

## **46ESS-55: Solar Energy Powered Gas Turbines**

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*During last decades, renewable energy sources are being developed among them solar energy is one of the most powerful and profitable sources. Solar turbines' take advantage of sunlight by capturing and converting it into heat energy. This energy is used to heat the air delivered by the compressor, then it is expanded in the turbine, and the remainder goes to power a free turbine and generate electric power, which is the main aim of this technology. For that purpose, concentrated solar power plants use mirrors to focus sun's energy into a receiver and convert it into high-temperature heat. Moreover, as solar energy is a renewable one, no pollutants are released, but one of the constraints that have to be faced is its fluctuating nature, as it is dependent on meteorology. As large surfaces are needed, the application for aero engines is not feasible so they are mainly used in industrial plants. Additionally, solar hybrid gas turbine power plants are being developed. The following paper will cover the different configurations of thermal solar plants, their applications and future hybrid applications.*