

Re-Arch: The Initiative for Renewable Energy in Architecture

Fact Sheet



Technology: FLAT PLATE SOLAR WATER HEATING PANELS

Common Uses:

Best for low heat applications such as heating domestic water, and infloor hydronic heat. Temperatures up to 180° F.

Siting Considerations:

Systems should face in a southerly direction, and have minimum shading between 9 am and 3 pm all year round. For optimum year round output panels should have a tilt angle equal to the sites latitude. Systems can be mounted on roofs, integrated into roof lines, as awnings, or mounted separate from buildings at ground level.

Size Considerations:

Panels come in varying sizes. Most common sizes are 8'x34 or 10'x4'. Custom sized panels are available from Midwest manufactures.

In the upper Midwest, one sq. ft. of solar panel will heat one gallon of water. For domestic water heating specify 20 sq.ft. of collector per household resident. Sizing for hydronic heating varies greatly and depends on building size, passive solar gains, thermal mass, and back up heating available (see resource list for more information).

Design Considerations:

Panels are dark brown or black, with tempered glass faces. Custom made panels can be building integrated, replacing existing roofing materials. Each 8'x 4' panel weighs approximately 110 lbs when filled (see manufacture materials for specifics).

System Costs:

Typical two panel system for heating water for residential uses costs between \$5,000 - \$7,000 installed. Federal tax incentives cover 30% of the cost of a residential system, capped at \$2000. Federal tax incentives cover 30% of a business system with no maximum cap. Federal tax incentives can not be used for space heating systems, or pools.

More Information:

More information on flat plate solar collectors and solar heating systems can be obtained from the following organizations:

Websites:

Solar Rating & Certification Corp (SRCC)

www.solar-rating.org

National Renewable Energy Laboratory

www.nrel.gov

Books and Resources:

Solar Hot Water Systems, Lessons Learned 1977 to Today

Tom Lane

www.ecs-solar.com

Solar Water Heating, a comprehensive guide to solar water & space heating
Systems

Bob Ramlow with Benjamin Nusz

www.arthaonline.com

This fact sheet was funded in part by an environmental assistance grant from the Minnesota Pollution Control Agency.

Other partners included:

- AIA Minnesota • College of Design • Center for Sustainable Building Research • Green Institute
- Midwest Renewable Energy Association • Minnesota Renewable Energy Society