



Harvest Radiant User Manual

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User Manual

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Welcome

A PDF copy of this manual can be obtained using the download icon (⌵) above.

Features and Benefits of Your Harvest Thermal Battery System™

Congratulations on being a pioneer in the shift to clean energy use. Your new Harvest Thermal Battery System™ shifts electricity consumption for heating and hot water to the times of day when grid energy is cleanest and cheapest, and then leverages the system's thermal storage to deliver that energy whenever it is needed in the home. Since the system is paired with the most efficient and lowest global-warming-potential refrigerant heat pump on the market, you can feel confident that you have minimized the impact of your home energy use on the environment and on your wallet.

Stay Connected with Harvest

Each Harvest Thermal Battery System is connected to the Harvest cloud for commissioning, accessing the weather forecast to minimize your energy bills, enabling remote support and monitoring, as well as keeping the pod up-to-date with the latest energy-saving software. Keep your Harvest Pod™ connected to the Internet to get full heating performance and to help you share in all the benefits of owning a Harvest System.

During commissioning, the Harvest Pod will be connected either via an Ethernet cable to your router or by connecting the Pod to your Wi-Fi network. An Ethernet cable is the most robust long-term option if available.

Note

If your Pod is connected via Wi-Fi, please email support@harvest-thermal.com if your Wi-Fi network name/password changes. This will help us keep your system updated and send you system alerts if needed.

 Note

In addition, please email support@harvest-thermal.com if your phone or email changes so we can keep our records accurate.

System Operation

How Harvest Systems Feel Different in the Home

Unlike traditional gas boilers which often deliver heat via short intermittent blasts of hot water, your Harvest Thermal Battery System™ provides gentler and longer heating runs to better match your heating needs. Due to the more continuous heating cycle and stable temperature, many Harvest users find that they feel comfortable at a lower thermostat setting.

The remaining difference is that the system heats more gradually than gas boilers, so it is best to keep your home at a fairly constant temperature (e.g., just 2-3°F lower at night but no more). This approach maximizes home comfort while minimizing energy use (similar to how it is better to drive a car at a constant speed rather than cycle through periods of acceleration and hard braking).

- Do not change the thermostat setting more than 2-3°F when you expect to be absent or asleep or if you come home at a different time than usual. Refer to the Heating section below for more information.
- When heating begins, it may take a few hours for your home to reach the set target temperature.

Heating

To use Heating mode, set your thermostat to Heat.

Note

Smart thermostats often have a built-in smart recovery algorithm. For example, on the Ecobee thermostat, this is called “Smart Recovery”, and on a Nest thermostat it is called “Early-On”.

This feature ensures the temperature in your home reaches the desired setpoint at the beginning of each scheduled change by having your heat or cooling start early if required. This is a great feature to use, if available to you.

Many users lower or completely shut off their thermostats at night and other times to save energy. This can reduce your Harvest System’s performance because it takes more energy to heat a cold home than to maintain a comfortable temperature. It also takes a lot of time to warm up a

chilly home, so keep your thermostat at relatively level settings to ensure your comfort.

Additionally, having a smaller separation between daytime and nighttime temperatures makes the home's heating load less "peaky", allowing you to get more use out of the system's thermal battery during peak times of the day.

When adjusting thermostat settings, follow the manufacturer's instructions and set the temperature down ("setback") only by 2 or 3°F at night and during the day when no one is home.

Suggested settings if using a smart thermostat

Time	Temperature
7 a.m.	69°F
9 a.m.	67°F (away) 69°F (home)
5 p.m.	69°F
10 p.m.	66°F

