



Budgetary Estimate Proposal

This is a budgetary
proposal for your
system request.



Project Details

Company Location: New Jersey

Company: ATH Cultivation

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The Ultimate Grower Climate Control System

A cutting-edge, all-in-one solution designed to optimize every aspect of environmental management in cultivation spaces.



The Ultimate Grower Climate Control System offers versatility and is suitable for indoor cultivation facilities with **AirDentro** units or greenhouse applications via BioTherm's **Plantcentric** system. Whether upgrading an existing facility or designing a new one, this solution redefines what is possible for growers.

Total Climate Control

- ✓ Temperature & Humidity Control
- ✓ CO2 Enrichment, On-Site
- ✓ Irrigation Tempering
- ✓ Dissolved Oxygen

Applies To:

- ✓ Indoor Cultivation
- ✓ Greenhouse Cultivation
- ✓ Clear-Top Indoor Cultivation
- ✓ Retrofit or New Construction



AirDentro® Air Handling Units

Efficient climate control with 4-pipe air handlers and reheat

Air handlers do more than just cool the air – they're the backbone of a perfectly controlled greenhouse environment. BioTherm's 4-pipe AirDentro air handling systems not only maintain optimal temperatures but also give you precise control over humidity levels, helping to maximize your growing footprint and crop productivity.

Why reheat?

With the added benefit of reheat functionality, these systems offer unmatched flexibility in climate management. Reheat allows you to reduce humidity without overcooling the greenhouse, ensuring plants remain in their ideal growth conditions while conserving energy and reducing operational costs.



Benefits of a 4-pipe system:

- ✓ **Consistent dehumidification**
Air handler consistently dehumidifies with precise chilled water control, reducing energy consumption by 10%.
- ✓ **Heating & boiler efficiency**
High-efficiency condensing boilers use 15% less energy for the same heat output as conventional gas unit heaters.
- ✓ **Economization**
Turn off the chilled water system and utilize outdoor air during cooler months of the year, for up to 35% electricity savings annually.



Specialized Chillers for precision cooling

Once water is chilled, it becomes the foundation for an efficient climate control system in your greenhouse. With BioTherm's Specialized Chillers, you can distribute chilled water seamlessly using space-saving options, including custom air handling units designed to maximize your growing space.

Natural Gas & Hybrid Chillers

When electricity is at a premium, BioTherm's Natural Gas and Hybrid Chillers offer an energy-efficient alternative. Equipped with natural gas engine-driven compressors, these systems help significantly cut operating costs while maintaining the reliable performance your greenhouse demands.

Hybrid chillers combine the best of both worlds, offering flexibility to use either natural gas or electricity, depending on your energy needs and availability.





CO2 Enrichment Generated on-site

CO2 is pulled directly from the boiler exhaust and delivered into the growing space at safe levels via our specialized AirDentro air handlers or our Plantcentric system. BioTherm systems capture CO2 directly from boiler exhaust gases, ensuring even distribution throughout the space while maintaining safe levels of other gases.

Irrigation Tempering

Proper irrigation starts with precision. At BioTherm, we understand that water temperature plays a critical role in plant health and growth. Our irrigation tempering systems are designed to deliver water at the ideal temperature for your crops—reducing thermal shock, improving nutrient uptake, and creating an environment where plants can thrive.

