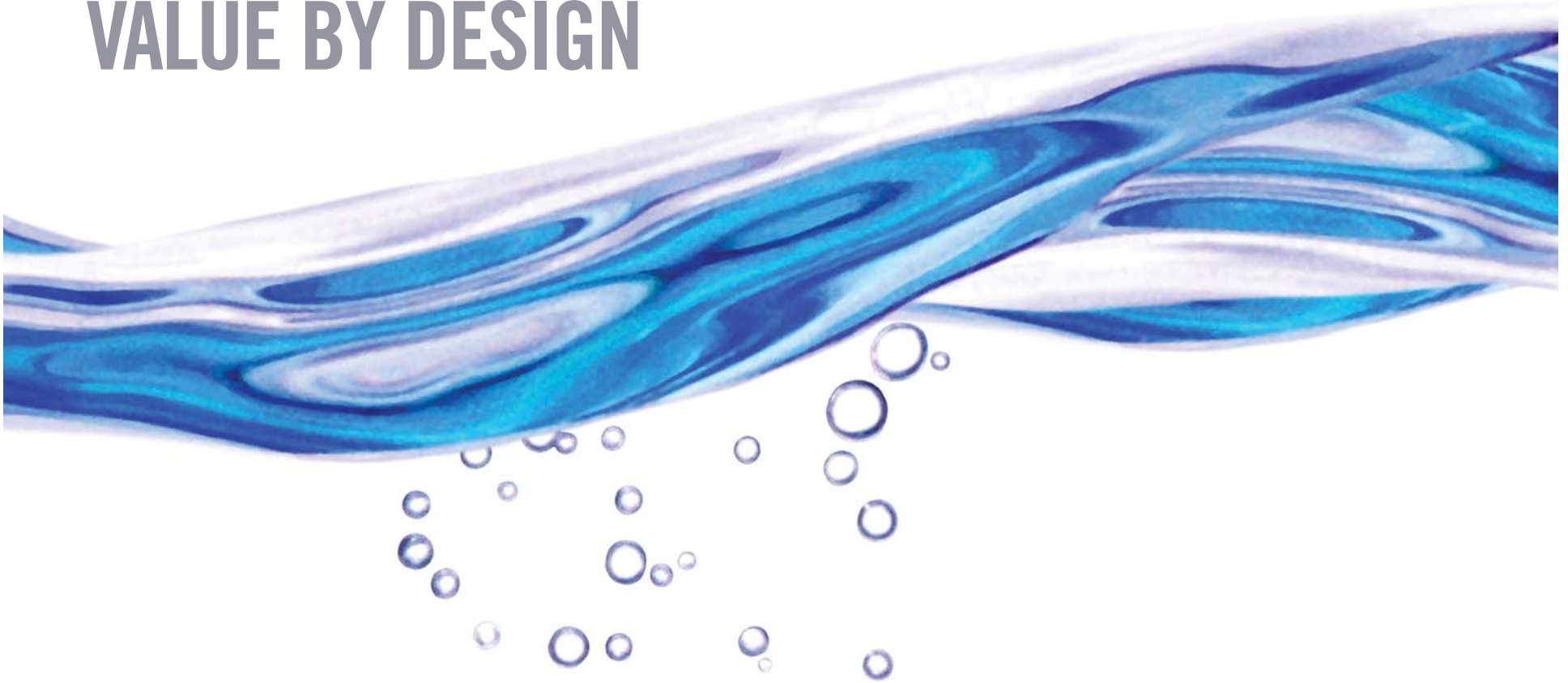
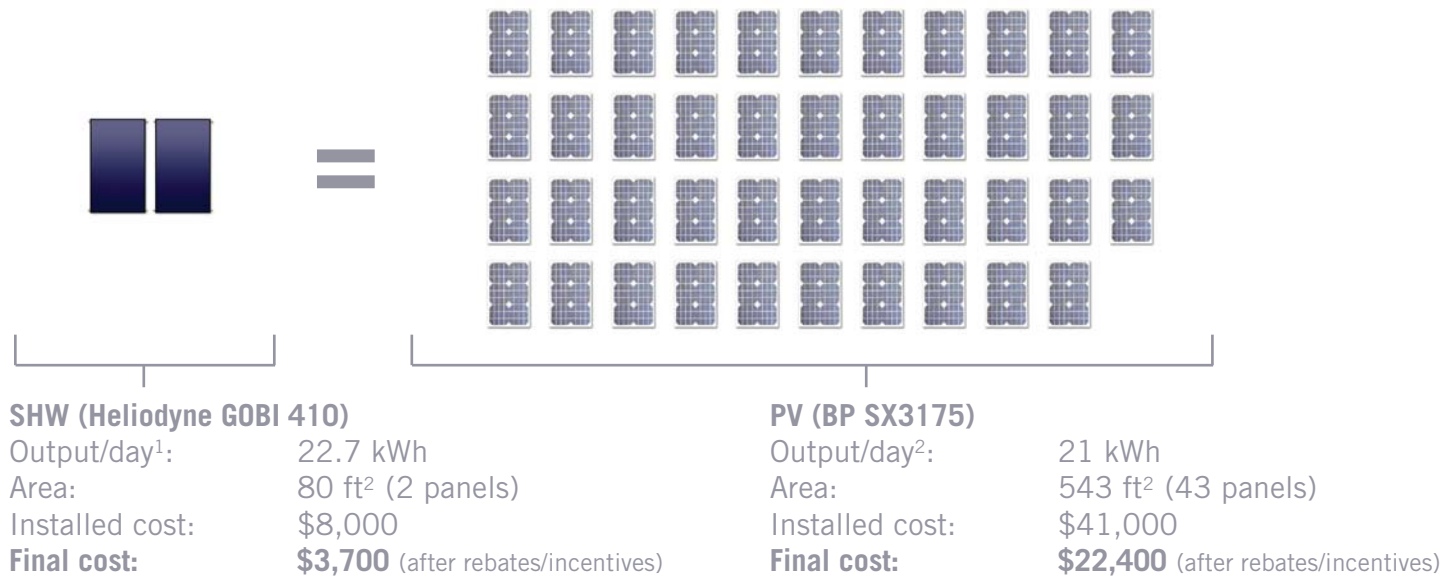