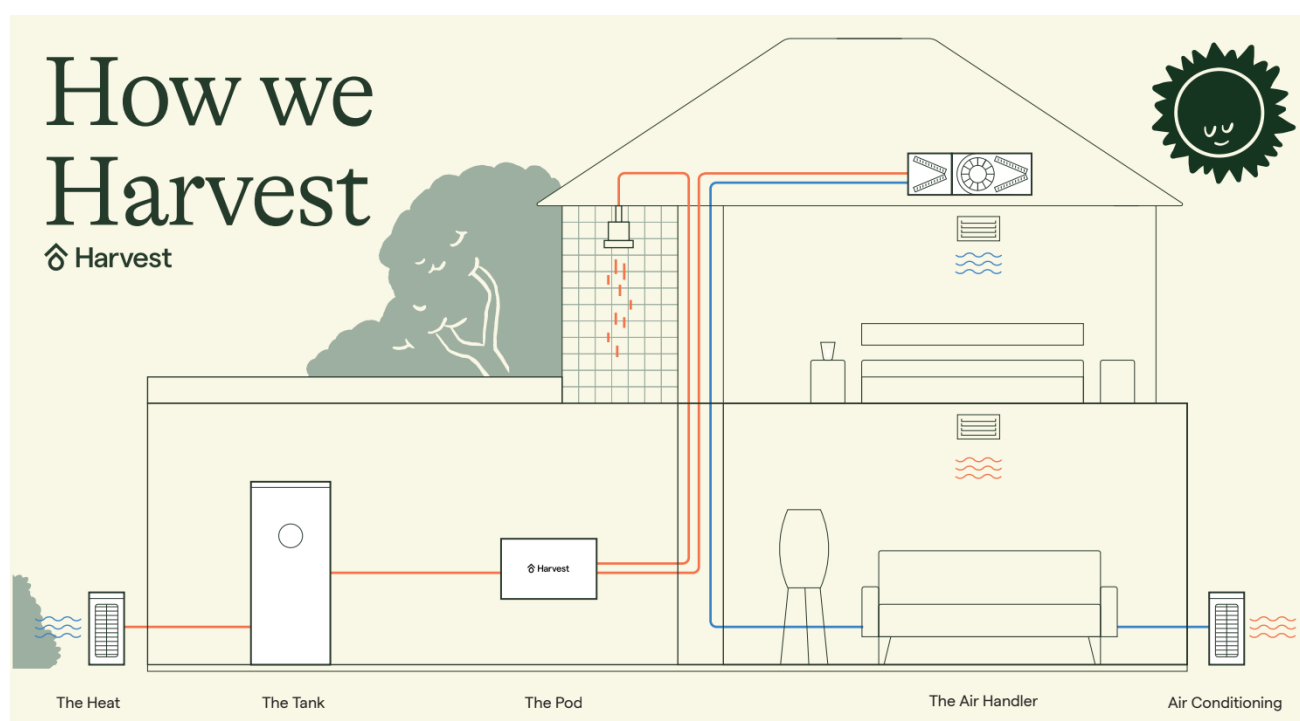
Vacation

When going on vacation, set the thermostat to your normal nighttime temperature to ensure that your home does not take too long to reheat upon your return. For those with connected thermostats, you can turn off the heat and remotely start reheating your home 1-2 days before returning.

How the Harvest Thermal Battery System Works

Your Harvest Thermal Battery System uses five primary components to supply your home with heating and hot water:

- the Heat Pump, which is a SANCO2 heat pump water heater,
- the Tank, which is a SANCO2 water tank, typically with 119 gallons storage (although one or two 83-gallon tanks may be installed),
- the Harvest Pod,[™]
- the radiant floor heat exchanger, which will be located close to the Pod.

