

JOINT EVENT

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Energy towers : Renewable energy strategy for hot dry climates

Energy (or Desert) towers are a renewable energy producing device suitable for hot and dry climates. They are based on spraying sea water from the top of a tower 500 m high. The sprayed droplets evaporate and thus cool the surrounding air creating a downdraft which moves electricity-generating turbines located at the basis of the tower. The air is subsequently delivered through a diffuser to the surrounding environment where the salt containing water precipitate to the ground. The Energy tower generates electricity without producing greenhouse gasses. It has been estimated that approximately 1/3rd of the gross power delivered by the turbines is necessary for pumping the sea water to the tower site and up the tower, whereas another 2/9th is lost to aerodynamic friction, leaving 4/9th as net power. The electricity is generated 24 hours a day (although at a much smaller power during the night) CFD calculations indicate that an energy tower with a 200 m diameter and a 600 m height may deliver a 250 MWe net electrical power and 250 GWh a year. In addition a by-product is desalinated water that can be derived from the cold humid air. The estimated cost of the generated electricity is estimated to 2-3 cents/kWh – which makes it competitive and clean, without green-house gasses. The major environmental effect is the precipitation of salt. Energy towers are suited for latitudes between 20 and 30° which are usually hot and dry.

Biography

Samuel Hassid is in the Environmental, Water Resources and Agricultural Engineering Unit, Faculty of Civil Engineering, Technion Israel Institute of Technology, Israel. teaches and works on Climatology of Buildings. He is author and co-author of 45 scientific papers in Scientific Journals and 6 chapters of books. He is a member of scientific committee on Energy in Buildings in the Israel Standards Institution.

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