HELIODYNE SOLAR HOT WATER VALUE BY DESIGN



WHY CHOOSE SOLAR HOT WATER?

- Lower utility cost
- Independence from utility company
- Stable energy prices
- Increase in property value
- Reduced carbon footprint
- More affordable than PV

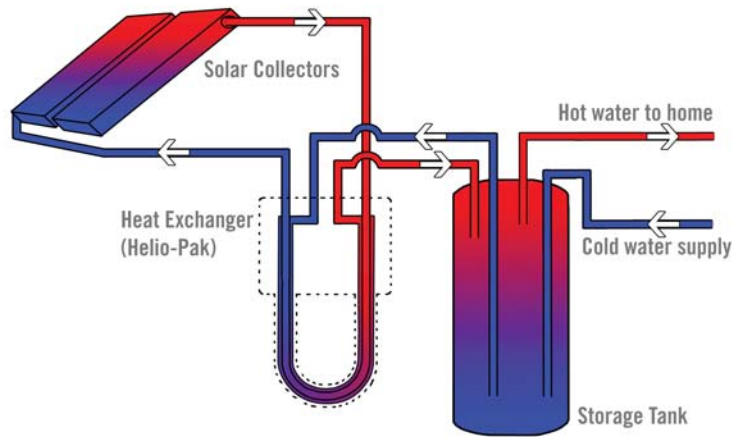


1. Peak output based on SRCC Category C Clear Sky for SHW (Equivalent kWh derived using 3, 414 Btu/kWh)
 2. Manufacturer's spec sheet for PV at standard test conditions (5.28 kW array rating x 5.8 peak sun-hrs/day)

	Energy Conversion Rate	Average Price / kWh
SHW	70%	\$0.055
PV	15-20%	\$0.268

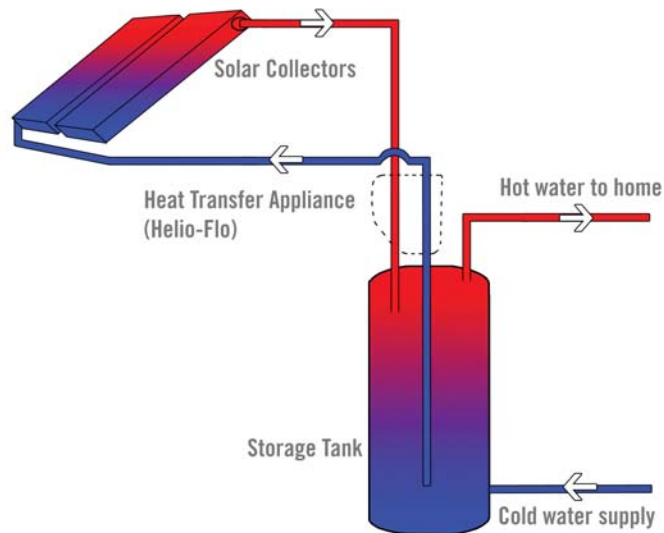
Sources: SHW cost estimate by AltaTerra Research; PV cost estimate from Energy+Environmental Economics, June 2010. Assumes 20-year system lifespan, Southern California location, gross kWh/dollar.

