US GLOBAL RESOURCES

Heating Systems For All Types of Greenhouses

Introduction:

Our hot water systems utilize the physics of heat to efficiently heat the plants. Placing the heat under the plants allows the heat source to react faster to temperature changes at the plant level. Heating from below offers a more consistent temperature, better plant quality and lower heating costs.

You know what you want, to heat your greenhouse efficiently. You also want a heating system that can withstand the harsh greenhouse environment. This is why USGR supplies a full product line of Modine unit heaters and all of our heating systems are designed to withstand the extremes of the greenhouse. It's a fact; no other company is more devoted to meeting your heating needs than Hummel Hydronics. Contact us today for your greenhouse heating needs.

Boilers:

Modular Condensing Boilers

Commercial modular condensing boilers are an efficient and flexible solution for heating large spaces.

Here are some key points about them:
Efficiency: These boilers are highly efficient, often achieving energy efficiencies of up to 95%1. They convert water vapor condensation into heat, recycling waste gas.

Modular Design: Modular boilers consist of multiple smaller units that work together. This design allows for redundancy and reliability, as each module can operate independently.

Applications: They are suitable for a wide range of commercial applications.

Installation and Maintenance: Modular boilers are compact and can be installed in various configurations, making them easier to fit into existing spaces. They also simplify maintenance since individual modules can be serviced without shutting down the entire system.

Cost Savings: By optimizing performance and reducing fuel consumption, these boilers can significantly lower operating costs.

Heating Systems

- Hot Water Boilers
- Modular Condensing Boilers
- Heat Exchangers
- EPDM Tube Bench Top Heating
- EPDM Tube In Ground Heating
- High Density Polyethylene Concrete
- Floor Heating
- Twin Fin Aluminum Tube Heating
- Multi Fin Aluminum Tube Heating
- Warm Water Irrigation
- Hot Water Unit Heaters
- Gas Fired Unit Heaters

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Boilers (Cont.)

Non Condensing Boilers

A commercial non-condensing boiler heats water using gas, oil, or electricity and employs a heat exchanger to transfer the heat. In contrast to condensing boilers, non-condensing boilers do not recover and reuse heat from the exhaust gasses, resulting in lower efficiency levels, typically between 80-90%.

Key Points on Commercial Non-Condensing Boilers:
Efficiency: Generally, they are less efficient than condensing boilers due to heat loss through the flue gasses.

Installation: They tend to be easier and more cost-effective to install, particularly in older buildings.

Venting: They necessitate a chimney or flue to expel the hot combustion gases directly outside.

Cost: They are less expensive initially compared to condensing boilers.

Non-condensing boilers may be a suitable option for buildings where installing a condensing boiler is impractical, or when the upfront cost is a major consideration.

Heat Exchangers

USGR provides a diverse selection of heat exchangers for greenhouses.

Ground to Air Heat Transfer (GAHT) Systems: Also known as Earth Batteries or Climate Batteries, these systems use the thermal mass of the soil to store and release heat. They are cost-effective and use fans to move air through underground pipes.

Unit Heaters: These heaters may be vented or unvented and often utilize LP gas, natural gas, or heating oil. Types of vented unit heaters include gravity-vented, power-vented, separated-combustion, and high-efficiency condensing models.

Convection Systems: These systems employ poly-tubes or fan-jet systems to ensure even heat distribution and facilitate air movement.

Horizontal Air Flow: (HAF) systems utilize fans to distribute air horizontally throughout the greenhouse, which ensures a uniform temperature distribution.

Each type has its own advantages and is suited to different greenhouse sizes and climates.

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EPDM Heating Systems

EPDM Heating Systems

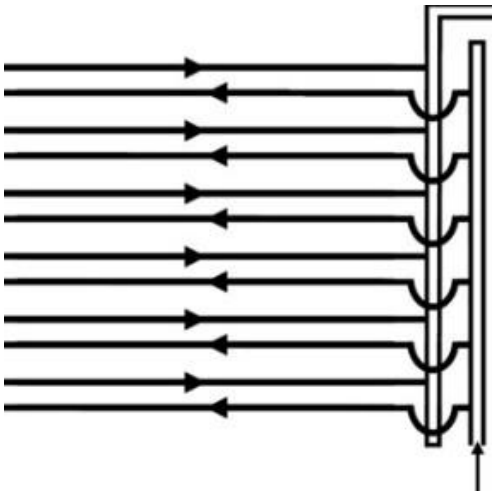
Our EPDM rubber tube heating systems warm crops at the benchtop level. The rising heat from the benchtop heats the soil and roots, aiding in the acceleration of plant growth.

