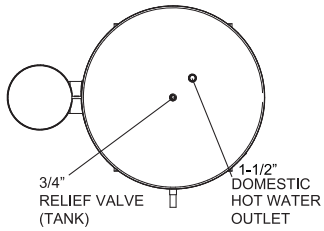
Strato-Therm+ Dimensions and Specifications



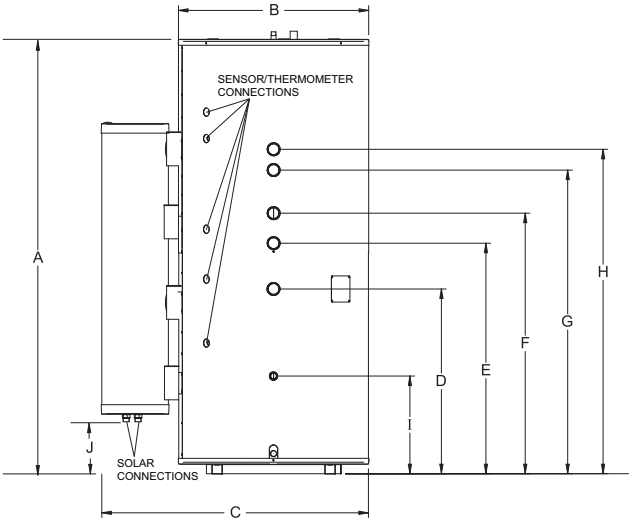


Chart Key

A= Overall Height
B= Tank Diameter
C= Overall Width
D= Low Temperature Return
E= High Temperature Return
F= Heat Source Out
G= Space Heat Supply
H= Heat Source In (Hot)
I= Cold Water Inlet
J= Solar Heat Exchanger Supply and Return

Model Number	Tank Volume	A	B	C	D	E	F	G	H	I	J	Solar Conn.	Shipping Weight
STU150	125	75-3/4″	28″	44-1/4″	23″	30-1/2″	35″	52-3/4″	57″	14″	4-3/4″	3/4″	800
STU200	175	79-3/4″	32″	48-1/4″	24-3/4″	35″	40-1/2″	58-1/4″	62-3/4″	15″	5-1/2″	3/4″	950
STU257	225	91-3/4″	34″	50-1/4″	36-1/2″	45-1/2″	51″	65-1/2″	69-3/4″	19″	9-3/4″	3/4″	1450
STU350	325	91-1/4″	40″	56″	38-3/4″	48-1/2″	54-3/4″	63-3/4″	68-1/4″	20-1/2″	11″	3/4″	1750
STU423	400	104″	40″	56″	42-1/4″	54″	60-1/4″	78-1/2″	82-3/4″	20-1/2″	11″	1″	1850
STU504	475	91-3/4″	46″	62″	35-3/4″	44-1/2″	51-1/4″	62-3/4″	67″	22-1/4″	12-3/4″	1″	2125
STU650	625	93-1/4″	52″	71-1/4″	39″	46-3/4″	53-1/4″	63-1/2″	68″	24-1/4″	14-1/2″	1-1/4″	2300
STU752	725	105″	52″	71-1/4″	40-1/2″	52-1/4″	59-3/4″	73″	77-1/4″	24-1/4″	14-1/2″	1-1/4″	2725
STU940	900	129-1/4″	52″	71-1/4″	51-1/4″	65-1/4″	72-3/4″	91-1/4″	95-3/4″	24-1/4″	14-1/2″	1-1/4″	3400

NOTES: *All dimensions in inches. Domestic water connections are 1-1/2" NPT. Space heating connections are 2" NPT.*

