SopoLite™ MicroCSP™

Mobile Solar Testing System

SOPOGY - THE TOTAL SOLAR SOLUTION

Sopogy Inc. is a Hawaii–based company with a mission to invent, manufacture and sell the world's most innovative and affordable concentrating solar power collectors. Our company strives to become part of the solution to global problems. These issues include climate change, energy security and sustainability.

Sopogy is dedicated to helping our customers achieve their renewable energy goals. Using our solar energy concentrator we help maximize energy production while minimizing costs.

ADVANTAGES

- Reduce Your Energy Cost
- Create Revenue Streams
- Lower Emissions
- Qualify for Renewable Energy Certificates
- Benefit from Tax Credits and Incentives

SOPOLITE GOAL

The goal of SopoLite is to deploy to prospective project sites and capture the solar and weather data of that area. This information will be correlated against modeled data from national and global resources and used to customize an energy solution for our customers.

MicroCSP Solutions By:

Figure 1: SopoLite™ System

Overview

Sopogy has pioneered the concept of MicroCSP™ bringing concentrated solar power to industrial and utility facilities. These systems have a small footprint and lightweight design while providing highly efficient electrical and thermal power generation from a renewable and sustainable fuel, solar energy.

SopoLite™ is a mobile system which can be used for determining the quality of the solar resources at a particular site. In addition, it can be used to test the thermal performance of customized Sopogy collectors at that particular location.

The system consists of a scaled down version of Sopogy's parabolic trough that is able to follow the sun from east to west during the course of the day. As in a typical solar field, a mineral oil circulating through the system gains temperature as the parabolic trough is focused at the sun with a proprietary tracking system. The heat generated in this fashion is typically used for electricity generation, air conditioning and process heat applications. On the SopoLite™, various sensors measure the temperature gain, the flow velocities, solar irradiance, wind speed, rainfall and ambient temperature. These parameters are used to determine the thermal output of the collectors. The sophisticated controls allow remote access to evaluate all relevant data through an interactive graphic interface.

Features and Benefits

Features:

- Powered by renewable solar energy
- No emissions
- Automated system control and monitoring
- Produces temperatures as high at 392° F (200° C)
- Mobile system to easily test feasibility of site locations

Benefits:

- No fossil fuel payments
- Federal Solar Tax Credits
- Federal Accelerated Depreciation
- State Tax Credits
- Storm Storage
- One energy input, multiple energy outputs

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MicroCSP™ System Applications

Power Generation

Thermal energy generated by using concentrated MicroCSP™ generate high temperature working fluid to drive either an organic rankine cycle power block that includes turbine and generator or other thermally driven engines.

Solar Air Conditioning

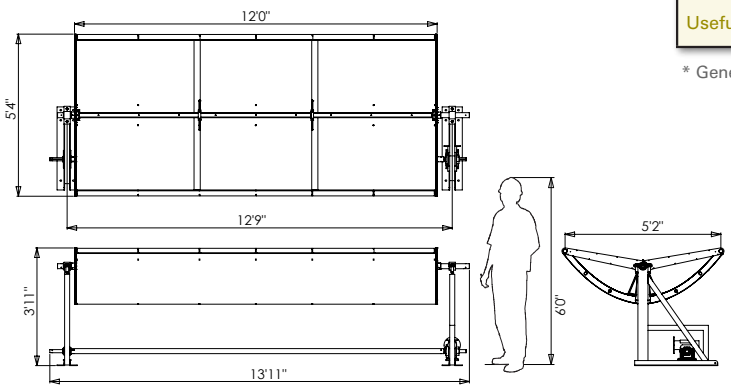
In many regions air conditioning can account for more than 50% if electrical usage for over 6 months of the year. With solar assisted air conditioning, thermal energy is used to drive the cooling process, rather than electrical compressors. The most commonly available machines used for solar cooling are absorption chillers.

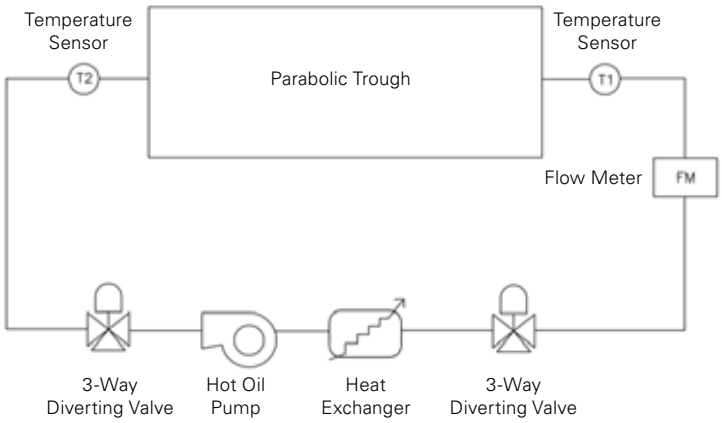
Process Heat

Significant opportunities exist for MicroCSP™ to provide high temperature thermal heat in the range of 200-350° F to supplement or replace existing process heat needs and reduce demand for natural gas. The market for such natural gas offsets is particularly promising in rural, agricultural and industrial sectors – including food processing operations, where use of steam boilers is prevalent.

Hybrid System

For customers with both power and process heat needs on site, a hybrid MircroCSP™ system can be installed to meet this dual power-and-heat generation requirement and greatly improve the return-on-investment through economies of scale. Such systems would entail a secondary loop coming off the power-generating unit to utilize the heat remaining in the working fluid. Secondary applications could include water heating, agricultural drying or other functions that require heat up to 220° F.





COLLECTOR - General Data*

Description	Units (Metric)	Units (Standard)
Collector Length	3.657 m	12 ft
Collector Width	1.524 m	5 ft
Total Collector Area	5.574 m^2	60 ft^2
Collector Reflective Area	5.07 m^2	54.6 ft^2
Heat Collection Element O.D.	25.4 mm	1 inch
Heat Transfer Fluid Capacity	1.288 liter	0.34 gal
Recommended Flow Rate	22.7-45.4 liter/min	6-12 gal/min
Operating Temperature Ranges	50-260° C	122-500° F
Collector Weight	68 kg	150 lb
Focal Length	304.8 mm	12 inch
Ambient Operating Temperatures	-10 to 50 ° C	14-122 ° F
Maximum Wind Speed (stowed)	161 km/h	100 mph
Maximum Wind Speed (tracking)	54 km/h	33 mph
Useful Life Expectancy	30 + years	30 + years

* General data subject to change

OPTICAL EFFICIENCY

Description	Value
Receiver Absorptivity	0.92
Mirror Reflectivity	0.91
Receiver Emittance (@ 400° C / 752° F)	0.23

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