동적 시뮬레이션 설계를 통한 RO담수화공정 optimal co-generation system의 에너지 및 변수 분석

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A dynamic simulation, and a parametric analysis of a reverse osmosis (RO) desalination plant integrated with an organic Rankine cycle (ORC) assisted with a solar-geothermal plant is proposed as an effective load resource to support various types of ancillary services to the electric grid, under variable operating conditions. Here, a parabolic trough collector (PTC) solar field is selected to study the dynamic analysis of such an integrated system. The fluid temperature supplying heat to the ORC varies continuously as a function of the solar radiation, affecting both the electrical and thermal energies. The simulation results indicate that an RO plant can provide operational flexibility to participate in energy management at utility scale. The system is profitable when a significant amount of the heat produced is consumed.

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