Performance Chart

Stored Water Temp.	DHW Output Temp.		GALLON CAPACITIES 150	200	257	350	423	504	650	752	940
180°F	140°F	Continuous Draw Rating (GPM)	16	19	19	19	27	28	31	31	31
		BTU/Hr input of Boiler for DHW	675,925	802,661	802,661	802,661	1,140,624	1,182,870	1,303,606	1,303,606	1,303,606
		First Hour Rating Gallons	1,035	1,244	1,365	1,550	1,690	1,816	2,036	2,042	2,072
180°F	115°F	Continuous Draw Rating (GPM)	23	27	27	27	36	36	36	36	36
		BTU/Hr input of Boiler for DHW	685,860	805,146	805,146	805,146	1,073,529	1,073,529	1,073,529	1,073,529	1,073,529
		First Hour Rating Gallons	1,516	1,774	1,965	2,223	2,451	2,569	2,737	2,869	3,011
140°F	115°F	Continuous Draw Rating (GPM)	15	18	18	18	26	27	28	28	28
		BTU/Hr input of Boiler for DHW	447,304	536,764	536,764	536,764	775,326	805,146	834,967	834,967	834,967
		First Hour Rating Gallons	997	1,125	1,250	1,395	1,436	1,783	1,952	1,983	2,032
		Standby By Loss °F /Hr Loss	0.61	0.52	0.44	0.39	0.31	0.3	0.27	0.25	0.23

*All models standard with a 5 year Limited Warranty Against Tank Failure. All parts are warranted for one year.**

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Strato-Therm+™

- Solar Thermal Storage Tank
- Indirect Water Heater
- Hydronic Buffer Tank
- 9 Models - 125 to 900 Gallon Capacities
- ASME Sec. VIII U Stamped Storage Vessel

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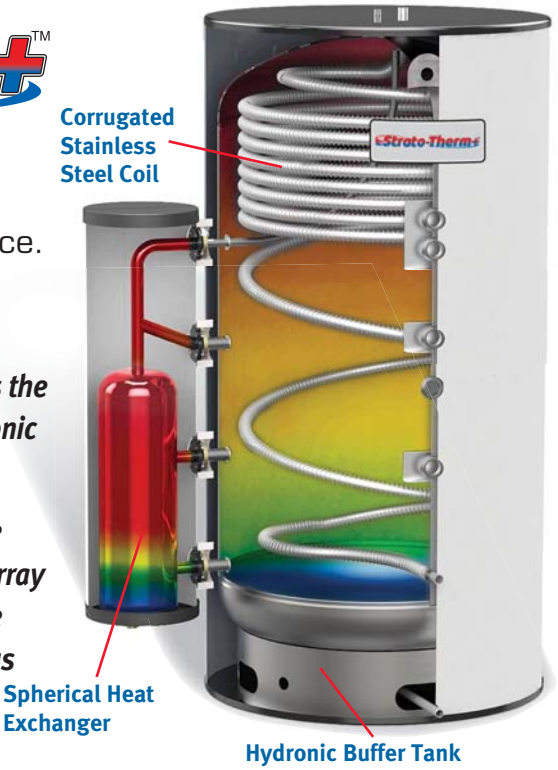
Strato-Therm+™

Solar Tank Innovation

Strato-Therm+ maximizes heat transfer in a solar thermal system and increases collector performance.

The Strato-Therm+ provides three functions, it acts as a storage vessel for solar thermal systems, an indirect water heater and a buffer tank for hydronic applications. The Strato-Therm+ utilizes the natural buoyancy of heated water to efficiently stratify the hydronic heating water that is stored within the tank.

A solar heat exchanger is connected at four points to the storage vessel which allows for the water heated by the solar collector array to naturally heat the tank. A corrugated stainless steel coil in the storage vessel houses potable water and acts as a instantaneous water heater for generating domestic hot water.



Stratification Process

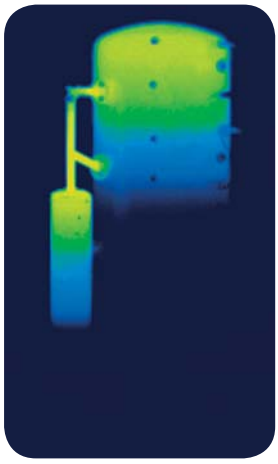
The Strato-Therm+ uses the natural stratification of hot and cold water to create the layering effect within the external heat exchanger and storage vessel. Since hot water is less dense than cold water it rises to the top of the storage vessel while the cooler water settles to the bottom of the vessel.

