Economic analysis of MD and AD desalination plant using low-enthalpy geothermal energy

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Desalination technology has been developed as water shortage becomes a global issue. Efforts were put in to make energy consumption of desalination plant lower and renewable energy driven-desalination technology can be one possibility. Using renewable energy can reduce fossil fuel consumption and emission of CO2 since less or none of carbon based fuel is needed. Of all kinds of renewable energies, geothermal energy has a benefit that it can provide stable energy constantly. Geothermal resources can be categorized into high-enthalpy(＞150℃) and low-enthalpy(50-150℃) resource. This study will focus on low-enthalpy geothermal energy since exploitation cost is much less than high-enthalpy resource. Therefore, feasibility will be discussed with Membrane Desalination (MD) and Adsorption Desalination (AD) which are known to employ low-temperature heat. Both methods will be compared in energy consumption and economically analyzed.