

# Free Hot Water Engineering Report



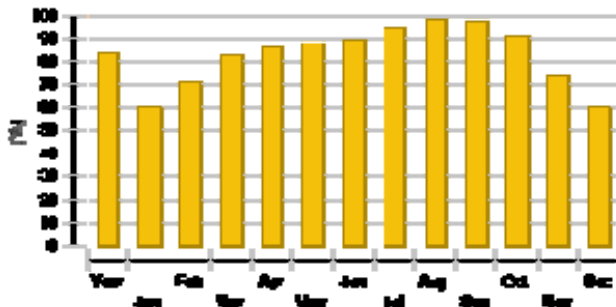
## System overview (annual values)

Total system energy consumption/ demand	606,966.3 kBtu
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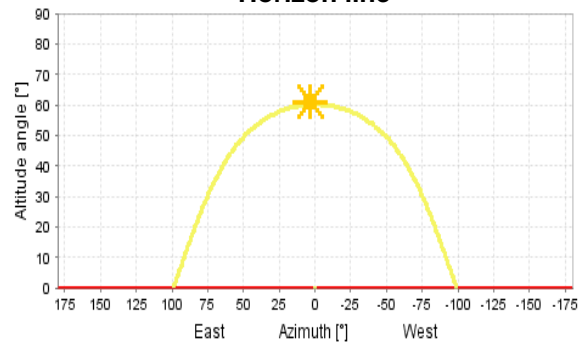
## Overview solar thermal energy (annual values)

Collector area	1,826 ft <sup>2</sup>
Solar fraction total	82.7%
Total annual field yield	563,703 kBtu
Collector field yield relating to gross area	309 kBtu/ft <sup>2</sup> /Year
Collector field yield relating to aperture area	340 kBtu/ft <sup>2</sup> /Year
Max. fuel savings	555,636.3 ft <sup>3</sup> : [Natural gas H]
Energy savings	563,702.8 kBtu
Reduction in CO2 emissions	84,348.1 pound

Solar fraction: fraction of solar energy to system



Horizon line



## Meteorological data-Overview

Outdoor temperature 24h	61.9 °F
Annual global irradiance	550.2 kBtu/ft <sup>2</sup>
Annual diffuse irradiance	194.1 kBtu/ft <sup>2</sup>

Collector field	Free Hot Water 7000 Series	
Data Source		SRCC
Number of collectors		66
Number of arrays		9
Total area	ft <sup>2</sup>	1,826.48
Total aperture area	ft <sup>2</sup>	1,659.537
Tilt angle	°	45

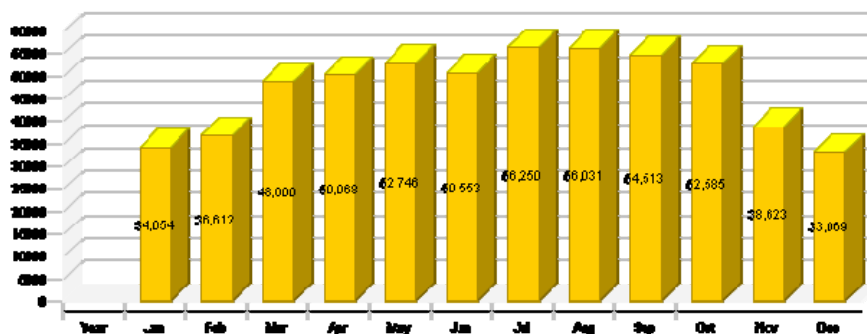
Orientation	°	South
Collector field yield	kBtu	563,702.8

<b>Hot water demand</b>	<b>Constant</b>	
Withdraw volume	gal/d	3,000
Temperature setting	°F	120

<b>Solar loop</b>		
Fluid mixture		Propylene mixture
Fluid concentration	%	20
Fluid domains volume	gal	199.5
Pressure on top of the circuit	psi	58.016

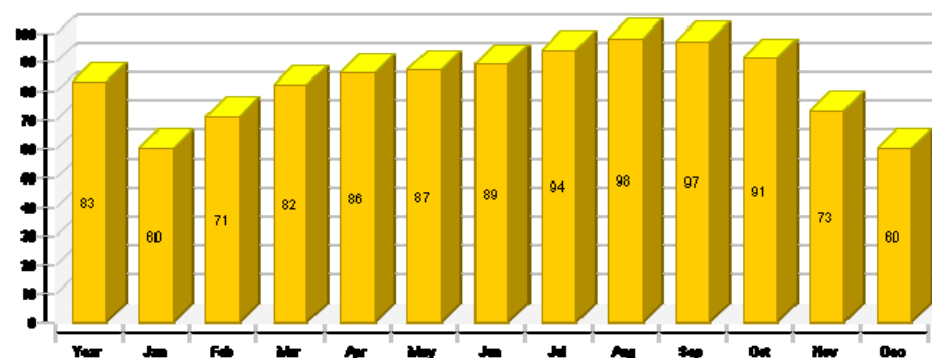
Solar thermal energy to the system [Qsol]

kBtu



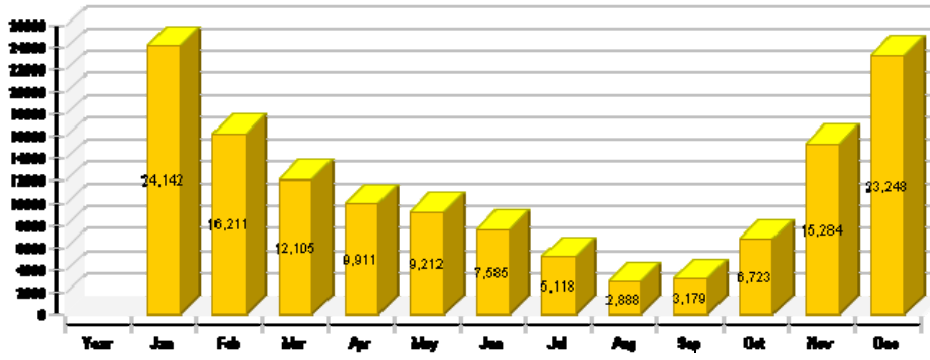
Solar fraction: fraction of solar energy to system [SF<sub>n</sub>]

%



Total fuel and/or electrical energy consumption of the system [E<sub>tot</sub>]

kBtu



Collector field  
Daily maximum temperature [ °F]

