

Honeycomb Solar Thermal Collector



What is this Technology?

A solar thermal collector generates hot water, which can be used for service water heating (SWH), space heating, or process heat. This product employs a “honeycomb” design that promises greater heat gain on the energy-collecting surface and thus higher efficiencies than traditional flat-plate or evacuated tube collectors. The design is also projected to work more effectively in diffuse light (during hazy or cloudy days) than other solar thermal collectors, making it particularly attractive in cold and temperate climate zones.

Why is GSA Interested?

EISA 2007 requires that 30% of GSA's hot water demand be met with solar hot water (SHW) if life cycle cost effective. This technology promises significantly shorter projected paybacks than the incumbent technologies for buildings with consistent hot water loads.



ENERGY EFFICIENCY Hot water heating currently represents 9% of the total energy consumed by GSA buildings. If it proves out, this technology has the potential to eliminate a significant portion of this SWH load.



COST EFFECTIVENESS This technology promises to be more cost effective than solar thermal collectors using incumbent technologies, particularly in colder climates and/or in locations with diffuse light. Preliminary modeling shows the potential for simple payback in less than 10 years.



OPERATIONS & MAINTENANCE This technology does not rely on vacuum, yielding longer estimated product lifetime and greater reliability than evacuated tube collectors. A component of this study will be to document any installation and operation issues, including those associated with ensuring the system does not overheat during low demand periods.



DEPLOYMENT POTENTIAL This study will provide guidance needed to prioritize its potential for deployment by GSA, should the technology prove out.

Adapted from a report by the National Renewable Energy Laboratory. The Green Proving Ground program, in association with a federal laboratory, is subjecting the honeycomb thermal solar collector to real-world measurement and verification in GSA buildings. Findings from that investigation will be available in late 2013 or early 2014.



Green Proving Ground Program

The Green Proving Ground program leverages GSA's real estate portfolio to evaluate innovative sustainable building technologies. The program aims to drive innovation in environmental performance in federal buildings and help lead market transformation through deployment of new technologies.