

Power Generation

Holaniku Solar Farm · Keahole, Hawaii · USA · 1,000 MicroCSP Collectors · 2 MW Thermal Energy Generation · 3.8 Acres

ADVANTAGES OF MICROCSP TECHNOLOGY FOR POWER

- Projects in the 2-50MW size range are easier and faster to permit and approve, obtain grid connection and financing - reducing some of the risks associated with large CSP projects.
- With less land requirements, more project locations and opportunities for projects to be built close to existing transmission lines are possible.
- Systems can be deployed relatively quickly and can contribute substantially to reducing carbon dioxide emissions.

MicroCSP technology is a smart redesign of the most commercially proven, bankable and mature CSP technology available: parabolic troughs

Overview

Micro-scaled Concentrated Solar Power (MicroCSP) is a member of the Concentrating Solar Power (CSP) technology family that has been redesigned for installation in smaller, modular projects. By reducing the traditional CSP trough to one-third of its size, MicroCSP technology can be cost-effectively deployed to on-site markets for distributed power generation or industrial and commercial applications such as air conditioning and process heating.

A Key Energy Alternative

As a key technology for enhancing energy security, MicroCSP is an economically attractive alternative to retail power and distributed fossil fuel markets. The modular systems can produce power on-site for power customers, including utilities and independent power producers (IPPs), where systems can be connected into the existing grid with minimal interconnection costs.

MicroCSP's role in mitigating rising energy costs offers not only a solution to these challenges, but also an exciting opportunity for investment, innovation, and job creation.

MicroCSP for Power Generation

MicroCSP is a sustainable method of electric generation fueled by the heat of the sun - an endless source of clean, free energy. Commercially viable and quickly expanding, the MicroCSP system uses trackers to follow the sun and reflectors and optics to concentrate and intensify the thermal energy from the sun into a heat transfer fluid. The transfer fluid is then passed through a turbine to create power. When combined with thermal storage capacity, the system can buffer clouds and produce power at night - offering reliable electricity that can be dispatched when needed to meet base-load demands.

Power Generation » Specifications

APPLICATION EFFICIENCY

SOPOGY » POWER GENERATION		
Direct Solar Radiation on a Clear Day*	850 W/m ²	269 Btuh/ft ²
Solar to Thermal Efficiency, Collector Only**	56.5%	
Available Thermal Energy for Process after Losses	480 W/m ²	
Thermal to Electric Efficiency:	20%	
Average Output per Panel:	0.688525349 kW _e	
Output Temperature Range:	200 - 518°F	93 - 270°C

DIMENSIONS/PANEL CAPACITY

SOPONOVA 4.0		
Length	3.67 m	12.04 ft
Width	2.09 m	6.86 ft
Center to Center Spacing	3.66 m	12 ft
Actual Area	7.68 m ²	82.5944 ft ²
Reflector Aperture Area	7.17 m ²	77.16 ft ²

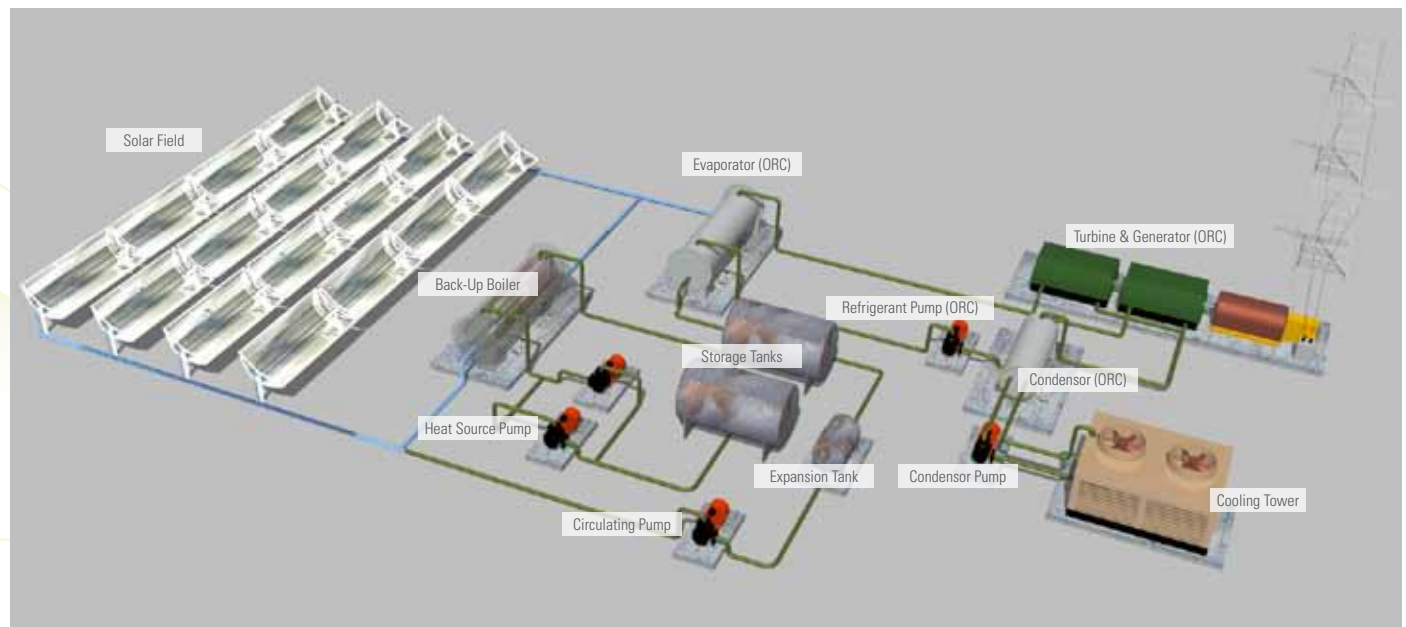
APPLICATION DATA

SOPONOVA 4.0						
Power (KW)	500	1,000	2,000	5,000	10,000	
Number of Panels	784	1,512	2,968	7,448	14,840	
SPACE REQUIREMENTS (ONLY SOLAR FIELD AREA)						
square feet	112,896	217,728	427,392	1,072,512	2,136,960	
square meter	10,488	20,228	39,706	99,640	198,530	
acre	2.59	5.00	9.81	24.62	49.06	
hectare	1.05	2.02	3.97	9.96	19.85	

* At zero degree incident angle

** Thermal losses estimated at 80°F ambient air temperature with wind speeds of 6mph

POWER GENERATION SYSTEM LAYOUT



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