EnerWorks

Frequently Asked Questions

1) Who is EnerWorks?

EnerWorks is a developer and manufacturer of clean, intelligent, solar thermal solutions for residential and commercial markets throughout North America. EnerWorks is venture capital-funded and works with the Queen's University Solar Calorimetry Laboratory to develop innovative and cost-effective water-heating solutions.

2) What products does EnerWorks offer?

Instead of using traditional energy sources, EnerWorks Solar Water Heating Appliances use the sun's energy to provide potable hot water. Solar water-heating products provide environmentally clean, competitively priced energy solutions for a range of heating applications. The appliances are available across North America through trained and authorized dealers/installers.

3) How much electricity does the EnerWorks Solar Hot Water Appliance produce?

None. However, the EnerWorks appliance displaces over half of the electricity, natural gas, oil or propane you purchase from your utility company with free solar energy from the sun.

4) Will heating water with solar energy save me money?

Yes. Depending upon the collector position and orientation, in southern Ontario and the northeastern United States, for example, free solar energy will deliver summer savings of 75-95% and winter savings of 20-40% for annual savings of up to 60% on your water-heating bill. In the southern United States and very sunny areas, annual utility savings of over 80% can be achieved.

5) How much does the appliance cost?

EnerWorks distributes its solar hot water appliance through builder channels, utilities and renewable energy dealers. A variety of models are available, depending on the heating demands. The installed cost will be quoted by your dealer or installer and depends on appliance model chosen and the specifics of the installation site. The installed cost of the solar energy is like buying electricity at 6¢ per kWh. Consumers have the option of purchasing or leasing the appliance. Commercial customers can purchase solar energy on a toll basis through power purchase agreements.

6) Why should I purchase an EnerWorks Solar Water Heating Appliance?

EnerWorks appliances offer these benefits:

- Cut hot water heating costs by 50% or more
- Reduce the impact of rising energy prices
- Offer cost-competitive and environmentally friendly green energy
- Offer a practical and inexpensive way for home and building owners to support sustainable, pollution-free energy solutions
- Contribute to a healthier environment by reducing greenhouse gas emissions

EnerWorks appliances are dependable; they do not affect your hot water use and require minimal maintenance.

7) How does the appliance work?

Solar energy, in the form of heat, is collected by solar collectors. The EnerWorks Energy Pack connected to your hot water storage tank transfers the heat to your potable water. The appliance works in all seasons, is freeze-protected and is designed to reduce, not replace, your dependence on your existing natural gas, electric, oil or propane water-heater.

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8) How dependable is the EnerWorks Solar Water Heating Appliance?

The EnerWorks Solar Water Heating Appliance combines the dependability of conventional fuels with free energy from the sun. It has been under development and testing with Natural Resources Canada, the Queen's University Solar Calorimetry Laboratory and leading component manufacturers over nine years. The appliance performance has been third party-verified by the National Solar Test Facility at Bodycote Material Testing. The appliance requires minimal service every 3 years and has an expected lifespan of over 20 years. EnerWorks appliances are certified under CSA, FSEC, and SRCC standards.

9) How do EnerWorks solar collectors and appliances compare to evacuated tube technology?

EnerWorks solar appliances use flat-plate collectors with very low flow, freeze-protected heat-transfer fluid and high-efficiency brazed-plate heat exchangers in the Energy Pack.

The EnerWorks residential collectors' patented, proprietary overheat protection keeps collector temperatures under 125°C (248°F) when the hot water tank is fully charged. The result is low system pressures and no degradation of the heat-transfer fluid. Evacuated tubes can reach temperatures of +300°C (572°F). These temperatures can cause overheating, high system pressures and breakdowns to rubber seals and vacuums

EnerWorks collectors have been tested by third parties such as Florida State Energy Center (FSEC). The EnerWorks residential collector has a FSEC BTU rating of 786 BTUs per sq ft. The leading brand of evacuated tube collector has models with performance ranges of 634 to 785 BTUs per sq ft.

An EnerWorks collector with hook-bracket mounting hardware can be safely positioned on the roof in less than 5 minutes by two people; there are no tubes and parts to sequentially pass up or store on the roof during installation.

The EnerWorks collector and flashings are a neutral colour and resemble a skylight. The collector is only 3 inches high, just like a skylight curb.

The copper tubing in the EnerWorks collector is a continuous serpentine loop; there are no internal connection points or brazing points to fail.

The EnerWorks collector is thermally sealed from the elements. The ambient temperature, winds, etc. have nominal impact on collector performance. As the winter ground water is colder, the appliances' heat transfer is actually higher in winter than summer.

