



GOOD ENERGY FOR
BREWERY HYBRID SOLAR

SAVE ON HEATING
REDUCE EMISSIONS
IMPROVE BRAND VALUE





GOOD ENERGY GOOD BREWS

BREWERY HEATING SOLUTIONS

BETTER HEAT FOR YOUR BEER AND FOR THE PLANET

Breweries require heat - lots of heat, reliably, consistently, and often at high temperatures. Brewery owners looking to save on heating costs, or exposure to variable energy prices, face a challenge: **How can I improve profits and sustainability without disrupting my finely-tuned operations?**

SunDrum Solar provides a solution. Our suite of technologies combines **photovoltaic solar, solar thermal, and heat pump technology** into integrated systems that provide **high-volume, high-quality, consistent & reliable heat** at a cost that saves brewery owners thousands of dollars over time.

IMPACT

SunDrum Solar substantially reduces the cost of heating for food processing facility operations compared to natural gas, propane, or electrical resistive heating. A SunDrum Solar system improves the sustainability of your facility operations while increasing profits by thousands each year.



BENEFITS FOR BREWERIES

SunDrum Solar solutions provide the heat you need - when, where, and how you need it - at an affordable, predictable price while enhancing the processes you already use and supporting your brand and community.



Spend less on heating

Delivers heating at a lower lifetime cost than natural gas, propane, or electricity - improving profitability



Reduce heating cost variability

Replaces highly variable fossil fuel costs with a single, predictable fee that helps you plan for the long-term



Take advantage of incentives

Offers federal and state energy rebates to offset more than 40% of the cost of a well-qualified system

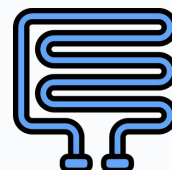
HOW DOES SUNDRUM SOLAR WORK?



PV Solar



Solar Thermal



Heat Pump

SunDrum Collectors mount directly behind conventional photovoltaic (PV) panels. A heat transfer fluid (propylene glycol) moves heat from the panels to an integrated heat pump to provide water heating.

When the sun is bright, the sunlight on the panels provides a direct source of heat for high-temperature, continuous water heating.

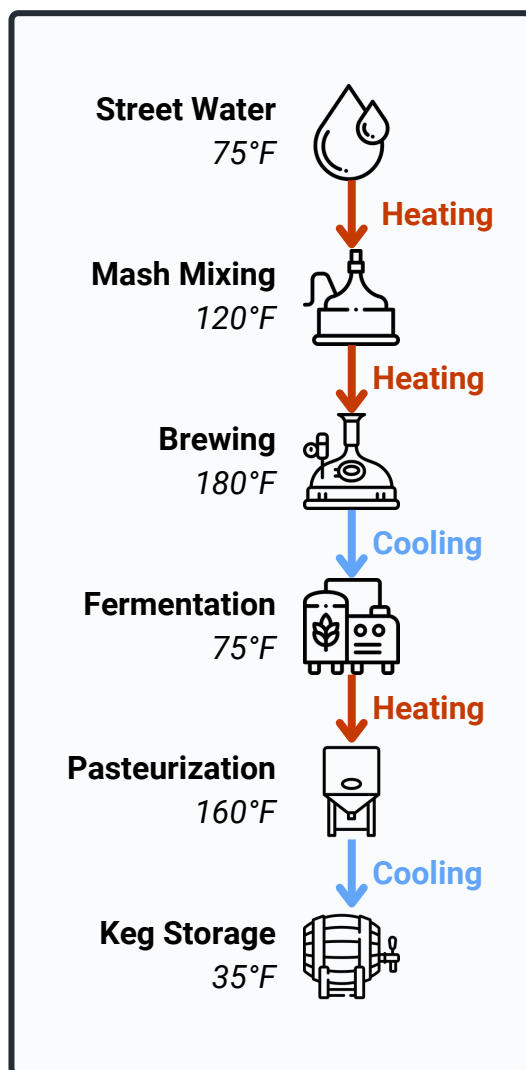
When the sun is dim, the integrated heat pump pulls heat from the surrounding air, providing on-demand heating at high efficiencies 24/7.

The result: 8x more solar energy capture than conventional solar with the same number of panels.



INTEGRATING SUNDRUM SOLAR

SunDrum Solar integrates directly with your existing brewery processes. SunDrum Solar combines solar thermal, photovoltaic, and heat pump technology to provide 24/7, reliable water and space heating at temperatures high enough to support mash mixing, pasteurization, and sanitation, and to offset the majority of the heat required for brewing.



SunDrum Solar simultaneously provides "free" chilled water, using the heat pump to capture heat released during cooling (for fermentation and keg storage) and using this heat to supplement solar thermal and heat pump energy. Under continuous operation, SunDrum Solar can provide brewery heat at a COP as high as 16 - meaning 16 therms of useful heat are provided for every 1 therm of energy expended. No other system on the market can match this performance.

When these benefits are combined, SunDrum Solar can dramatically reduce brewery heating and cooling expenses, while eliminating emissions associated with this energy consumption.

SunDrum Systems are designed specifically for each client's goals, opportunities, and resources.



EXAMPLE SYSTEM

Consider a microbrewery producing **12,000 barrels per year**. This client wants to maximize financial return, and so aims to offset 60% of their total thermal load using SunDrum Solar. They are also installing new PV panels.

Heating Goal:	9,200 Therms
SunDrum System Size:	130 Collectors
PV System Size:	150 PV Panels
Annual Therm Savings:	9,200 Therms
Annual kWh Savings:	99,000 kWh
Annual Savings Value:	\$42,500
Annual Financing Cost:	\$30,300
Net Annual Savings:	\$12,200
Annual kg CO2 Avoided:	48,000
Net Lifetime Savings:	\$400,000

This example brewery would reduce their net heating expense by nearly 24% in the first year, with this benefit increasing over time. Note: Each client's benefit will depend on energy prices, financing terms, and incentive eligibility.

IMPROVING **BREWERY** PROFITS

SunDrum Solar provides continuous, reliable heat that meets the on-demand heating needs of brewery operations. SunDrum Solar significantly reduces lifetime expenditure on heating, markedly improving profitability while reducing operational cost variability.

SunDrum Solar can also help increase the share of total emissions offset by sustainable and renewable solutions, improving eligibility for incentive programs like REAP and other grants and opportunities targeting sustainability.

NEXT STEPS

Contact SunDrum Solar today to begin the process of engineering your system and taking advantage of reduced heating costs, increased incentives, and improved system profitability.

Our proven system has been installed at over 200 sites nationwide, and our systems have reduced carbon emissions by over 17 million pounds - and counting. **Make SunDrum Solar a part of your sustainability strategy today.**