RESIDENTIAL: HOW A SOLAR HOT WATER SYSTEM WORKS



INDIRECT SYSTEM

- Suitable for all regions
- Recommended if freezing or water issues
- Fully protected from overheating or freezing



DIRECT SYSTEM

- Recommended only for warm climates with good water
- Efficient direct water circulation
- Mild freeze protection
- Low cost

RESIDENTIAL: SAMPLE SYSTEMS

2-4 person household with a 25-year system lifespan

PROJECT INFORMATION	SINGEL TANK SYSTEM w/ GAS WATER HEATER	SINGEL TANK SYSTEM w/ ELECTRIC WATER HEATER	DUAL TANK SYSTEM w/ GAS WATER HEATER
LOCATION	Los Angeles	Honolulu	New York
Equipment, piping and labor	\$8,200	\$5,600	\$7,800
DISCOUNTS			
Federal tax credit	30% of total system cost: -\$2,460	30% of total system cost: -\$1,680	30% of total sys cost: -\$2,340
State rebates/incentives**	CSI solar thermal rebate: -\$1,680	HI energy solar water heater rebate: -\$750 HI solar & wind energy credit: -\$2,000	NY residential solar tax credit: -\$1,950 NYSERDA solar thermal incentive program: -\$3,990
TOTAL COST	\$4,060	\$1,250	\$0
SYSTEM PERFORMANCE			
Annual energy saved	5,010 kwh (171 therms)	3,311 kwh (113 therms)	2,661 kwh (113 therms)
Annual CO2 offset	2,062 lbs	1,696 lbs	1,363 lbs
COST SAVINGS			
Curent energy rate*	\$1.20 per therm	\$0.30 per kwh	\$1.32 per therm
Solar hot water rate	\$0.94 per therm	\$0.015 per kwh	0
Deferred cost of replacing broken or worn-out water heater***	-\$1,500	-\$1,250	N/A

* Energy rates provided by US Bureau of Labor Statistics, Hawaii Electric Company, and actual energy bills from local customers.

** Incentive program data provided by Database of State Incentives for Renewables Efficiency.

*** If water heater is to be replaced regardless, the deferred cost of that can be deducted from the cost of the solar system.

Note: Heliodyne takes no responsibility for the availability of any rebates or incentives.

RESIDENTIAL: CASE STUDIES



Location: Rhode Island

12 collectors were used to not only heat the home's hot water supply, but also to provide radiant floor heating throughout the 3,000 sq. ft. home.



Location: Lake Tahoe

Solar collectors can work even in areas with winter snowfall.



Location: Rhode Island

This home, built in 1750, gets a modern update with solar hot water.



Location: San Francisco Bay Area

This system was installed in 1984, and it is still in operation today.



