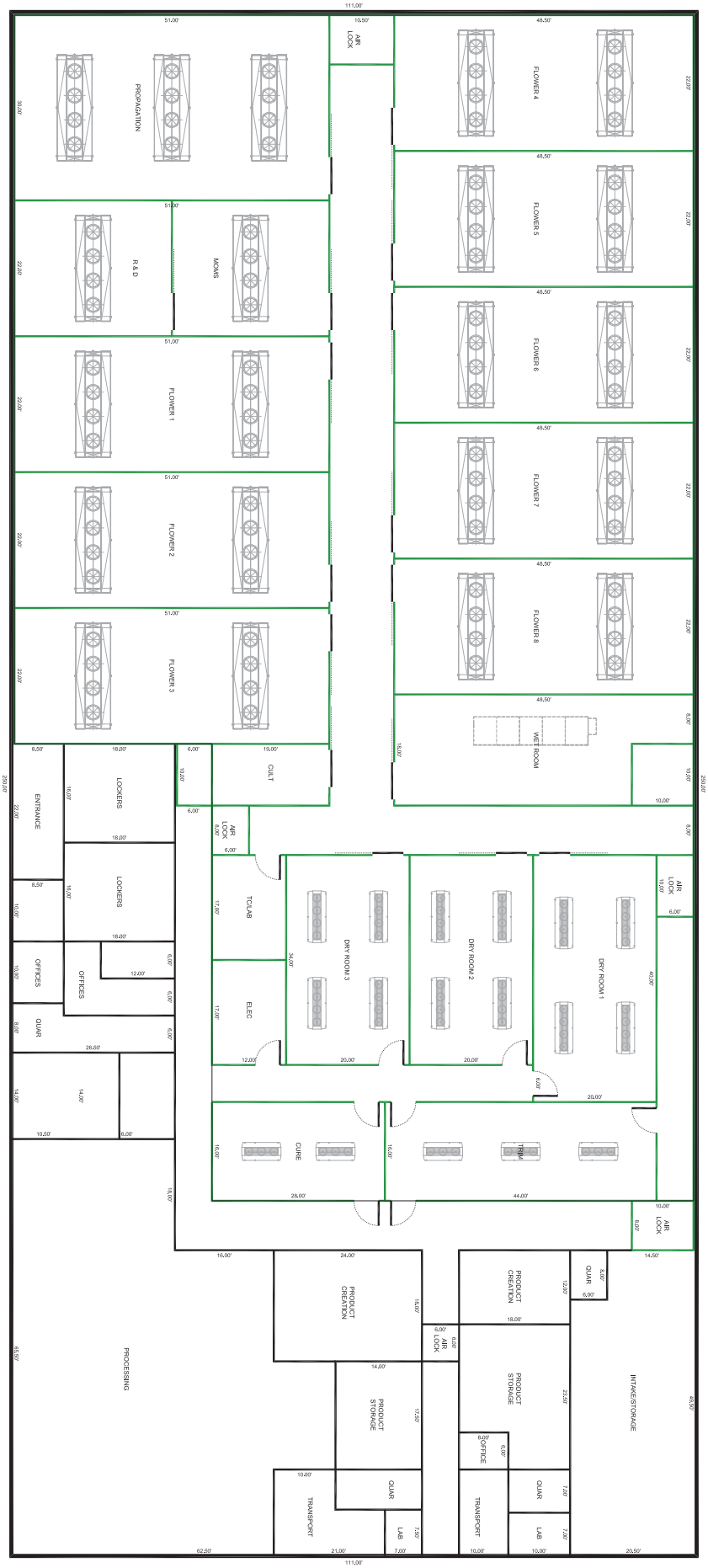
BUDGET

GROW OPERATION FIT-OUT




March 2022

GC LLC | Premium Air Industries



PREMIUM AIR INDUSTRIES

TURNKEY FACILITY

A1
CONCEPT
03 MAR 21

GROW CONTROLLED, LLC
100 APPLEWOOD DRIVE
SPARTA, MI 49345
616.256.0420
GROWCONTROLLED.COM

Premium Air Industries
Hybrid GC Post Frame Cultivation Budget

Flower rooms	8	734 Plants	16	Rooms
R&D room	1	468 Plants	6340	Plants

GC Atmosphere Control Equipment	$ 650,000
Secondary Refrigeration using Reheat Coils for Dehu	$ 4,200,000
Insulated Panels Installed 4" Ceiling, 4" Walls PolyIso foam	$ 1,145,000
GC Advantage - Gastight Vaportight Rooms	$ 180,000
Rolling Benches	$ 755,000
LED Grow Light	$ 1,387,500
Fertigation System	$ 695,000
Subtotal	**$ 6,930,000**
Office, conference rooms, bathrooms, locker rooms	$ 1,387,500
General Conditions - Dumsters, Stake, site cleanup, travel, temp power, job trailer, porta potty	$ 190,000
Budget - Building materials as of 03/03/22	$ 1,110,000
Includes - Standing Seam Roof, 24 ga. Kynar Finish, White	$ -
Allowance - Gutters and snow retention	$ 36,000
Labor to Erect Weather-Tight Exterior Shell	$ 499,500
	$ -
Allowance - Excavating and Underground plumbing	$ 299,700
Concrete -	$ -
27750 ft2 - 6" floor slab	$ 333,000
footings for post frame columns.	$ 80,000
footings for interior steel columns.	$ 65,000
exterior concrete sidewalks, entrance, etc	$ 165,000
Plumbing	$ 832,500
Electrical	$ 1,054,500
Travel, Lodging, Perdiem, Truck Charge	$ 150,000
Coordination Fee 12% - Supervision, Building Materials, Labor, Concrete	$ 755,364
2" Hi Density Floor Insulation	$ 62,000
Engineered Hybrid Post Frame Structural Plans - Sealed	$ 30,000
Architectural Document for Permit	$ 200,000
Building Permit Fees	$ 150,000
Subtotal	**$ 6,012,564**
Grand Total	**$ 12,942,564**
cost per Sq. Ft.	$ 466.40