As solar thermal energy is added to the external spherical heat exchanger the stored water will follow the laws of physics and begin to stratify in the tank. As heat is added, the water will begin to "layer" with the heated water rising to the top and the cooler water settling to the bottom. The external spherical heat exchanger utilizes four distinct connection points to drive the stratification process in the storage tank.

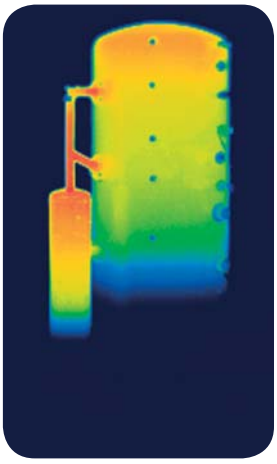
The solar thermal system, domestic hot water system, and space heating system all benefit by keeping the tank stratified. The hot water in the top of the tank permits domestic hot water to be generated instantaneously to meet the temperature demand through the corrugated stainless steel coil and allows for the space heating system to access the hottest possible water for distribution to the heat emitters.

The cooler water in the bottom of the tank allows for greater collector efficiency and greater opportunity for solar thermal heat generation.

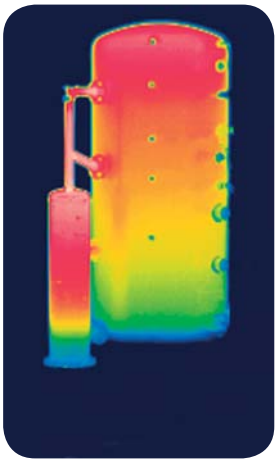
30 Minutes
After 30 minutes of Solar gain the upper portion of the tank begins to heat.



1 Hour 15 Minutes
At the 1 hour 15 minute mark you can begin to see the tank stratification layers begin to form.



2 Hours 5 Minutes
At the 2 hour 5 minute mark almost the entire tank is uniformly stratified.



2 Hours 50 Minutes
After 2 hours and 50 minutes of solar gain the entire tank is uniformly stratified.

Sizing Worksheet...

The Strato-Therm+ acts as a solar thermal storage tank, an instantaneous water heater, and a hydronic heating buffer tank. When sizing the back-up heat source it is important to remember that the heat source must be sized appropriately to meet 100% of the space heat demand and 100% of the domestic hot water demand simultaneously. *The simple equation below will aid in sizing the back-up heat source.*

Required Heat Source =
BTU/Hr Output Required to Meet Building Demand + BTU/Hr Output Required to Meet DHW Demand.

BTU/Hr Output required to Meet Building Heating Demand =
The amount of heat required to meet the space heating load at design conditions.

BTU/Hr Output Required to Meet DHW Demand =
The Amount of heat required to heat the potable domestic water from 55°F to the desired delivery temperature.
The performance chart on page 4 of this literature will give the BTU/Hr requirements to meet DHW demand for given parameters.

Example...

The space heating load at the design outside air temperature is 1,000,000 BTU/Hr and the maximum domestic hot water demand at any given time is 500,000 BTU/Hr.

Required Heat Source = 1,000,000 BTU/Hr+500,000 BTU/Hr
Required Heat Source=1,500,000 BTU/Hr

How it Works...

1. Solar Thermal energy is transferred to the storage vessel by way of a copper tube spherical heat exchanger.

2. As domestic water is drawn through the stainless steel corrugated coil it is indirectly heated. An ASSE mixing valve ensures that the domestic water delivered is at the proper temperature. (ASSE mixing valve - by others)

3. A back-up hydronic heat source such as a KNIGHT Boiler ensures that the storage vessel is at a sufficient temperature to simultaneously generate domestic hot water and meet hydronic heating demands.

4. As demand for space heating is initialized, the Strato-Therm+ acts as a hydraulic separator, decoupling the system demand from the boiler output. Decoupling the system and boiler demands allows for extended boiler on times and constant system delivery temperatures.