

Combined geothermal heat and pressure retarded osmosis as a new green power system

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Abstract

SaltPower is the name of a new renewable energy system. The system uses brine with high contents of salts to make an osmotic pressure that can become converted into electricity by help of turbines and generators. We present the principle of the energy system, the setup of a 20 kW pilot plant and laboratory investigations for the selection of a membrane that can resist the high pressure which can be up to 70 bar. The osmotic power system can be applied together with an already existing geothermal plant where hot water from the underground is used for district heating purposes. Alternatively, it could be applied where salt is extracted from salt domes and many other sources of salt.

Levelized Cost of Electricity (LCOE) is calculated on the osmotic power system when it is connected to a geothermal plant. The calculated value is competitive with other technologies creating electrical power.