	Width	Length	Eave
Dimensions:	111	250	22

27750 ft2

Structure ONLY	cost per ft2
1,609,500.00	$58.00

Sales tax not included
Site Fencing not included
Utility connection fees - not included

Jim Schaefer Estimate - March 1, 2022
Grow Controlled, LLC

FRIGADON CHILLERS

GC is able to bring industrial equipment into a traditional commercial equipment market. Energy savings and reliability are built into our designs, reducing necessary installed equipment, all with significantly better ability to control every aspect of your grow cycle.

Frigadon chillers have a proven track record in many industries around the world, and the cannabis industry is the next emerging market to benefit from the multi-circuited, dual-liquid-loop design. Cooling products with chilled liquid and fluid coolers inside rooms is commonplace. Grow Controlled's innovation in adding a warm loop of HTC fluid efficiently provides improved RH control using reheat coils. The simplicity and integration of the chiller within the GC control system allows for highly accurate temperature and RH conditions, giving the grower the flexibility to meet their custom grow requirements with the touch of a button. A single chiller can operate many rooms, even with different room usages, and in most cases, an entire facility.

Frigadon

To substantially reduce operating costs, GC has developed a method of humidity control in rooms without the use of costly dehumidifiers. Heat reclaim utilizes otherwise wasted heat from the condensers and transfers it to custom designed fluid coolers inside the grow rooms. These custom low profile, vertical flow, dual-discharge heat exchangers incorporate both cold and warm fluid loops. By running the cold and warm coilpacks in harmony, we are able to manipulate dew points and pull moisture out of the air with ease. The end result is constant temperature and RH levels without conventional dehumidifiers, all at a fraction of the operating expense.

Never before has it been so easy to install and commission a refrigeration system. Chillers come with complete controls and electrics, Bitzer compressors, as well as built-in circulator pumps on inverter drives. Just connect the power supply and the flow/return pipes on the liquid side and you are ready to go!

BENEFITS

- Environmentally-Friendly Design
- Minimal Footprint - Indoor or Outdoor
- Expedient Installation & Low Maintenance
- Reduces Operating Expenses Substantially
- GC Method Eliminates Dehumidifiers
- Control Vapor Pressure Deficit
- Frees Valuable Grow Room Space for Lights, Plants, etc.
- Control within 1°F & 1% RH
- Web-Based Remote Monitor & Control

Free Cooler Option using Outdoor Temperatures for Cooling during Winter Months

GC LLC

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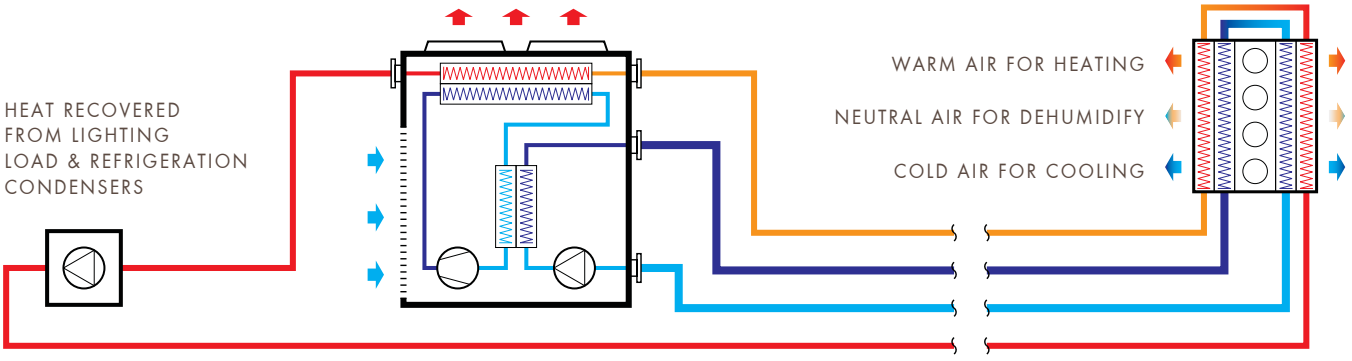
FRIGADON CHILLERS