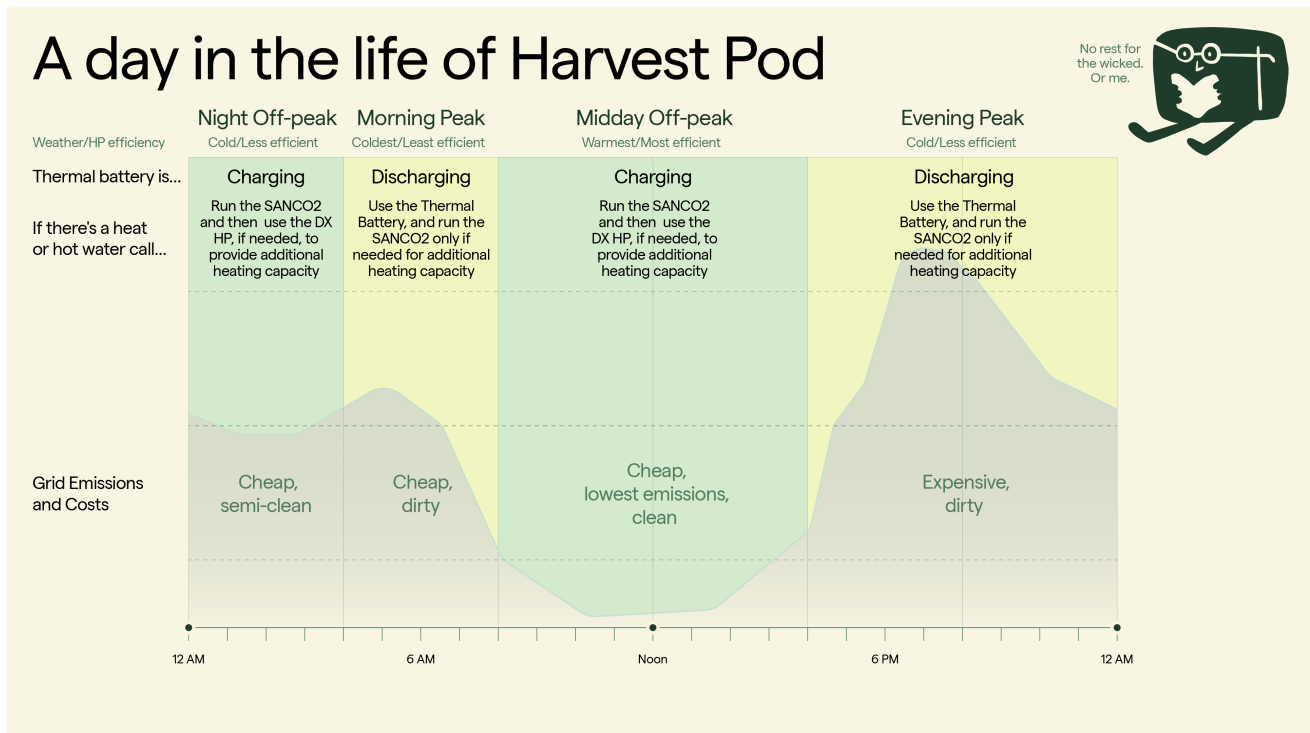


The heat pump water heater and Pod work together to maintain a supply of hot water in the storage tank. That hot water is used directly in the home for showers, etc., and is also directed through the radiant floor heat exchanger for heating. When hot water passes through the radiant floor heat exchanger, the heat is transferred to the closed-loop water system which is then circulated through the pipes in your floor to heat the floor.

The Harvest Pod manages all of these components, serving three primary purposes:

1. maintains just the right amount of hot water in the tank
2. monitors and predicts heating and hot water demand based on the weather forecast and occupant usage patterns, and

3. optimizes the heat pump water heater operating schedule to shift electricity from times of high prices and emissions to times and low prices and emissions, while always delivering heating and hot water whenever needed (see [Leveraging Time-of-Use Rates](#) to take best advantage for this feature)



The Harvest Home App

What is the Harvest Home App?

The Harvest Home App provides visibility on system operation, performance, and control over some system settings, such as:

- **WiFi:** Changing the WiFi network
- **Time-of-use:** Changing the time-of-use schedule that the system optimizes for
- **Hot water reserve:** Updating the hot water reserve level that the system will try to maintain even at high price hours
- **Full charge:** Fully charging the tank ahead of emergency high-demand events

The Harvest Home App does not replace your thermostat or smart thermostat app. The thermostat is still your primary interface to control your home heating and cooling.

The Harvest Home app gives you access to data and system settings that determine how your Harvest system responds to your thermostat and hot water usage.

Accessing the Harvest Home App

The Harvest Home App is a web app hosted on the Harvest Pod: it is accessible on the local network that your Pod is connected to. It is **NOT** accessible from the Internet outside of your home.

Connect your phone/tablet/laptop to your local network (WiFi or Ethernet). In most cases, your home has a single network. However, if you have multiple local networks, make sure to connect to the same network that the Harvest Pod.

- Type “**http://harvestpod/NNNN**.local****” in an internet browser address bar, where “NNNN” is the four-digit serial number printed on the label underneath your Harvest Pod.
- Also note the **password** printed on the same label, and use it to unlock the page when prompted.
- Use the “**User Settings, Data & Control**” button.

 Caution

Using the “System Setup (Advanced)” section can risk losing your commissioned settings and making your system inoperative.

Troubleshooting

If <http://harvestpodNNNN.local> doesn't work, it means that your router does not support multicast DNS. If you know how to find the IP address of the Harvest Pod on your network, use **http://[your ip address]** instead.

If you do not know how to find your IP address, ask us at support@harvest-thermal.com and we will help you.

Leveraging Time-of-Use Rates

What is a Time-of-Use (TOU) rate?

Time-of-Use rate plans vary the price the utility charges for electricity depending on the time of day, day of week, and season. By shifting electricity usage to times when demand on the grid and electricity costs are low, you can lower your bill and reduce the need to run fossil fuel power plants, cutting air and climate pollution.

Why should I sign up for a TOU rate?

