Mohammad Jadidbonab, Hesameddin Mousavi-Sarabi, Behnam Mohammadi-Ivatloo, 2018, Risk-constrained scheduling of solar-based three state compressed air energy storage with waste thermal recovery unit in the thermal energy market environment, *IET Renewable Power Generation.*
https://digital-library.theiet.org/content/journals/10.1049/iet-rpg.2018.5689

Abstract This paper evaluates the self-scheduling problem for solar-based compressed air energy storage (CAES) plant with capability of compression waste thermal energy recovery via information gap decision theory (IGDT) approach. This feature gives the plant the ability to make income through participation in the thermal energy market. Moreover, the proposed plant uses natural gas as input fuel, which makes the system flexible to operate as a simple cycle gas generator when the stored air is drained. The utilization of renewable energies in spite of many benefits have some challenges to self-scheduling of the solar-based three state CAES plant such as volatility and unpredictability. In addition, the uncertain solar farm generation is modeled by IGDT method. By the proposed IGDT model the plant can pursue risk-taker and risk-averse strategies to face with different situations related to uncertain parameter. Finally, the numerical results obtained from case studies validate the appropriateness of the proposed approach.

Keywords Waste thermal energy recovery, thermal energy market, information gap decision theory (IGDT), solar farm, compressed air energy storage (CAES), simple cycle generation