GROW ROOM REFRIGERATION DESIGN

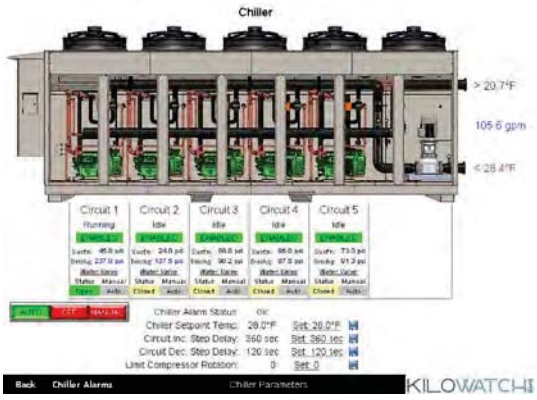


WARM LOOP PUMP

FRIGADON SECONDARY CHILLER WITH CUSTOM WARM RECOVERY LOOP

V-FLOW DUAL-DISCHARGE COILS IN ROOMS

Low Profile V-Flow Dual-Discharge Coils use Less Space and Improve Airflow



Remote Chiller Operation via GC KiloWatch™

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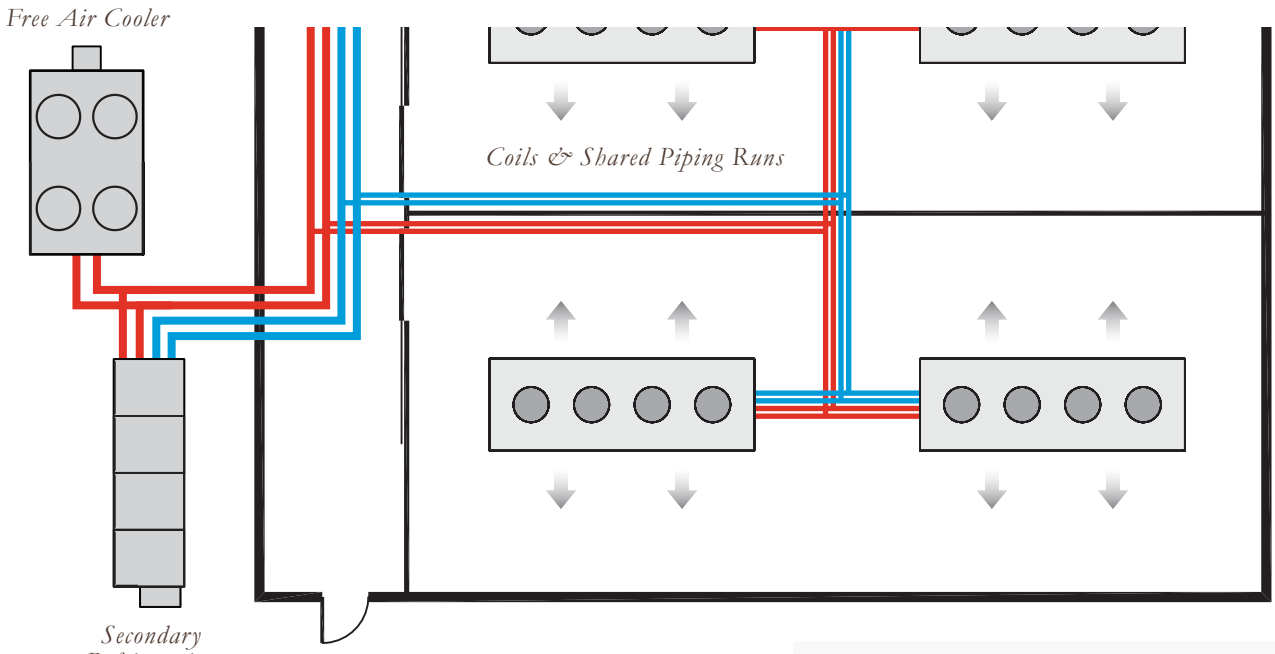
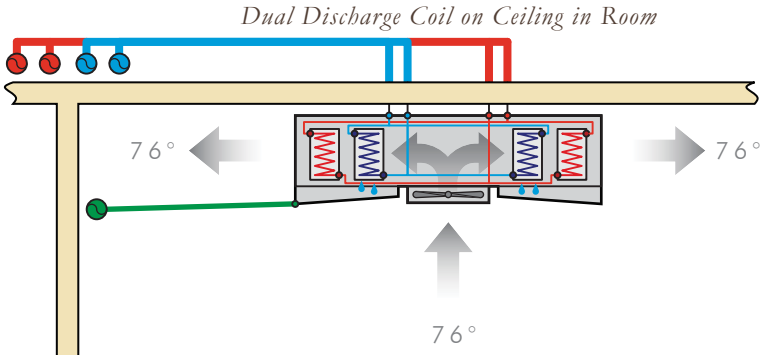
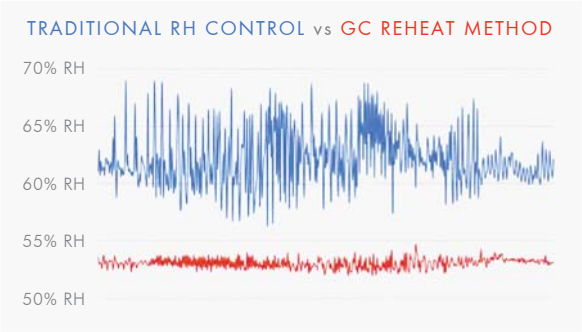
THE GC METHOD



