

Solar Thermal Collector

PRODUCT DESCRIPTION

Basic Uses

The **Dawn Solar Thermal Collector (DS-T)** is an architecturally integrated system used to collect solar-heated water from roof or wall areas. Installed in either new construction or retrofit applications, the solar thermal energy collector can be used to deliver solar energy to a building to heat or pre-heat domestic hot water, or provide pool, space or process heating in residential or commercial buildings.

The solar thermal system uses Patent Pending Dawn Solar thermal technology closely coupled to roofing and siding materials available from many manufacturers. As solar thermal energy is collected, the building envelope is cooled by recirculating glycol through a closed loop and heat exchange system, reducing the building's heating and cooling costs. Process cooling can be achieved by off cycle operation utilizing the effects of night sky radiational cooling.

The Dawn Solar Thermal Collector (DS-T) should be considered whenever performance requirements demand solar water heating and architectural design criteria dictate building integrated systems. Energy savings depend on several project specific factors and can be predicted by computer modeling. Factors that influence system effectiveness are the energy distribution systems in the building, length of heating season, utility rates for heating, system slopes, orientation and exterior finishes.

In all instances the collector is assembled on site and installed on existing or new structures in conformance with local requirements.

The collector is supplied complete with all materials necessary for integration into a building's weather tight skin. The solar thermal system is terminated at a multiport manifold, ready for connection to circulating and storage systems custom designed for each project.

Applications are limited only by the designer's creativity.

Ideal applications include:

- * Roofing, siding and curtain walls
- * Shade structures, car ports
- * Retail awnings
- * Residential
- * Industrial
- * Hospitals
- * Schools and gymnasiums
- * Arenas
- * Laboratories
- * Maintenance facilities
- * Government and military buildings
- * Warehouses
- * Theaters and conference centers
- * Restaurants

Major system components may include:

- * DS-T collection system
- * Solar differential controls
- * Solar storage tank, expansion tank and misc. hardware
- * Temperature sensors, circulators, manifolds
- * Trim and closures

Composition and Materials

The DS-T collection system designs vary from region to region and may incorporate some or all of the following components:

1. DS Thermal Snaplock Purlin: Purlins manufactured to Dawn Solar specifications from 24 gauge galvanized or Galvalume[®] coated steel in conformance with ASTM A792, AZ50, 50 ksi yield point, 52 ksi tensile strength. Other materials such as copper and stainless steel are available upon request.

2. DS Pex Tubing: Tubing will be made of cross linked polyethylene that meets the requirements of ASTM F 876, F 877, CSA B 137.5 and PPI TR-3, and be certified to NSF Standard 14 and comply with the requirements of DIN 4726.

3. Reflective Insulation System: This will consist of a layer or layers of aluminum foil separated by layers of a foam insulation material manufactured to Dawn Solar System specifications.

4. Thermistors: Multiple units of a 1K type bolt on thermistor with attached leads will be included. Quantities will vary as a function of overall system size.

5. Manifolds: Supply and return manifold sets will be furnished as part of each kit. Manifold sets may include actuators, balancing valves, flow rate indicators, pressure test assembly and related accessories.

Sizes and Profiles

The overall thickness of the DS-T Collector is 1.00". Large scale implementations are easily achieved by scaling the system to meet the project requirements.

Limitations

The performance of solar energy systems are heavily dependant upon latitude and related weather conditions and are not designed to entirely replace conventional heating systems. Consult local codes for applicable standards in all applications.

TECHNICAL DATA

Applicable Standards

Solar Thermal Collector System: The underlying technology for building integrated solar thermal collector applications has been the subject of extensive testing by the Building America Program of the U.S. Department of Energy and the Florida Solar Energy Center (FSEC), a research institute of the University of Central Florida. Certified product performance data that can be used for applications modeling is on file at FSEC and the Solar Rating and Certification Corporation (SRCC).

Solar Thermal Collector

Exterior Finish Materials

DS-T collectors can be installed under the following exterior finishes:

- Standing seam roofing
- Metal siding
- Metal roofing shingles
- Metal roofing tiles
- Cementitious roofing tiles
- Ceramic roofing tiles
- Cement fiber tiles
- Slate roofing

Environmental Considerations

The Dawn Solar DS-T Solar Collection System is a renewable energy collection system that benefits the environment by:

- Harvesting 150-300 BTU's per installed square foot (per standard test day) or 6-18kWH-T (Thermal equivalent) depending on load and configuration.
- Collecting solar thermal energy that is suitable for water and space heating.
- Offsetting fossil fuel use, reducing a building's carbon footprint.
- Utilizing metal components that contain recycled material and are recyclable.
- Projects with this technology may qualify for LEED credits in renewable energy, optimizing energy performance and other areas.

Installation

The DS-T collector is installed on top of roofing underlayment or other water resistant builder's fabrics that have been installed over a structure's plywood sheathing, all to be in conformance with local codes and conditions. The collector is site-assembled from components delivered in kit form to the project site. A typical 500 square foot installation can be accomplished in 8-10 man-hours. The configuration of the system will accommodate existing penetrations in roofs and openings in walls. No cranes or rigging are required. Installation manuals or project-specific installation drawings are available. Contact your local dealer for information.

AVAILABILITY & COST

Availability

The DS-T system is available through dealers and product distributors.

Cost

System costs are highly competitive with conventional solar thermal collector modules when compared on a "Lifecycle cost per delivered BTU" basis. Significant economies are achieved due to integrations into building structures. Maintenance costs are lower than modular collector products due to system simplicity.

Contact Dawn Solar dealers or distributors for current pricing on systems. **Many state and federal incentives are available.**

Warranty

The solar thermal system carries the Dawn Solar System 25-year Warranty.

Maintenance

Dawn Solar DS-T collectors are virtually maintenance free. Periodic testing of the glycol fluids in the closed loop solar thermal collector is required.

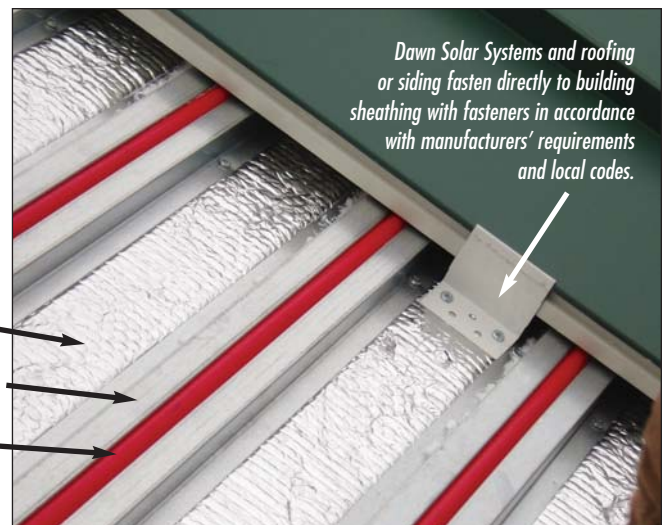
Technical Services

Complete technical information and literature and design services are available from Dawn Solar Systems, Inc.

DS Radiant Reflective Insulation

DS Thermal Snaplock Purlin

DS Pex Tubing



Dawn Solar Systems, Inc. 183 Route 125, Suite A-7, Brentwood, NH 03833

Phone: 603-642-7899 • Toll Free: 866-338-2016 • Fax: 603-658-7912 • E-mail: info@dawnsolar.com