Location: Los Angeles

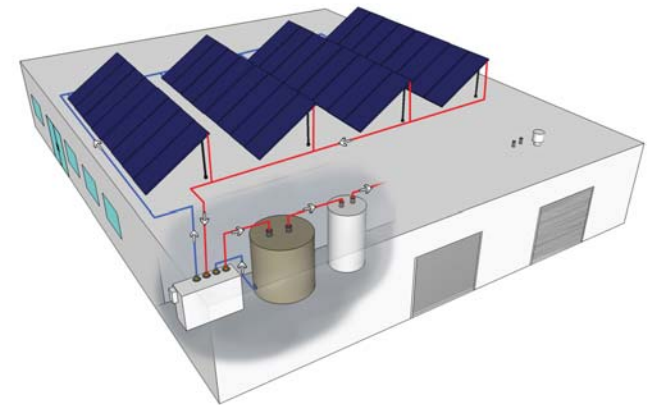
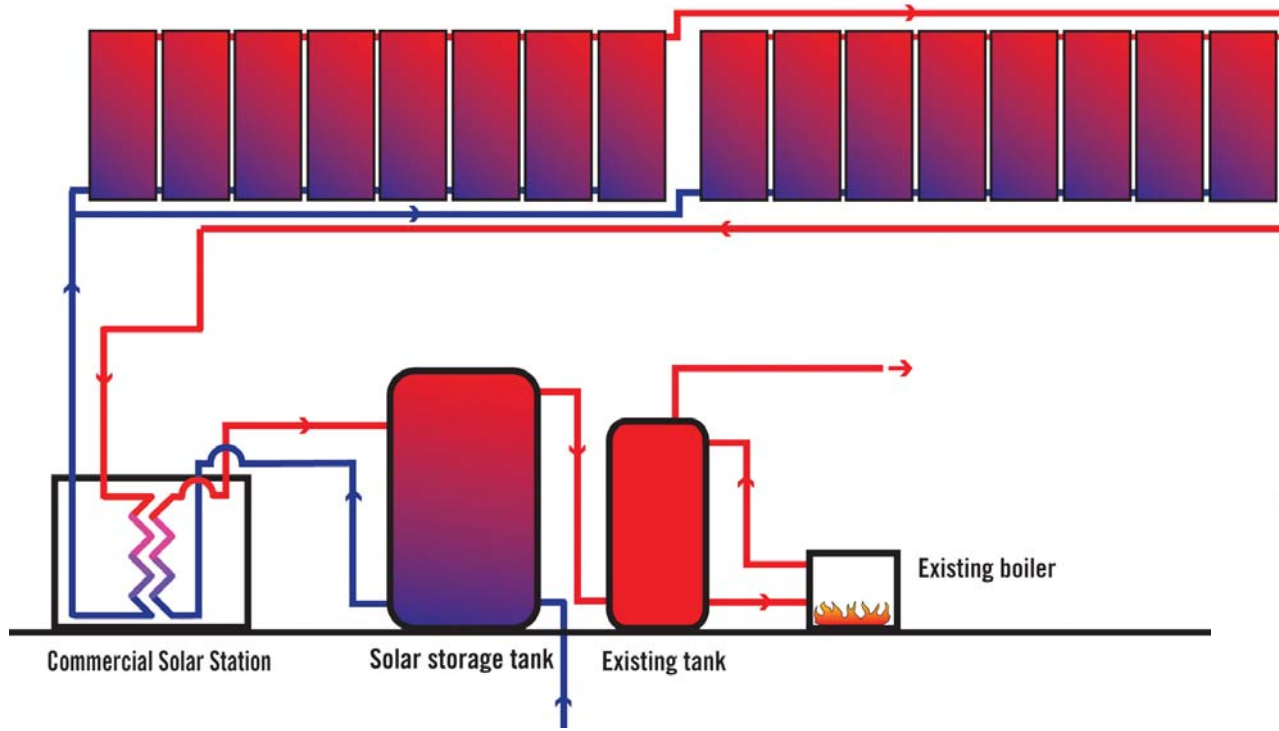
This system shows an example of how collectors can be mounted on homes with flat roofs.



Location: San Diego

This system utilizes just one large GOBI collector to heat water for 3 people.

COMMERCIAL: HOW THE TECHNOLOGY WORKS



COMMERCIAL: SAMPLE SYSTEM INSTALLATIONS

SMALL SYSTEM

Property overview: Apartment complex
Location: Long Island, NY
Daily hot water usage: 4,000 gallons

Number of collectors: 20
Total collector area: 803 square ft.
Installed cost (equipment, labor, piping): \$129,000
Less fed tax credit (30%): -\$27,161
Less nycedc grant (30%): -\$38,800
Depreciation amount: -\$26,100

Total system cost: \$37,000
Annual natural gas savings: 2,590 therms
Annual CO2 reduction: 46,620 lbs
Payback period: 5 years

(assuming 10% increase in fuel prices annually)

Current natural gas price: \$1.55 per therm
Solar thermal rate: \$0.57 per therm

(assuming a 25-year system lifespan)

LARGE SYSTEM

Property overview: Hotel resort
Location: Los Angeles, CA
Daily hot water usage: 8,200 gallons

Number of collectors: 64
Total collector area: 2,570 square ft.
Installed cost (equipment, labor, piping): \$320,000
Less fed tax credit (30%): -\$96,000
Less CSI solar rebate: -\$105,000
Federal tax on state rebate: \$35,700

Total system cost: \$154,700
Annual natural gas savings: 13,720 therms
Annual CO2 reduction: 247,650 lbs
Payback period: 5 years

(assuming 10% increase in fuel prices annually)

Current natural gas price: \$1.02 per therm
Solar thermal rate: \$0.65 per therm

(assuming a 25-year system lifespan)

COMMERCIAL: CASE STUDIES



Twin Pines Apartments, Bronx, NY

System size: 20 collectors

Usage: Apartment units



Fort Lewis College, Durango, CO

System size: 32 collectors

Usage: Cafeteria kitchen, and bathrooms



Spenger's Fish Grotto, Berkeley, CA

System size: 76 collectors

Usage: Restaurant kitchen. Installed in 1978, and still in operation today.