PLAN VIEW





- Patent Pending
- Cooling Coil Creates Condensation
- Room Air Dehumidifies via Condensate Drain
- Warm Coil Reheats Cool Air for Minimal Temperature Change

SECTION VIEW

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THE GC METHOD

Lights Hang Below Coils for Maximum Canopy Height

Slim-Line Coil with even Less Vertical Impact

Low Profile V-Flow Dual-Discharge Coils use Less Space and Improve Airflow

Back-to-Back Coil Arrangement over Aisle in Room

Chiller with Free Cooler Option using Outdoor Temperatures for Cooling

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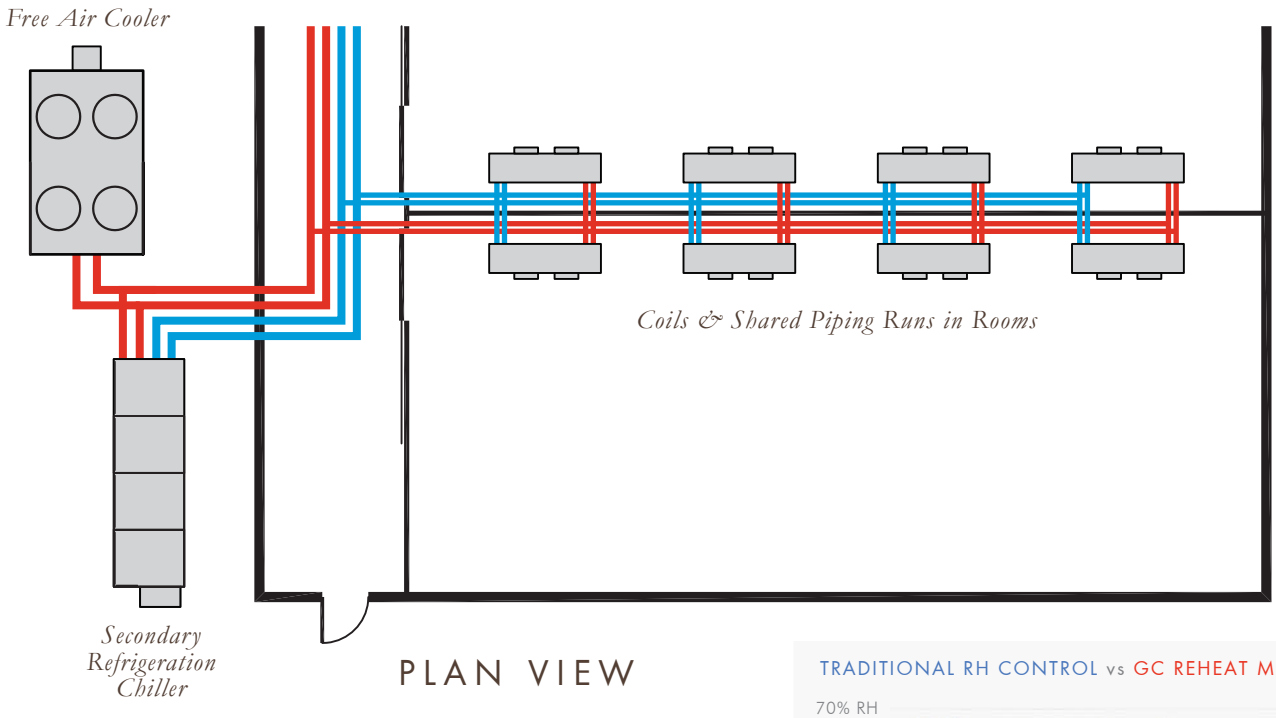

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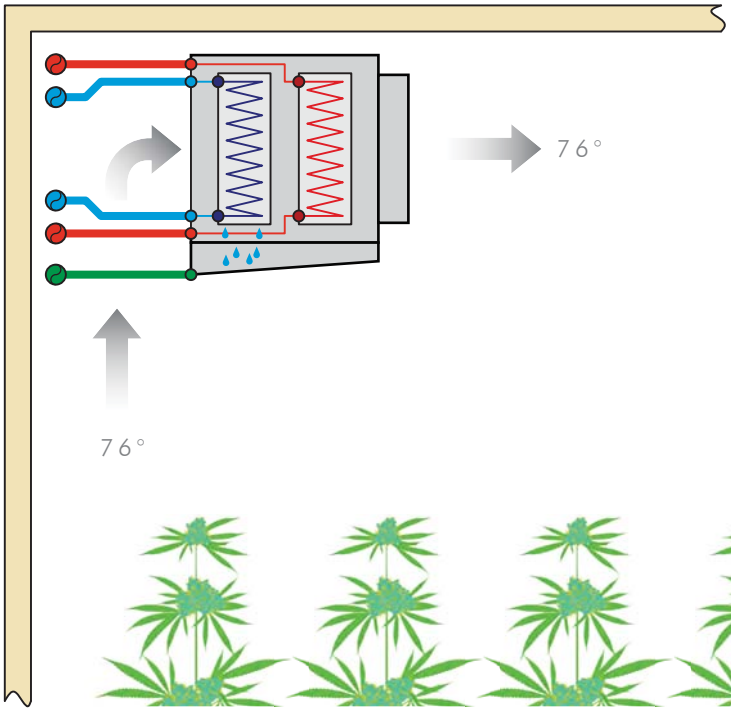

