Technical Assistance Request

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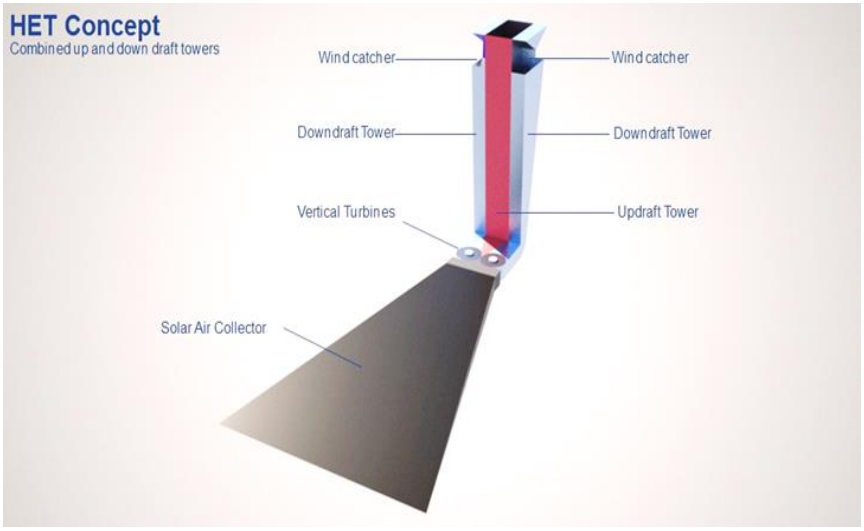
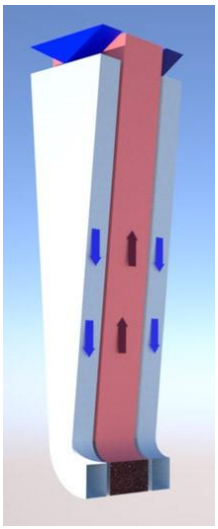
Solar Thermal Power Tower

Conserval and its CEO, John Hollick, the inventor of the transpired solar air collector (SolarWall) have developed a revolutionary new concept which combines the best features of multiple renewable technologies into one Hybrid Energy Tower.



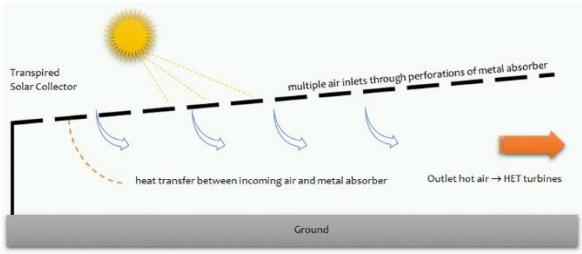


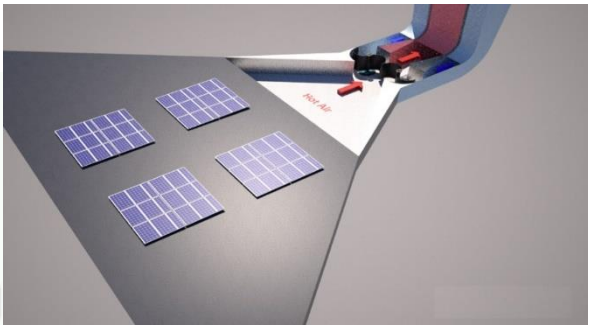
The Solar Thermal Power Tower includes transpired solar air collectors, solar updraft tower, wind downdraft tower, Venturi or shrouded chamber for turbines, phase change material (PCM) thermal storage and integration of PV with recovery of wasted PV heat. A recent objective is to utilize the towers in fire prone areas and situated as firebreaks. The towers can also attract lightning and store it in ground as thermal energy.

Two prototypes built to date confirm the much higher efficiencies compared with traditional solar updraft towers, but additional work is necessary to complete a modular system for rapid deployment. Various combinations of these technologies are possible depending on local wind and solar resources. The LCOE calculator will be used to optimize designs based on costs and performance.

Lightning accounts for half of the wildfires and our Power Towers can be designed to attract lightning and reduce these strikes on combustible materials.

Assistance is required from experts in fire breaks, fire towers, lightning protection and other issues related to fire protection for remote communities and buildings.





Heat from transpired collectors provide the driving force and can be coupled with PV arrays in a PVT configuration to recover the thermal energy and produce more power.

Components requiring further optimization include the turbines and blades, likely a vertical axis configuration but not ruling out horizontal axis turbines, design of the tower and connecting turbine chamber and better understanding of the air movements at the top of the tower and at the turbines.

Sandia is to perform CFD analysis of the turbines, provide a best-estimate value for Cp and make recommendations for optimizing the vertical axis turbine design with a Venturi or diffuser chamber receiving air flows from two directions.

We would appreciate assistance from federal and state forest reserves to review our ideas and offer suggestions to accommodate fire protection measures to better protect areas from wildfires.

A partner will be required to produce the turbines. Suppliers for the turbines are being requested especially those interested in developing a new line of turbines for our team.

Manufacturers of towers will be required. One potential is to modify agricultural grain bins using similar construction techniques to suit the solar towers.

PV developers and installers are asked to contact Conserval to participate in the demonstration and work with our team for ongoing projects after the demonstration has been completed.