrangement is then adopted for accessing thermal potentials. Modeling the energy system is followed by thermodynamic and energetic evaluation, and then the price of the manufactured products is also determined using the Total Revenue Requirement (TRR) method and term economic analysis. The results of optimization are then presented in a Pareto chart diagram by implementing a new model with dual objective functions, which include power cost and produce heat. This model can be utilized to identify the optimal operating point for such power plants based on electricity and heat prices in different regions.

Keywords : heat loss, recycling, unused energy, efficient production, optimization, triple-pressure cogeneration
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