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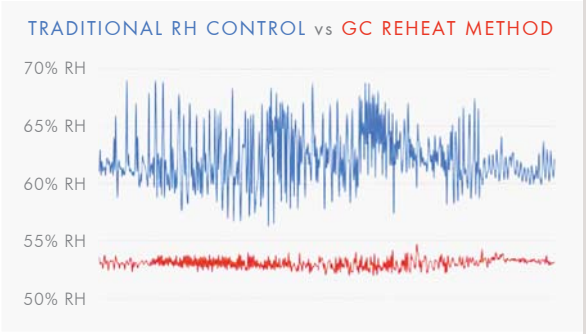

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INSULATED METAL PANELS

Interior of IMP GCPA Room w/ GC SeamSeal

Grow Room Fit-Out with GC IMP & Dehu using Reheat Coils

FEATURES

- Perfect for both Typical and GCPA Grow Applications
- High-Density PIR or QuadCore™ High R-Value Foam Cores
- Will Not Lose R-Value Over Time
- 42" & 45" Widths; Up to 80' Lengths
- Tongue & Groove Connection *(See Right)*
- Water/Air Tight with Minimal Thermal Transfer/Vapor Drive
- Semi-Structural, Suitable for Exterior & Interior Walls
- Easily Washable with Little to No Additional Maintenance
- Reduces CO_2 Usage, Odor, and Microbial Spread

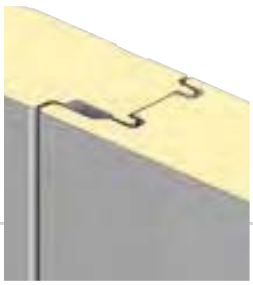
The insulated metal paneling solution offered by Grow Controlled is intended to improve the experience of both traditional grow and more rigorous controlled atmosphere (CA) applications. Touting an R34 insulation rating that won't deteriorate over time makes them an extremely efficient and reflective alternative to traditional insulation or spray foam, and most importantly stops vapor drive, enabling RH control.

IMP construction is comprised of coated galvalume sheeting on either side of a rigid closed cell core of Polyisocyanurate (PIR) or new QuadCore™ insulation for improved R-value and fire-resistance. With standard 42" and 45" widths, panels can be manufactured in up to 80' lengths. The tongue and groove connection between panels makes for easy installation. Additionally, the steel sheeting on the panel's faces do not connect, thereby breaking thermal transfer. This means that a single panel wall may be used to partition two rooms with no additional insulation or structural support required, cutting down on materials & installation costs, as well as maximizing internal floor space.

In order to make rooms gastight, an optional flexible and permanent seam tape is applied to the interior panel joints. Then, to ensure a perfect seal and protection from condensation, the tape is painted over with a flexible seam paint. This allows the panels to move in their natural expansion/contraction without compromising the seal.

The panels are semi-structural by nature, so while they are not intended to serve as exterior structural supports, they are capable of creating self-supporting rooms/hallways within a new or existing structure.

Maintenance on the panels is negligible and certainly less than with traditional room construction methods. The panels have a natural resistance to mold/fungi, but when cleaning is required, they may be washed easily. The upgraded finish and smooth texture of interior faces allow for even greater resistance to wear associated with cleaning, and offer fewer places for spores to collect.



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INSULATED METAL PANELS

ceiling support solutions

grow room hallway

interior room finishes

gc advantage seamseal

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THE GC IMP ADVANTAGE

WASHABLE & FOOD SAFE

Panel rooms can be washed of all debris and residue, making them ideal for working environments, as well as for creating rooms which will be used for growing cannabis. This combined with the non-degrading design of panel walls make them the preferred choice for flower production and storage industries.

BUILT-IN VAPOR BARRIER

Proper installation following approved practices will create a vapor barrier built-in to the panel wall system. Since an additional vapor barrier is not required, savings are found in the reduction of material and labor costs. Humid climates make this imperative to achieving low relative humidity, especially late in the flower cycle.

BUBBLE TIGHT CONSTRUCTION

GC has world-wide partnerships bringing exclusive, European-proven products and techniques to panel construction. The deliberate process of using GC StickyFleece and GCFiller to finish rooms proves a Cornell University Water Column pressure test and ensures gastightness. The "bubble-tight" goal also offers energy savings in the world of GCPA grow rooms.

CLASS 1, FM-4882 RATED

Panels are tested in accordance with UL, ULC, FM and ASTM approval standards, testing methods and procedures. Panels received a Class 1 classification rating of insulated wall & ceiling panels to unlimited height without sprinkler protection. Available Kynar and CleanSafe finish options afford the option of increased durability in high-use areas.