Your Harvest Thermal Battery System™ is designed to save you money when on a TOU rate by shifting your home's electricity demand from peak to off-peak times. The lower the off-peak price, the more you will save.

How do I sign up for a TOU rate?

Contact your energy company about time-of-use rate plans and choose one which offers a high difference between peak and off-peak times. For example, Pacific Gas & Electric (PG&E)'s EV2-A and E-Elec rates have large peak to off-peak differences and are ideal for Harvest. We recommend starting with PG&E's E-Elec rate if you have a heating-only system, and EV2-A if you have a heat pump A/C, and then using your utility's online tool to find which rate is best for you after 12 months of Harvest Thermal Battery System operation.

Understanding Energy Usage Reports

The Energy Usage Report can be found on the Harvest App under the Data tab.

Electricity Used:

The electricity consumption is attributed to:

- the heat pump(s) – specifically, the Heat Pump Water Heater (HPWH) for hot water generation, and, if present, the heat pump A/C unit used for cooling and supplemental heating. The heat pump A/C electricity use is an estimate;
- the air handler which distributes air throughout the home, or circulator pump for radiant,
- and the Harvest Pod, which controls the entire system and pumps water to and from the air handler or radiant heat exchanger.

Harvest makes the operation of the heat pump independent from the delivery of heating and domestic hot water, prioritizing heat pump operation during off-peak times.

Thermal Energy Delivered:

The energy delivered as hot water, heating, and cooling. The A/C heat pump energy delivered is an estimate, based on Energy Star for cooling (SEER2 15.2) and the median heating efficiency of heat pumps in a field study of heat pumps in Massachusetts and Connecticut (HSPF2 8.4).

Heat Pump Water Heater Efficiency:

This represents the electrical energy consumed by the CO2 hot water heat pump in relation to the thermal energy produced in the hot water. The CO2 heat pump efficiency ranges from approximately 200% to 550%. Factors influencing this efficiency include the outdoor air temperature, returning water temperature, frequency of startups and shutdowns, and defrosting. Harvest prioritizes operating the heat pump during suitable outdoor temperatures and regulates the return water temperature, allowing the CO2 heat pump to operate more efficiently than standard heat pump

Hydronic System Efficiency:

This represents the electrical energy consumed by all components of the water-based system, including the CO2 heat pump, air handler fan, circulator pump, Harvest Pod, and thermal losses from the storage tank, in relation to heating and hot water delivered to the home. It does not include heating and cooling from the A/C heat pump.

Whole System Efficiency:

This is the thermal energy delivered to the home as heating and hot water in relation to the electrical energy used by all components to generate and deliver heating and hot water. Thermal energy delivered refers to domestic hot water and heating/cooling provided to the home, excluding thermal losses from the water tank. Electrical energy includes the heat pump(s), the air handler fan, water pump, and electronic controller inside the Pod. Including all components means system efficiency is lower than heat pump efficiency. Typical annual efficiency ranges from about 50%-60% for gas tank water heaters, 80%-95% for furnaces, 200%-300% for heat pumps.

Q: Why is my system efficiency lower in summer than in winter, when the air is warmer?

A: Thermal energy use is lower in summer when there is little or no heating. As a result, thermal losses from the thermal battery make a larger share of overall energy consumption, leading to lower overall efficiency.

Heating and Hot Water Time Shifting:

Average electricity used, and heat and hot water delivered, by hour of day, over the report time period. Harvest uses the tank as a thermal battery to run the heat pump at the lowest-price and most efficient times of day, stores that energy as heat in the hot water tank, and delivers the stored energy as heating and hot water whenever it is needed. The Heat Pump Water heater occasionally runs at peak times when needed to avoid running out of hot water. Air handler fan and pod energy use also contribute to peak energy use but are much lower than heat pump energy use.

Troubleshooting

Below are some checks you can perform if you have any issues with your system.

Note

For issues related to (or warranty on) the heat pump water heater, air conditioner heat pump, hot water tank, or air handler, please also consult the documentation from the respective manufacturer.

- › The Harvest Home App won't load
- › Connecting the Harvest Pod to a different Wi-Fi router
- › The system is off, or a component has no power
- › No hot water, or the water isn't hot enough
- › Low airflow, or not enough heating/cooling
- › A heat pump runs during time-of-use peak hours
- › The SANCO2 shows an error code
- › Descaling
- › Issues with other units in the system (air handler, A/C, heat pump water heater, tank)

Maintenance

Caution

CAUTION: Before having any general plumbing work done in your home, be sure to share the Harvest System Service Card with your service technician so they know what precautions to take when shutting off water to the house or shutting any valves connected to the Harvest System.