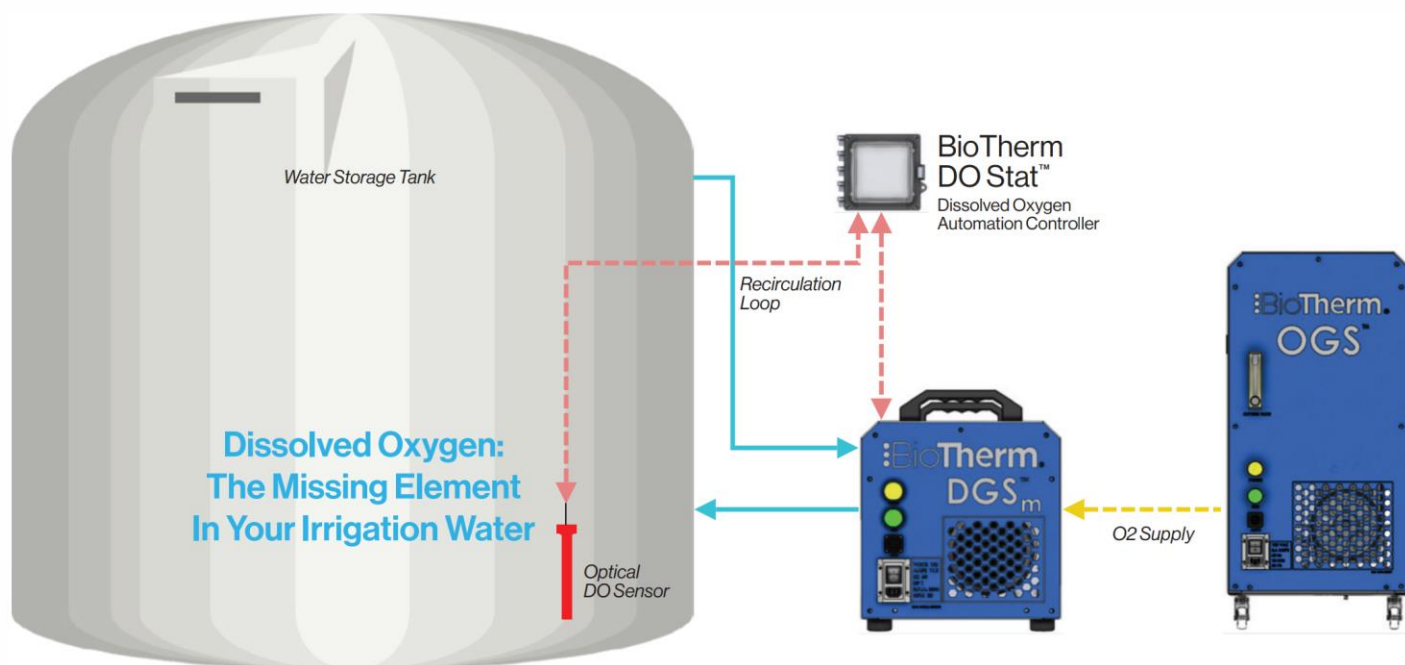




Dissolved Oxygen

Increasing dissolved oxygen (DO) levels in your irrigation system is one of the most innovative ways to enhance your plants' health and production. Our dissolved oxygen solutions are simple and efficient, easy to install, and scalable for your irrigation needs.

The DGS Series is a lineup of plug-and-play dissolved gas systems, in-stock and ready to ship from our Cotati, CA warehouse.



Site Square Footage: 12,990 sq ft

Flower – PlantCentric Arcade, Veg – AirDentro Distribution

Structure:

We believe greenhouses are for growing, not to be used as equipment rooms. The PlantCentric arcade attaches to your greenhouse to allow for complete climate control. Select how much of the system you are interested in including.

	PlantCentric Arcade (By BioTherm)	Two compartment arcade, utilizing fresh air blending and mechanical cooling/dehu or evaporative cooling. Structure provided by the BioTherm team.
	PlantCentric Arcade (By Others)	Two compartment arcade, utilizing fresh air blending and mechanical cooling/dehu or evaporative cooling. Structure provided by BioTherm partners.
	PlantCentric Lite Arcade (By BioTherm)	One compartment arcade, providing a space of mechanical cooling/dehu equipment. Structure provided by the BioTherm team.
	PlantCentric Lite Arcade (By Others)	One compartment arcade, providing a space of mechanical cooling/dehu equipment. Structure provided by BioTherm partners.
	AirDentro System (By BioTherm)	Distribution equipment will be inside the growing space.

Structure Add-ons:

	Evap Pad & Bug Screen (By BioTherm)	This option includes an evaporation pad with insect screen. By BioTherm.
	Evap Pad & Bug Screen (By Others)	This option includes an evaporation pad with insect screen. By BioTherm. By BioTherm partners.
	No Evap Pad & Bug Screen	This option excludes the evap pad and bug screen. Typically, this means a one compartment arcade structure.
	Louvers (By BioTherm)	This option includes a louver system for different operational modes and to connect arcades to the growing space. By BioTherm.
	Louvers (By Others)	This option includes a louver system for different operational modes and to connect arcades to the growing space. By BioTherm partners.

What Systems are Included in this Initial Estimation?

Core Systems:

✓	Cooling & Dehumidification	Optimize climate control for ideal growing conditions in your greenhouse or grow room with air conditioning solutions from BioTherm.
✓	Arcade AHUs	Air Handling Units are placed in a PlantCentric Arcade, which is separate from the growing space.
✗	Grow Space AHUs	Air Handling Units are distributed within the growing space.
✓	Chiller Package	The Hydronic Cooling and Dehumidification AHUs utilize chilled water from an air-to-water chiller package. This equipment must be located outdoors.
✓	Boiler Package	The Hydronic Cooling and Dehumidification AHUs utilize hot water from a hydronic boiler package. This equipment is to be installed indoors.
✓	CO2 System	Greenhouse CO2 enrichment systems elevate carbon dioxide levels to create stronger plants through stronger, healthier root systems.
✓	Polyduct System	Polyduct Systems help distribute conditioned air uniformly within the grow space.
✗	Root Zone Heating System	Our heating systems target the plant root zone ensuring the energy is used where it's most needed resulting in improved crop uniformity and quality.
✓	Snowmelt System	In harsher winter climates, heat can be delivered to the greenhouse gutters to protect the structure from buildup of snow and ice.
✓	Piping Package	Hydronic systems require piping systems to connect the distribution system components. Depending on the region, piping may be locally sourced.
✓	Pipe Insulation Package	Piping insulation is essential in various areas to ensure efficiency, safety, and protection.
✓	HAF System	Air movement plays a critical role in maintaining uniform air distribution in the greenhouse. Our premium Horizontal Airflow Fans deliver efficient and reliable airflow.
✗	Controls	Control systems are critical to maintain your optimal greenhouse environment by utilizing both the greenhouse structure as well as supplemental mechanical equipment to give you the most efficient use of your engineered systems.
✗	Irrigation Tempering	Our irrigation tempering systems are designed to deliver water at the ideal temperature for your crops – reducing thermal shock, improving nutrient uptake, and creating an environment where plants can thrive.
✗	Dissolved Oxygen	By supplementing dissolved oxygen in irrigation water, horticulturalists can increase their growth rates, help fend off rootzone diseases and decrease fertilizer usage by up to 20%.

System Cost & Breakdown - BioTherm

Total sq ft
12,990

Base Pricing

Price p/sq/ft

Engineering Package + Upgrades

Package Includes:

- Air Handling Units
- Chiller Package
- Boiler Package
- CO2 Package
- Piping Package
- Insulation
- HAF System
- Snowmelt Package
- PlantCentric Arcade (Without Evap Pad and Bug Screen)
- Louvers

By Others:

- Structural Engineering
- Concrete Footing
- Controls
- Utilities (Distribution and Connections)

Exclusions:

- Rootzone Heating Package
- Irrigation Tempering Package
- Dissolved Oxygen Package