29 Palms Military Base, 29 Palms, CA

System size: 100+ collectors (distributed over several systems across the base)

Usage: Mess halls, barracks



Lucky Labrador Brewery, Portland, OR

System size: 16 collectors

Usage: Beer-making



Hyatt Hotel, Scottsdale, AZ

System size: 172 collectors

Usage: 492 hotel guest rooms

HELIODYNE: THE COMPANY



- The most experienced solar hot water company in America
- Dedicated to innovation and excellence by design
- Proudly produced in the U.S.
- The specialist in solar hot water

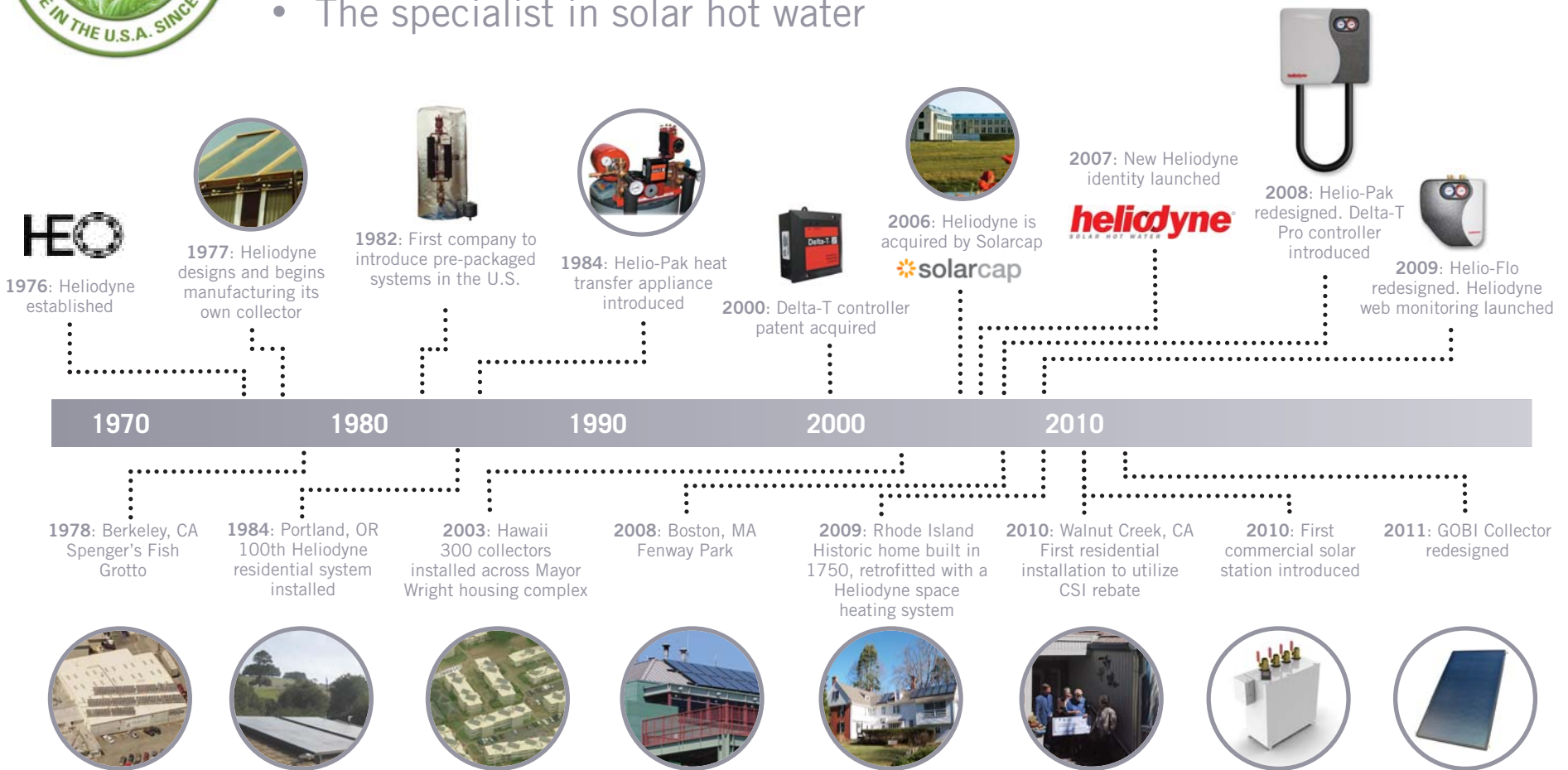


Photo courtesy of: groSolar

HELIODYNE: GOBI COLLECTOR - BEST VALUE



MADE IN AMERICA

EASY-MOUNT DOS CONNECTOR SYSTEM

Factory fitted 1" DYN-O-SEAL inter-connections eliminate soldering between panels, and allow collectors to be repositioned during renovations and reroofing

LOW PROFILE FRAME

2.8" thick frame is easy to handle, and offers the end-user a sleek, aesthetically pleasing design

