

Chromasun Heat Pump Energy Solution:

Base-load Supply of Domestic Hot Water and Chilled Water



CHROMASUN

Technology Basis

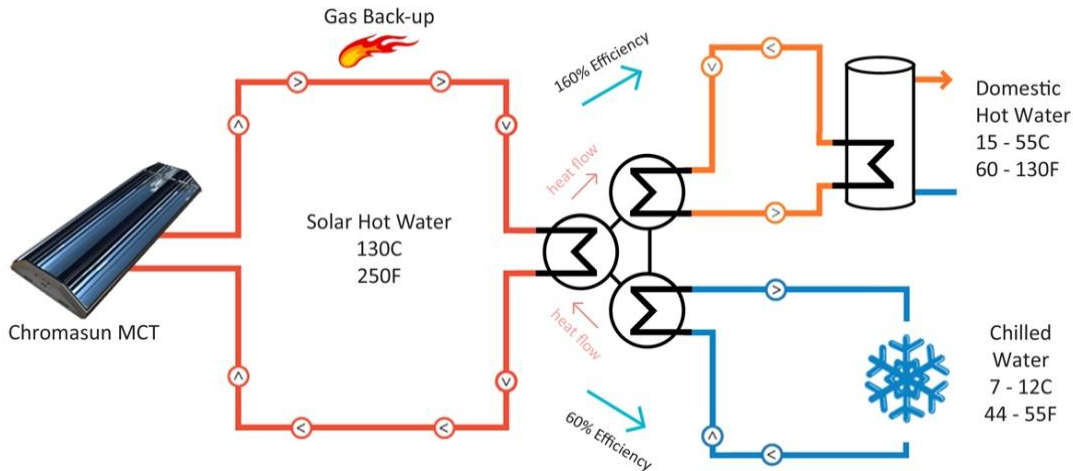
Solar thermal currently produces either chilling or hot water – one or the other. The Chromasun Heat Pump Energy Solution is able to provide simultaneous heating and chilling which equates to more than 3X the energy than competing technologies from the same roof area. The result is a more than twice as much value for the customer and an impressive ROI.

When coupled with Chromasun’s proven Micro-Concentrator (MCT) Technology, the Heat Pump achieves an efficiency of 160% in the production of domestic hot water (DHW) and 60% efficiency in the production of chilled water (CHW). The combined efficiency is therefore 220%. The key is the MCT’s unique ability to consistently deliver the 250°F temperature required by the Heat Pump.

A Chromasun Heat Pump Energy Solution also combines the use of a back-up boiler that while 85% efficient, achieves a 135% efficiency for DHW and 50% efficiency for CHW when combined with the heat pump. This 185% efficiency provides the customer with additional savings when the solar resource is unavailable.



Example Heat Pump Deployment in California



Sizing Options

System	Refrigeration Tons	MCT Units	Equivalent Boiler	Daily DHW	Daily CHW	Annual Gas Savings	Annual Electrical Savings
	RT	#	MBH	GPD	GPD	Therms	kWh
HP 25	25	75	500	32,500	70,000	42,500	170,000
HP 50	50	150	1,000	65,000	140,000	85,000	340,000
HP 100	100	300	2,000	130,000	280,000	170,000	680,000
HP 200	200	600	4,000	260,000	560,000	340,000	1,360,000

About Chromasun

Founded in 2008, Chromasun is a leading developer and manufacturer of rooftop friendly high performance solar solutions. Chromasun’s unique MCT HT solar collector provides high grade thermal energy, but in a familiar flat panel format with no external moving parts. The MCT HT is designed to drive high performance air-conditioning absorption chillers and other industrial process heat applications. It is the most space efficient solar technology available and can produce more energy per unit of roof area than any competing technology. As a leader in the space, the Chromasun team of engineers and professionals have decades of experience in utility scale solar, air-conditioning engineering, product development and manufacturing.