STABLE R-VALUE

Panels are available in many thicknesses to suit any application, including freezers. Their sandwich construction keeps them protected for years from outside variables, which in turn helps them maintain their guaranteed 8.0 per inch with QuadCore insulation.

stickyfleece seam tape

gcfiller seam paint

gcfiller seam paint

gcfiller wall/floor joint seal

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THE GC IMP ADVANTAGE

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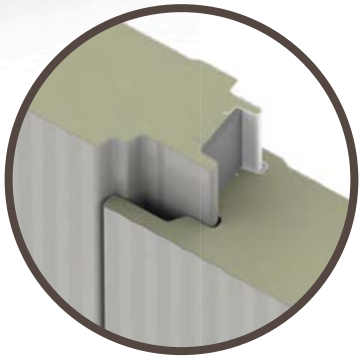
GC40

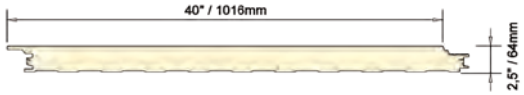
CONCEALED FASTENER INSULATED PANEL

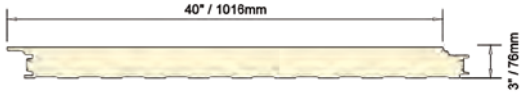
FEATURES

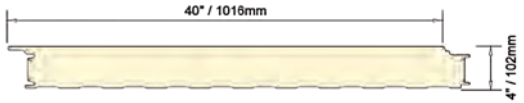
- Max length up to 82 feet
- In macrorib, microrib, box profile, or non-lining
- Colorcoat HPS200 Ultra® for exterior and interior faces
- Designed for vertical and horizontal installation
- Hidden fastner

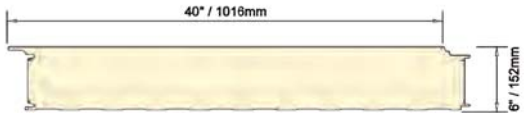


PANEL INTERLOCK









Core Thickness [in]	U-Factor (IP) [BTU/h·ft²·°F]	R-Value [h.ft²·°F/BTU]	U-Value (SI) W/(m².K)
2.5	0.0557	17.95	0.316
3	0.0464	21.54	0.264
4	0.0348	28.72	0.198
5	0.0279	35.90	0.158
6	0.0232	43.08	0.132

*Tested at 40 degrees Fahrenheit

GC40

CONCEALED FASTENER INSULATED PANEL

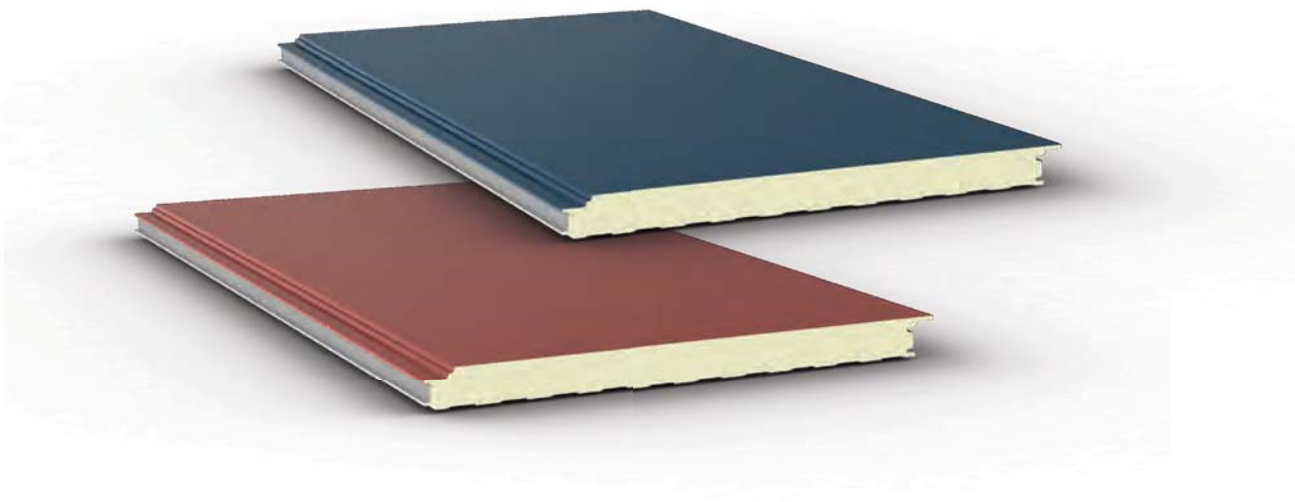
FOODSAFE
Special edition for the food industry. The foodsafe coating meets food safety requirements.

AGRI-COATING
Agri-coating is designed for long life in agricultural applications.

FM APPROVED
These products are FM 4881, 4880 and 4471 approved.

CAN/ULC
Meets the National Building Code of Canada requirements.

ASTM APPROVED
Tested conform ASTM E84. With a flame spread = 0 and smoke developed < 450 as result.



