

Solar-powered gas turbines

Researchers from Israel and the United States have together developed a technology that facilitates production of electricity using gas turbines and solar energy. A pilot plant has been set up at the Weizmann Institute of Science, Israel. Sunlight is collected by a field of heliostats located north of a tall tower topped by a vast mirror device made up of 800 separate mirrors. Light reflected from the heliostats is aimed at this device which reflects the rays down towards the ground and on to an optical system which concentrates sunlight by a factor between 4,000 and 10,000.

Special receivers then convert the concentrated light energy to create hot, pressurized air at a temperature of 900°-1,350°C, which is used to run a gas turbine. Air exiting the turbine is still hot enough to circulate through a further downstream cycle. Efficiency of the gas turbine combined-cycle plant is about 50 per cent higher than that of a steam power plant. Plans are afoot to produce power round the clock by incorporating night storage facilities. At present, the plant can produce 270 kW of electricity.