

CONNECTION OF A DISTRICT HEATING SYSTEM AND AN ORC GEOTHERMAL PLANT

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ABSTRACT

Cogeneration of electricity and heat for district heating is feasible in colder climates, where a city having market for district heating is close to the plant.

Geothermal power plants usually produce base load. Heat load for district heating is dependent on the ambient temperature, and has a high peak to average heat load ratio. The production of district heating will reduce the electrical output of the geothermal plant, thus incurring lost revenue. This loss is the more, the higher the district heating load is. The characteristics of district heating consumption influence these losses as well, and certain measures to influence the consumer behaviour are necessary.

The minimization of this loss of electrical generation of the geothermal plant is crucial for the economics of the cogeneration.

This paper presents the cogeneration couplings suggested by Atlas Copco. Good temperature profiles for district heating supply and return are presented, and the relation between these temperature profiles and revenue loss is presented. Suggestions regarding tariff system and how the district heating consumer should be motivated are as well presented.