MACRORIB PROFILE

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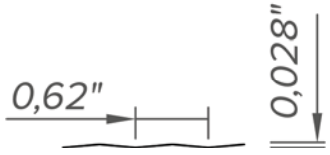
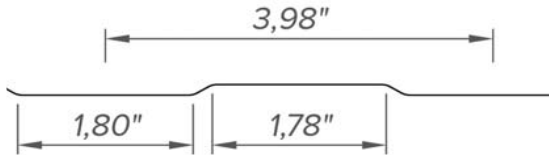


BOX PROFILE

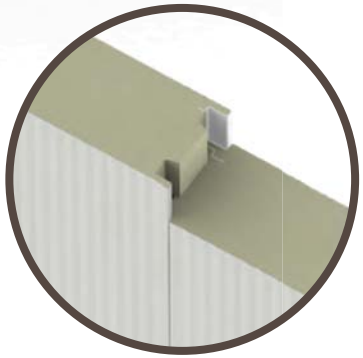


GC44

INSULATED WALL PANEL

FEATURES

- Max length up to 82 feet
- In macrorib, microrib, box profile, or non-lining
- Colorcoat HPS200 Ultra® for exterior and interior faces
- Designed for vertical and horizontal installation



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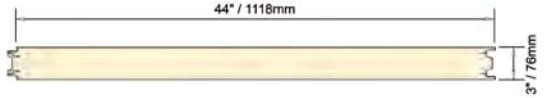

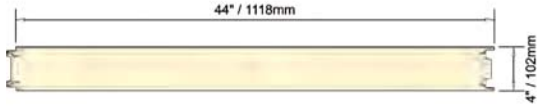

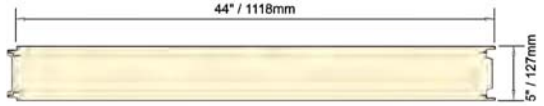

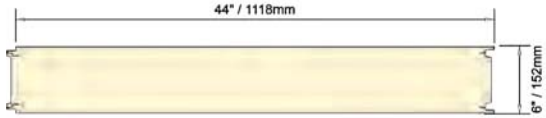

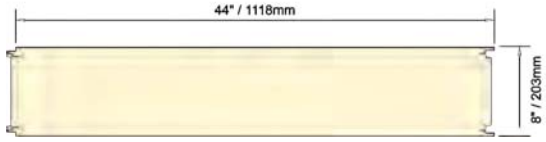

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6	0.0232	43.08	0.132
8	0.0174	57.44	0.099

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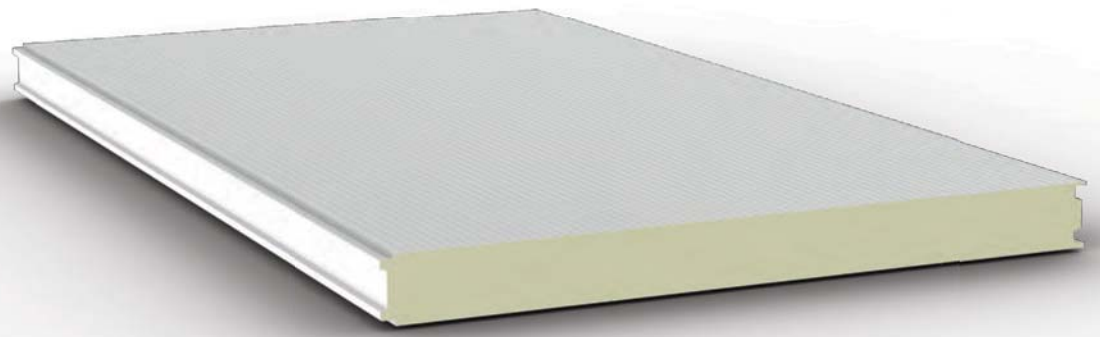

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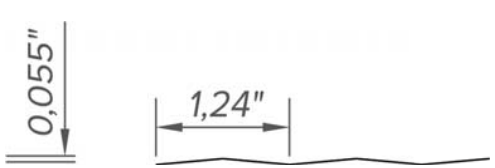
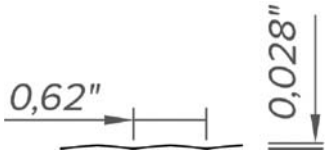


MICRORIB PROFILE



BOX PROFILE

KILOWATCH EM9™ ENERGY MANAGEMENT

KiloWatch™ Panel with Touchscreens

FEATURES

- Automatic Control of Indoor and Outdoor Greenhouse Systems
- Patent-Pending Light Cycle Programming
- Use Weather Data to Optimize Light, Shade, and Louvre Usage
- Lighting Control using PAR Values
- Contributes to Patent-Pending GCPA Program
- Refrigeration Equipment & System Control
- Temperature & RH Sensor Monitoring & Logging
- Fan Cycling & Control with Variable Speed Fans
- Boiler, Humidifier, and other Facility Equipment Integration and Control for Energy Savings
- O_2 and/or CO_2 Control for Higher Production
- Data Logging with Export Options
- Cloud Access & Backup of Data
- Remote Access & Control of Facility Systems

It may be called the KiloWatch Energy Management System™, but it offers so much more than energy savings. Consider the KiloWatch to be the brains that brings your grow operation to its full potential. Once connected to the KiloWatch, nearly any equipment or sensor can be monitored, controlled, and/or automated, even remotely, taking some of the load off of the grower, while building in a level of insurance unmatched by conventional control systems.