The system provides several benefits:

- Enhanced germination rate
- Reduced production time
- Resistance to UV rays and chemicals
- Rapid and efficient system response
- Tailor-made manifolds for various benchtop scenarios

This system offers an optimal growing environment for propagators, plug producers, and general cultivation. It ensures healthier, more uniform plants and guarantees at least 10% in fuel savings, making it a preferred choice for growers. The high-quality EPDM tubing is resistant to breakdown from ultraviolet light, ensuring durability and minimal maintenance.

LD EPDM Soil Heating System



Our EPDM soil systems start your heating under the soil level. Similar in construction to the bench top systems, this system uses a larger diameter EPDM hose and a bigger manifold.

This system offers several advantages:

- Initiates heating from the lowest point in the greenhouse
- Contributes to reduced heating expenses
- Features a rapid response time
- Includes custom-made manifolds tailored to your specifications
- Delivers heat starting at the roots
- Boasts UV and chemical resistance

This heating system is well-suited for extensive areas. It thrives in the nursery industry and offers cost-efficiency for starter houses, potentially saving 20% or more compared to traditional forced air heating. It operates with low volume and provides a rapid response. The superior EPDM tubing is resistant to ultraviolet degradation, ensuring durability and minimal maintenance.

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Radient Floor Heating Systems

Floor Heating Systems

Our floor heating systems are a great choice for heating potting areas, greenhouses, retail spaces and even warehouses. Because the tubing is installed directly into the concrete floor, it doesn't get in the way of production. It is easy to install. Special manifolds are concealed by a box in the ground for some installations. These manifolds are custom made for each job. Another option for floor heating is to connect directly to the ring lines.

Key Advantages of This Heating System:

- Installed beneath the concrete, it does not interfere with operations.
- Heating begins at floor level, ensuring even distribution.
- Simple installation process.
- Heat output is consistent and easy to regulate.
- Reduces energy expenses.
- Operates invisibly and silently.
- Environmentally friendly.

Slant Fin Systems

SF125 & SF200 Multi Fin Tube

Our SF125 and SF200 multi-fin models are ideal solutions for consistent heating. The SF125 features 1.25-inch schedule 40 high-grade aluminum, while the SF200 features 2.00- inch schedule 40 high-grade aluminum. This system heats the greenhouse from the perimeter and beneath the gutters to melt snow. It can also be applied in the roof for additional snow melting. Made of aluminum, it dissipates heat rapidly and effectively. Roughly 100 feet of SF 200 generates the same amount of heat as 850 feet of bare pipe, meaning its high BTU output requires fewer materials.

Installation is straightforward since the fittings do not require threading. The fin tubes are connected using all-aluminum grooved couplings. Its simple design ensures the fin is easy to maintain and replace parts, making it ideal for heating cold spots or areas that are difficult to heat.

The multi-fin system offers several advantages:

- Simple installation process
- Ideal for addressing cold spots
- Designed to run along the perimeter
- Provides efficient heating
- Constructed from aluminum to resist corrosion

TF1 & TF2 Under Bench Heating System

Our Twin Fin is available in two sizes. TF1 features a 3/8-inch fin on both the top and bottom, while the TF2 features a 1-inch fin on both top and bottom. This fin design ensures adequate heating with minimal water volume, resulting in high efficiency and rapid response times.

The fins effectively warm the greenhouse from beneath the bench, leading to optimal temperature regulation and faster plant growth. They are crafted from high-quality hardened aluminum for durability and resistance to rust. Additionally, the twist-on coupler and stainless-steel retaining clip ensure that installation is both swift and straightforward.

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Unit Heaters

USGR provides a variety of unit heater solutions boasting efficiencies of up to 97%. Unit heaters are autonomous heating systems designed to warm a designated area. They are composed of a heating element, a fan, and control mechanisms to regulate temperature and airflow. Typically mounted on walls or ceilings.

Our selection encompasses multiple types and styles of unit heaters, including:

- Gas-fired
- Electric
- Hot water
- Steam
- Oil

Unit heaters are effective and adaptable heating solutions suitable for diverse environments such as greenhouses, warehouses, garages, and commercial areas. They provide advantages like efficient heating, straightforward installation, and minimal maintenance.

Irrigation Heating Systems

Warm Water Irrigation Systems

USGR warm water irrigation system heats water from a chilled temperature up to 70 degrees. It prevents root zone thermal shock and conserves fuel that would otherwise be used to warm crops post-watering. The system is energy-efficient, providing an immediate response without the need for large volumes of water, resulting in minimal to no radiation-standby loss. The system effectively enhances rooting germination rates and nutrient mixing, while also preventing spotting and diseases in crops.

When utilizing unit heaters or boilers with limited capacity, Hummel Hydronics warm water irrigation system is an ideal solution for providing warm water irrigation. In greenhouses that already have a boiler, installing the warm water irrigation system is comparable to adding an additional zone.

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