The EnerWorks collector and flashings present a uniform flat surface across the roof and have no spaces and crevices to hold snow, ice and leaf debris. Rain and snow cleans the glass and slides off.

EnerWorks collectors and Energy Packs are very cost-competitive.

10) What is the advantage of a closed-loop heat transfer system versus drain-back?

EnerWorks uses and strongly recommends the "closed-loop heat transfer" type systems even in hot climates not requiring freezing protection.

In drain-back systems, if mains water is being used as heat-transfer fluid in an un-pressurized system, then:

a) collector tubing will scale and require frequent maintenance or will malfunction; and
b) pure water used in a closed, un-pressurized loop will eventually breed bacteria and cause bio-fouling or present a hazard to potable water.

Some drain-back installers are trying to counter these effects by using a closed loop propylene glycol drain-back system – propylene glycol is an effective bactericide. If the glycol is not pressurized and is exposed to oxygen, it will actually degrade even faster. If glycol and a nitrogen blanket are used to avoid oxygen exposure, the system becomes very complex, expensive and leak-proofing, although crucial, becomes very difficult. In drain-back, all pipes have to be properly sloped for it to work. This makes those systems very dependent on the skills and level of care of the installer.

Traditional closed loop glycol systems are known to:
a) blow heat-transfer fluid or water pressure relief valves; and
b) degrade the heat-transfer fluid in a short period of time due to exposing it to high temperatures for extended periods of time.

11) How does EnerWorks Solar Hot Water Appliance handle the high summer temperature and solar radiation of a city like Phoenix Arizona?

EnerWorks residential system is designed to avoid the problems associated with stagnation with no user intervention required:

- Each EnerWorks residential collector has a patented temperature limiting device that sheds excess heat. This is done in a “passive”, mechanical way so that the device is not dependent on a power source; the vent works automatically even during a power outage.
- Fluid in the collector evaporates and the vapors push the rest of the fluid volume out of the collector. Because vapor has a very large specific volume and very small mass, in effect, only a very tiny amount of fluid is exposed to high temperatures. This dramatically slows down fluid degradation.
- EnerWorks uses only non-toxic, propylene-glycol that can withstand high temperatures with minimal degradation.
- Fluid change is recommended at least once every three years in moderate climates, and should be checked more often in hot climates.
- The last protection level is provided by a pressure relief valve set at 50 psi.
- Collector materials are carefully selected to prevent out-gassing and to be able to withstand collector stagnation temperatures (which are lower due to the temperature limiting device).

For southern States, Arizona, Florida, Texas, Louisiana, New Mexico, California, EnerWorks recommends a single collector appliance for families of up to 5. For larger families, or where solar heat is used for more than just domestic hot water during the summer, a two collector appliance is appropriate. Over-sizing solar appliances should be avoided as it results in lower return. Extended stagnation is undesirable for both economic and technical reasons. Reasonable episodes of stagnation will not hurt the EnerWorks appliance, or the fluid; no action is required by the owner (covering the collectors to prevent stagnation is NOT recommended).

12) How is the appliance installed?

In residential applications, one to four solar collectors (4 ft X 8 ft X 3 in.) resembling thin skylights, are mounted on your roof, fence, or a ground-mounted rack. An insulated, flexible fluid line runs from the roof to the hot water tank(s). Once connected, the EnerWorks solar water heating appliance is quickly ready for everyday use.

The solar water heating appliances are scaled up to provide the same benefits to commercial users of hot water and other thermal operations like food services, hospitality, multi-family accommodation, car washes, community centers, agriculture, industrial processes and government buildings.

In commercial applications, modules of 10 collectors are sized to fit the heat load and available installation space. Typically, installations are from 20 to 120 collectors. EnerWorks has supplied district heating projects such as Okotoks, Alberta's Drake Landing Solar Community near Calgary, where solar arrays with 800 solar collectors are mounted on the garages of the subdivision. www.dlsc.ca

13) I am building a new home, is there anything I can do to make installation easier?

During mechanical rough-ins, run a 3- or 4-inch PVC pipe from the basement (or where your hot water tank will be located) to the roof (or where you wish to install the solar collectors). Contact EnerWorks for installation requirements as certain roof positions need to be considered.

14) How can I get the EnerWorks Solar Water Heating Appliance?

EnerWorks offers solar water heating appliances through dealers across Canada and the USA, for installation by trained professionals. For dealer information support in your area, please send an e-mail to info@enerworks.com.