oventrop

Solar Thermal Planning Worksheet

Date:_____/_____/_____

Preliminary Report By: _____

Project Name _____ **Address**_____

Installation Location or City _____ **State** _____

Contractor or Agent:	
Address:	
Telephone / Fax:	
Email:	
Project: ☐ New Construction ☐ Remodel **Notes:**	

Application

☐ Domestic Hot Water (DHW) ☐ Space Heating ☐ Commercial Hot Water

☐ Pool / Spa ☐ Other _____

Approximate Installation Area Available for Solar Collectors

Roof area 1: _____Width in ft. _____ Length in ft. (height on pitch roof)

Orientation: ☐ South +/- 10° ☐ South +/- 30° ☐ South-East ☐ South-West

Roof area 2: _____Width in ft. _____ Length in ft. (height on pitch roof)

Orientation: ☐ South +/- 10° ☐ South +/- 30° ☐ South-East ☐ South-West

Roof area 3: _____Width in ft. _____ Length in ft. (height on pitch roof)

Orientation: ☐ South +/- 10° ☐ South +/- 30° ☐ South-East ☐ South-West

*Solar Collectors should be oriented within 30° east or west of true south.

Solar Array Mounting

☐ Asphalt Shingle Roof ☐ Clay Tile Roof ☐ Flat Roof

☐ Standing Metal Seam Roof ☐ Ground Mounting ☐ Other

Roof Inclination

☐ Flat roof ☐ approx. 25° (6/12) ☐ approx. 30° (7/12)

☐ approx. 45° (12/12) ☐ other angles:_____

*Evacuated Tube Collectors installed in snowy regions must be mounted at 50° or higher.

Shading

☐ none ☐ partial ☐ large buildings / trees

Solar Pathfinder Analysis ☐ yes ☐ no If yes, please include.

*When assessing shading, be aware of mechanical equipment, parapet walls, chimneys, etc.

Mechanical Room Location

☐ Basement ☐ Ground floor ☐ Roof ☐ other _____

Mechanical Room Area Available for Solar Tanks

_____Width in ft. _____ Length in ft. _____ Height in ft.

_____Width in ft. _____ Length in ft. _____ Height in ft.

One Way Pipe Length From Mechanical Room To Collector Installation

_____ ft.

Vertical Height from Mechanical Room to top of collector installation

_____ ft.

DHW Load

Building Type:

☐ residential ☐ apartment ☐ office ☐ restaurant ☐ hotel

Other: _____

Number of people for occupancy: _____

Hot water consumption in gallons per person per day: _____gallons
Typically household 20 - 30 gal./ person/ day.

If available, total gallons per day average hot water consumption: _____gallons

Building is occupied: ☐ every day ☐ 5 days per week ☐ seasonally

Any comments on hot water load variations: _____

_____

Cold water temperature: _____°F Hot water design temperature: _____°F

Desired Annual Solar Contribution _____ %
*For DHW it is suggested to choose an annual solar contribution between 30 – 65%.

Back-Up Water Heater

☐ indirect boiler ☐ gas ☐ electric ☐ tankless / wall hung

Volume of back-up water heater: _____ Gallons

Boiler / Water Heater efficiency _____ % Fuel type _____
Fuel Cost _____

Hot Water Recirculation? ☐ yes ☐ no Diameter of recirc pipe ____
If yes, estimate length of recirculation loop: _____ft.

Recirculation timer in use? ☐ yes ☐ no
If yes how many hours run time per day: _____hrs/day

Space Heating Support

Building Heat Load (from heat loss analysis): _____ Btu/hr

Outdoor design temperature used in heat load equation: _____ °F

Indoor setpoint temperature used in heat load equation: _____ °F

Heat Distribution: ☐ radiant floor Is radiant floor heating slab on grade? _____

☐ radiant panels ☐ baseboard ☐ radiators ☐ forced air

Design Water Temperature: _____ °F (supply) _____ °F (return)

Desired Annual Solar Contribution _____ %

*For space heating it is suggested to choose an annual solar contribution between 20 – 60%.

Boiler efficiency _____ % Fuel type _____ Fuel Cost _____

Notes on Space Heating System: _____

_____

_____

_____

_____

Notes on solar space heating

Solar energy availability is related primarily to cloud cover and the number of daylight hours. Wintertime solar peak performance collection hours are the lowest for the year. Collector efficiency is related primarily to outdoor temperature. As the temperature of the outdoor air drops the solar collector becomes less efficient. Because of this relationship, solar thermal collectors tend to perform best at the beginning and ending of the heating season and marginally at the height of the heating season.

Pool Heating

Pool Use: ☐ Year round ☐ May - September ☐ June - August

Desired Pool Temperature: _____ °F

Pool Dimensions: _____length _____width _____average depth

Location: ☐ indoor If indoors, pool room temperature: _____ °F

If indoors, pool room humidity: _____%

☐ outdoor If outdoors, is pool wind sheltered: yes_____ no_____

If outdoors, is pool dark colored: yes_____ no_____

Pool Cover: ☐ yes ☐ no

If yes, estimated hours cover is used per day: _____hrs/day

Back-Up Heating: ☐ none ☐ gas ☐ lp ☐ electric

Desired Annual Solar Contribution _____ %

*For pool heating it is suggested to choose an annual solar contribution between 30 – 65%.

Boiler efficiency _____ % Fuel type _____ Fuel Cost _____

Solar System Performance disclaimer:

Solar collector performance depends on several factors. These factors include, but are not limited to: ambient temperature at the location of the solar collector, required operating temperature of the working fluid in the collector, incoming solar radiation (energy), geographical location of the collector, shading of the collector, and inclination angle of the collector.
The difference in temperature between the working fluid and the ambient temperature drives the heat loss of the solar collector. This temperature difference has the greatest influence on the solar collector's thermal efficiency. This efficiency measures the solar collector's ability to convert incoming solar radiation to usable heat in the form of a hot working fluid. This hot working fluid can be used for any application.
The availability of solar radiation (energy) is dependent on weather, time of year, site shading, and collector inclination angle. Throughout the year, the distance of the sun from the horizon will change from the longest on the first day of summer to the shortest on the first day of winter. This translates to a 47-degree change in the sun's angle with respect to the collector throughout the year. The optimal inclination angle to minimize this change and maximize year-round performance is equivalent to the latitude at which the collector is located. Shading at the collector site determines the amount of available solar radiation to which the collector is exposed.
Understanding that all of the above factors affect the performance of the solar thermal collector, one cannot make a guarantee of collector performance.

Oventrop Corporation
PO Box 789
East Granby, CT 06026
(860) 413-9173 fax (860) 413- 9436