DURABLE & LONG-LASTING CASING

Dark anodized aluminum frame provides longevity and a subtle rooftop presence



UNIQUE WEATHER-TIGHT GLAZING SEAL

Compression type glass support, fastener independent, with seamless EPDM gasket

STRONG & RELIABLE MOUNTING SYSTEM

Built-in mounting flange for mounting without collector penetration

SUPERIOR ABSORBER EFFICIENCY

Proprietary laser-welded absorber fin/tube bond maximizes efficiency
US Patent # 6300591



HIGHEST PRESSURE TESTING IN THE INDUSTRY

MEETS THE HIGHEST ACCREDITATIONS & CERTIFICATIONS



Canadian Standards Association



Energy Star



Solar Rating & Certification Corporation



IAPMO Low-Lead Certified

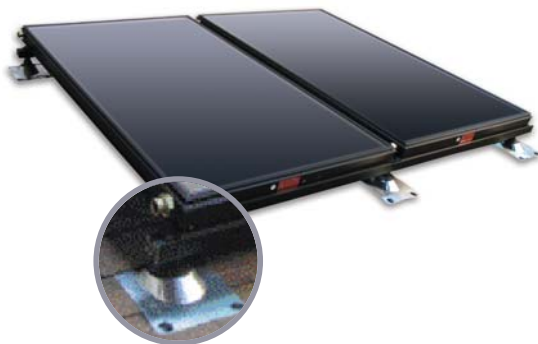


American Society of Heating, Refrigerating, and Air Conditioning Engineers

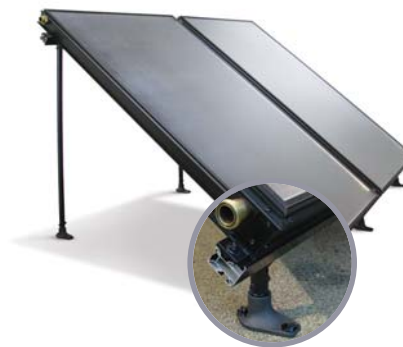
MOUNTING HARDWARE

Heliodyne collector mounting hardware is designed for use with the GOBI brand collector. A variety of kits are available to suit all roof types.

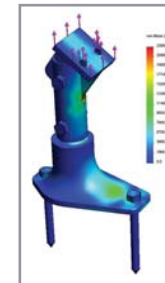
Flush-Mount



Rack-Mount



All components are structurally analyzed to withstand the harshest weather conditions



HELIODYNE: HEAT-TRANSFER APPLIANCES

HELIO-PAK: For indirect heating



HIGHEST PRESSURE TESTING IN THE INDUSTRY

SUPERIOR HEAT TRANSFER TECHNOLOGY

Unique “tube in tube” external heat exchanger with counterflow design promotes higher rate of heat transfer and minimizes scaling

PLUG & PLAY

Pre-configured, factory assembled components ensure consistency, quality performance, and come with factory warranty

SLEEK MODERN DESIGN

Foam casing adds clean look to the appliance and insulates components for minimal heat loss

ADVANCED CONTROLLER OPTION

Proprietary advanced controller includes energy metering, Wi-Fi system access with remote web monitoring and automatic service and maintenance notifications

LEAK PROTECTION (Helio-Pak models only)

Double-wall heat exchanger with built in leak detection complies with U.S. plumbing codes and allows for use of high temp. antifreeze liquids for longer system performance

MEETS THE HIGHEST ACCREDITATIONS & CERTIFICATIONS



Underwriter Laboratories Listed

OG300 CERTIFIED

Solar Rating and Certification Corporation

IAPMO Certification: International Association of Plumbing and Mechanical Officials

Electronic Testing Laboratories

Energy Star

HELIO-FLO: For direct heating



HIGHEST PRESSURE TESTING IN THE INDUSTRY

EFFICIENT DIRECT WATER CIRCULATION

Simplifies system design and allows for an economical solution

heliodyne
SOLAR HOT WATER

HELIODYNE: HEAT-TRANSFER APPLIANCES

HCOM: Commercial Solar Station

PLUG & PLAY

Pre-configured and factory assembled. Reduces installation time and eliminates engineering design work needed to piece together the balance of system components

TOUCH-SCREEN INTERFACE

Easy configuration and at-a-glance system monitoring

COMPACT ASSEMBLY

Saves space in the mechanical room and makes access to all the components easier

INNOVATIVE DESIGN

Novel integrated pressure relief, reclaim, and refill system



ENERGY OPTIMIZATION

Integrated variable speed pumps provide energy optimization

STATE-OF-THE-ART CAPABILITIES

Advanced controller with detailed energy metering and web-enabled monitoring

MEETS THE HIGHEST ACCREDITATIONS & CERTIFICATIONS



HIGHEST PRESSURE TESTING IN THE INDUSTRY



Underwriter Laboratories Listed



IAPMO Certification: International Association of Plumbing and Mechanical Officials



