



CERES

GREENHOUSE SOLUTIONS®

HVACD SOLUTIONS

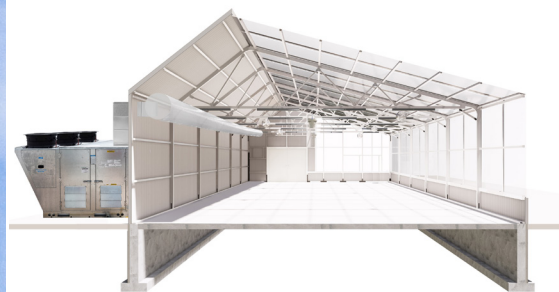
WHY CERES HVACD?

Ceres Greenhouse Solutions offers two styles of HVACD (Heating, Venting, Air Conditioning, and Dehumidification) systems for the SunChamber™ (sealed greenhouse design).

Both of our "EcoSystems," the **EcoLoop™** and the **EcoPack™**, are heat pump systems. We offer a hybrid gas/electric option as well as electric only, which is beneficial as we transition into more renewable energies in an electricity-based world.

While these HVACD systems are **both very efficient**, the equipment and installation between the two systems are quite different.

The EcoPack™



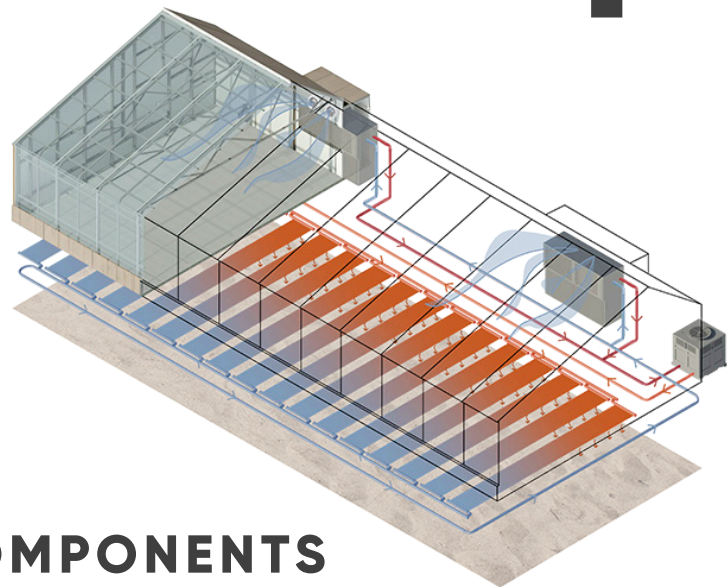
The EcoLoop™



Offering precision heating, cooling, & dehumidification



EcoLoop™



COMPONENTS

- 1. Water Source Heat Pumps:** use water as a medium for heat rejection into ground. When heating, the greenhouse warmth is extracted from the earth as needed, & excess waste heat dissipates into ground.
- 2. Heat Exchange Mats:** transfer heat from the earth to the greenhouse & vice versa.
- 3. Adiabatic Fluid Cooler:** provides an efficient alternative for heat rejection when ground is saturated during warmer months & heating is not required.

BENEFITS

- Innovative geothermal HVACD system
- Designed specifically for Ceres HighYield™ kits
- Precise temperature & humidity control
- Vapor pressure differential control
- Modular design & installation

*Considerations:

- Higher cost of installation (added excavation & HDPE polyethylene pipe welding)
- Reliance on ability to evaporate water (humid summer climates or places that lack water, might consider the EcoPack™ instead)

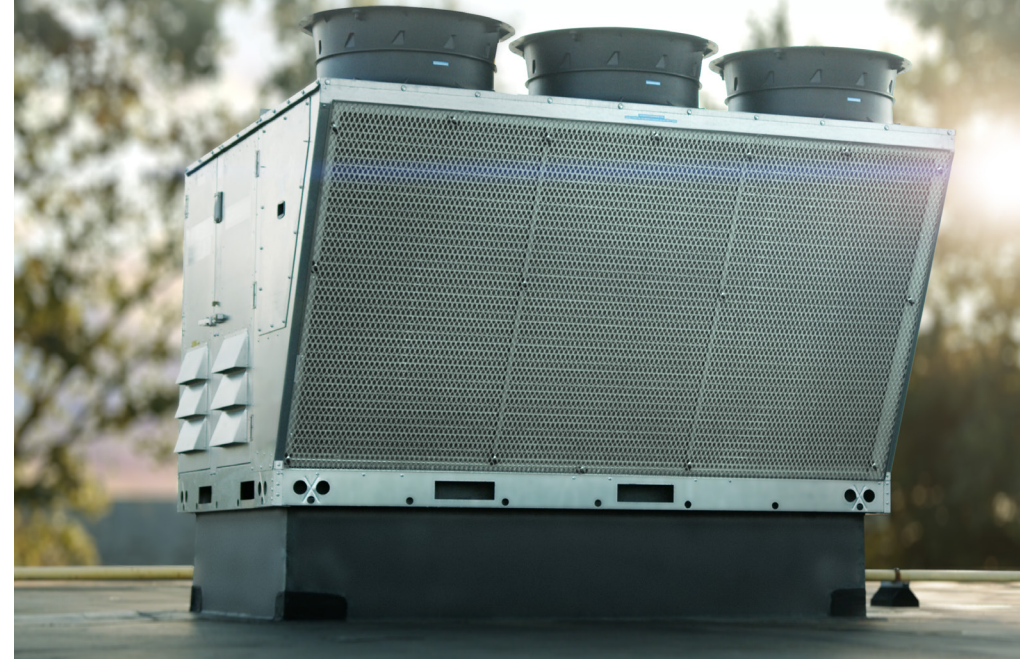


BENEFITS

- Precise temperature & humidity control
- Vapor pressure differential control
- Easy installation
- Can be configured to use electrical connection for installation, or integrate gas for heating & reheat functions
- Staggered coil design reduces supply air bypass & provides superior moisture removal from environment

Economizer Mode: allows the system to intake filtered cool exterior air when select ambient conditions arise. This allows optional hybrid venting to lower greenhouse energy consumption to save even more energy.

EcoPack™



COMPONENTS

- 1. Air Source Heat Pump:** utilizes ambient air outside building for heat rejection during cooling mode & heat harvesting in heating mod
- 2. Modulating Compressors:** has fully modulating inverter scroll compressors, providing precise load matching in greenhouse with reduced energy consumption
- 3. Modulating Hot Gas Reheat:** includes a fully modulating hot gas reheating coil, providing precision temperature & humidity control



WHAT IS A SEALED GREENHOUSE & WHY DOES IT NEED AN HVACD SYSTEM?

For some growers, depending on crop type or external weather conditions, "sealing" the greenhouse, (not allowing the greenhouse to intake, vent, or interact with exterior conditions) is the most effective way to achieve an optimal grow environment for their plants. With a sealed environment, growers can precisely control temperature, humidity, and CO2 concentrations for optimal plant health. It also allows cultivation facilities to protect themselves from exterior pests and pathogens that can limit or destroy harvests.

WHY CERES?

- International design and support team
- Local sourcing for materials and manufacturing in US, CA, & EU
- Highest quality design and materials
- Most efficient greenhouses in the industry
- Long-term support and collaboration with clients/partners
- Data Analysis & optimization



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