

US Innovation

Arup joins huge updraught project

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Australia's EnviroMission has brought in international engineering outfit Arup to begin development of a huge 400MW solar updraught tower project in Arizona.

EnviroMission's Solar Tower development will use a revolutionary updraught concept developed by Jörg Schlaich and Rudolf Bergemann at German consultancy Schlaich Bergemann and Partner (SBP). The idea was pioneered as an experimental 50kW model 30 years ago in Spain.

"EnviroMission's aim to develop Solar Tower technology from concept to commercial reality has always been maintained in the knowledge that only the highest level of engineering support capabilities could achieve this strategic intent," says Arup project spokesman Ken Stickland.

Solar updraught towers are made up of three basic components: a vast, open-sided, transparent, circular membrane roof, known as an air collector; a chimney-like tower; and a set of pressure-staged turbines.

As the Sun beats down on the air collector, the air and earth beneath the membrane are heated. The air becomes lighter as the temperature rises, and flows towards the central tower, while cooler air is drawn in at the collector's edges.

The collector membrane allows solar radiation through, but absorbs the long-wave "re-radiation" coming off the heated ground, so that heat is transferred to the air flowing inward.

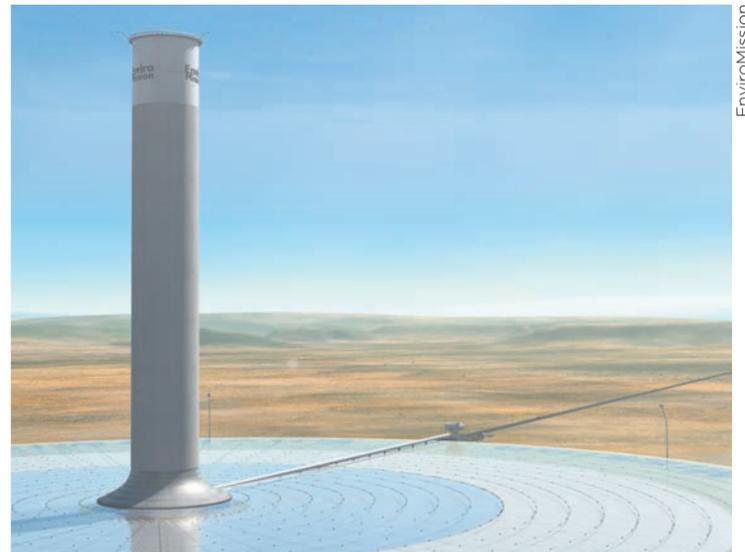
When the heated air reaches the tower base, the updraught's air stream is converted into mechanical energy using

turbines, and then into electricity via conventional generators.

This gargantuan project will involve building an air collector about 3.2km across, topped by a 750-metre-high, 100-metre-wide tower kept steady by a giant "spoked wheel" structure. To put this into perspective, the world's

tallest man-made structure is Dubai's 828-metre Burj Khalifa skyscraper.

EnviroMission's Arizona Solar Tower development will generate electricity for the Southern California Public Power Authority under a power-purchase agreement finalised last month.



EnviroMission

LOT OF HOT AIR: Artist's impression of a solar updraught project. EnviroMission's Arizona development will have a 3.2km diameter

Metalkraft plant to recycle slurry

SINGAPORE Norway's Metalkraft has made its biggest investment to date, opening a S\$90.2m (\$70.3m) plant that will recycle slurry used in the solar wafer cutting process.

The plant will meet the recycling needs of REC's Singapore factory, which produces 40,000 tonnes of used slurry a year.

Large amounts of slurry are required for wafer cutting. The abrasive silicon carbide particles and glycol used are polluted during the cutting process by silicon dust and metal particles.