Electronic Testing Laboratories

heliodyne[®]
SOLAR HOT WATER

HELIODYNE: SYSTEM MONITORING

HELIODYNE CONTROLLERS OFFER UNIQUE OPTIONS



WEB ACCESS VIA BUILT-IN WI-FI TECHNOLOGY

Allows remote access (via internet) to the system for both the homeowner and installer. (Requires Wi-Fi router connected to internet)

DATA STORAGE

Energy output is recorded for the entire life of the system and can be downloaded via Excel or similar software

ENERGY METERING

Displays BTU output hourly, daily, monthly or even yearly for precise energy reading

AUTOMATED NOTIFICATIONS

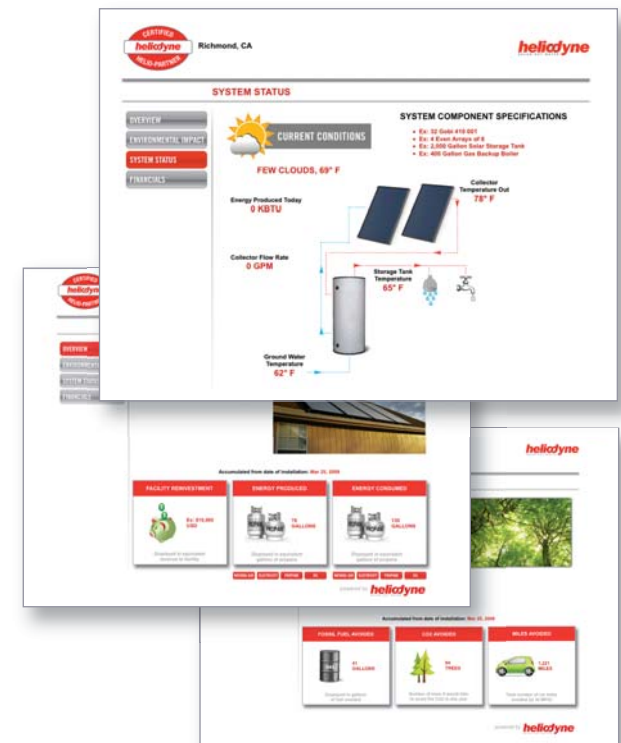
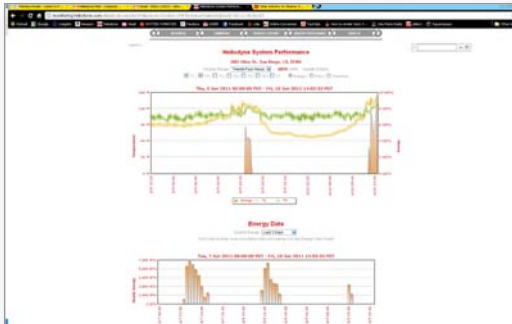
Notifies the owner and installer to scheduled service reminders and systems alerts. Web monitoring and password-protected website for system monitoring & remote settings.

PRIORITY HEATING ASSIGNMENT

Keeps auxiliary heating at a minimum and maximizes solar water-heated storage

VIEWING PUBLIC PERFORMANCE DATA

Key performance data can be made public. This is a useful function for commercial jobs where data often needs to be shared.

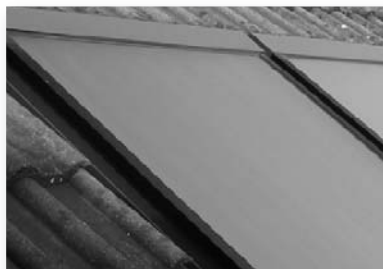
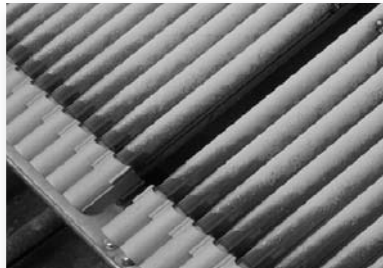


Over 32 years of solar experience is built into our controller technology, ensuring optimal performance at all times.