The System Service Card comes with the Pod, and may be located near the Harvest Pod or water tank.

SANCO2 Heat Pump Maintenance

Please see the SANCO2 maintenance document [linked here](#).

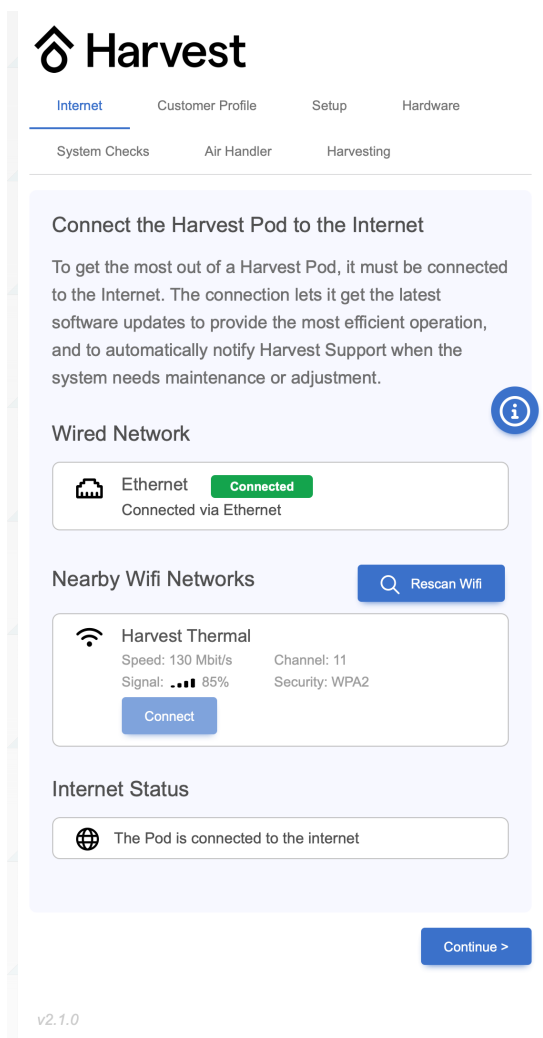
Keep the area around the heat pump water heater's outdoor unit clear. Do not let vegetation grow on or against the unit, and trim back any nearby plants — restricted airflow lowers efficiency and can cause the unit to fault.

Connecting the Harvest Pod to a different wifi router

1. Make sure the Harvest Pod is powered on.
2. Connect your phone, tablet, or laptop to the Harvest Pod's Wi-Fi access point. The network name (HarvestPodXXXX) and password are on the label on the bottom of the Pod. Wait at least 5 minutes after powering the Pod before connecting.
3. In a browser, go to `http://harvestpodXXXX.local` (where XXXX matches the network name).
4. Configure the internet connection and look for a green **Connected** indicator.

Caution

A Wi-Fi signal below **65%** can make connectivity unreliable — the Pod may drop offline intermittently and become difficult to interact with. If the signal is weak, add a Wi-Fi router or extender closer to the Pod, or hardwire the Pod with a Cat5 Ethernet cable.



For step-by-step help and Wi-Fi signal guidance, see the [troubleshooting section on connecting to a different Wi-Fi router](#).

Descaling

Scaling is the build up of minerals on the inner linings of pipes and of the hydronic coil. Over time it can reduce system performance.

Consider asking your plumber to descale the system every 3 to 5 years depending the hardness of your water. The system has drain valves to facilitate descaling of the heating coil.

See the [Descaling guide](#) for the full procedure.

Real-Time Clock Battery Replacement

The Pod contains a real-time clock with battery backup to keep track of time when it loses power and isn't connected to the internet. The battery is a CR1220 coin cell type. Replacement is

recommended every 10 years and must be performed by a Harvest-authorized professional, not by the homeowner. Replacement parts must be high quality brand name parts.

 Caution

CAUTION: There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to manufacturer instructions.

Contact Us

For issues related to the Harvest Pod or its installation (e.g., leaks), please consult a Harvest-Qualified Installer for assistance.

For issues related to, or warranty on, the heat pump, hot water tank, air handler unit, and other system devices please consult the documentation from the respective manufacturer.

For any remaining questions or concerns about your Harvest Thermal Battery System™ contact us at support@harvest-thermal.com or 510-962-6898 during business hours. We welcome all feedback.