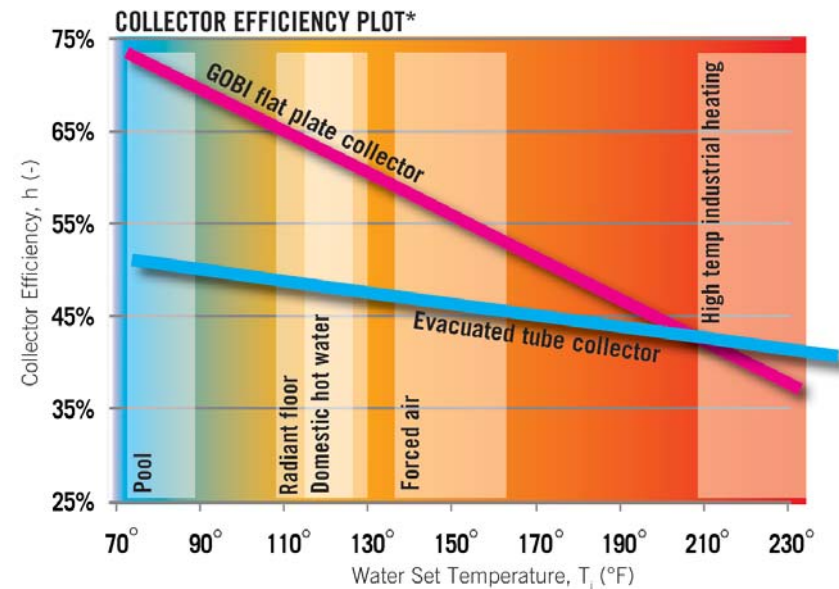
HELIODYNE: PERFORMANCE

Why flat-plate collectors are a sensible choice over evacuated tube for hot water.

- Better efficiency for most solar water heating applications
- Better year-round performance in any region
- Generally less expensive
- High durability and longer lasting
- More subtle rooftop presence



Winter months often hamper the performance of evacuated tubes, as snow and frost block the sun's energy.



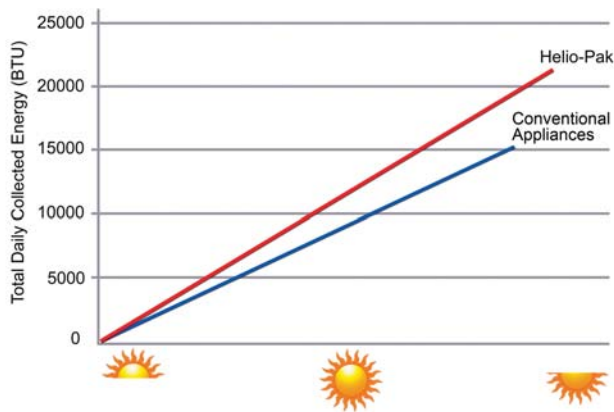
*At ambient temperature = 74°F; Insolation = 317 Btu/hr-Ft² (1,000 W/m²)

Flat-plate collectors have better efficiency for most water heating applications

HELIODYNE: PERFORMANCE

Why an external heat exchanger is better than coil in tank.

- More efficient heat transfer rate
- Cheaper tank replacement cost
- Easier adaptability to existing water heater

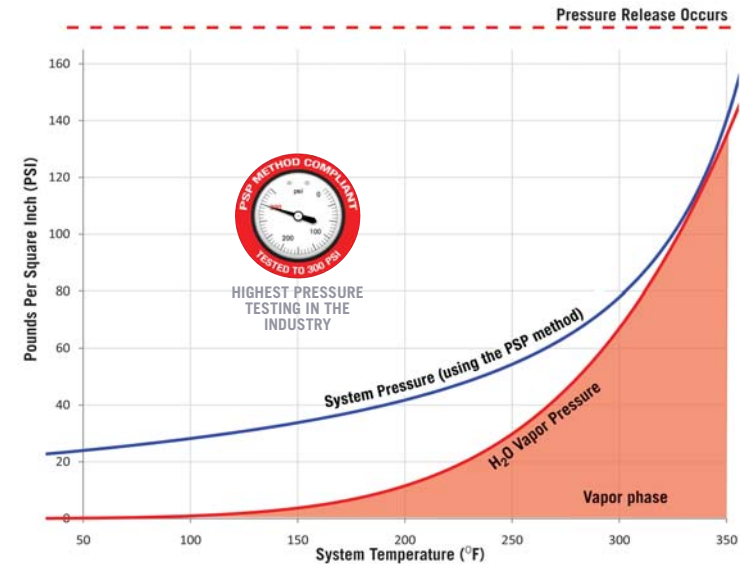


Heliodyne heat appliances outperform conventional heat-transfer appliances

Why closed loop is better than drain-back.

- Easier installation
- Generally less expensive
- Complete freeze protection in cold weather environments

Why Heliodyne equipment outlasts other brands.



- Tested to 300 psi for hassle-free, real-world operation up to 150 psi
- Solar fluid stays in a liquid state, minimizing phase-change system shock
- Solar fluid service-life extended with less stress on the equipment during times of stagnation