The KiloWatch system uses real-time energy usage monitoring combined with an abundance of energy saving features that translate to significantly reduced operating costs. With demand limiting, dynamic fan stirring, facility lighting control, and compressor management, the system provides up-to-the-minute operating cost reports which allow the operator to understand fully where their energy is being used. For example, staging of compressors and other connected equipment which require high levels of energy reduces energy demand & surges, translating into significant cost savings.

Another feature when using KiloWatch is the ability to cycle lighting between less than 12 hours on and 12 hours off. This patent-pending feature is one of the key elements in allowing increased growing rotations every couple of years, offering higher profitability. Due to the connectivity and custom nature of the KiloWatch, greenhouses also have the ability to use current weather data to automatically optimize any combination of lighting, shades, and/or louvres to satisfy a set daily light integral target. This not only saves energy and increases production, but improves the lifetime of equipment by reducing overrun.

This system keeps you connected. With daily status reports and alarm notification by SMS and email, you remain on top of your operation. You can also login and view the system and make adjustments in real-time from your PC or smartphone as if you were standing in front of the interface. The system also carries data logging capabilities that store years of temperature and atmospheric data from your facility, as well as the ability to backup and access that information from the cloud, insuring nothing is compromised during a power loss or system failure.

Each KiloWatch is built in-house and fully customized to your operation, so let us help you take your grow to new heights!

GC LLC
GROW CONTROLLED, LLC
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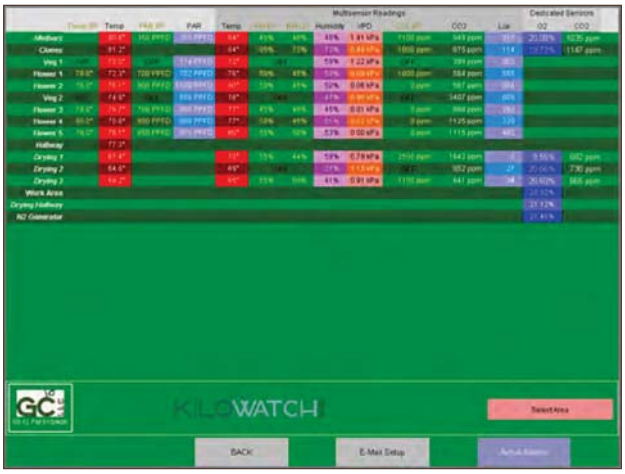
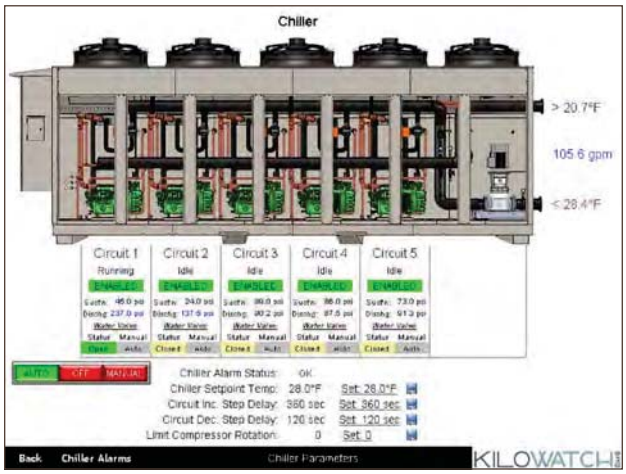
KILOWATCH EM9™ ENERGY MANAGEMENT



Whole Facility Current Readings Overview

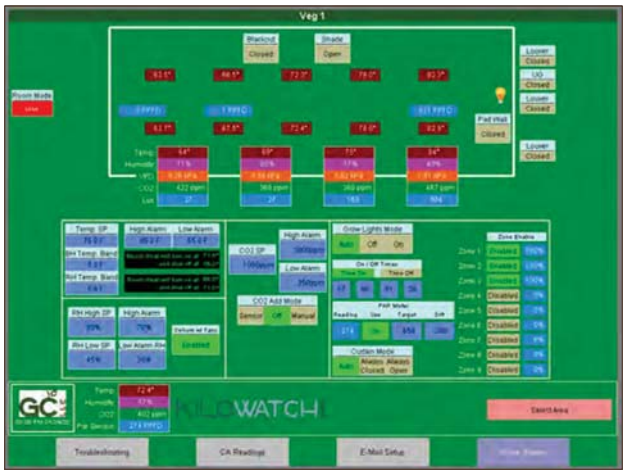
Flower Room Troubleshooting Screen

Greenhouse Flower Room Overview



Chiller Monitoring & Control

Mothers & Drying Rooms Overview Screens



Vegitation Room Overview Screen

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GC QUAD SENSOR

GC QUAD Sensor: a Carbon Dioxide, Relative Humidity, Temperature, and Light Sensor in One Box!

Installed GC QUAD Sensor with Visual LED Alarm Connection

FEATURES

- CO_2 Monitoring & Control
- CO_2 Safety/Evacuation
- Dual-Band Infrared CO_2 Sensor: 0-10,000 PPM
- Thermistor Temperature Sensor: 30-100°F ± 0.2°F
- RH Sensor: 0-95% RH ± 1.5%
- Light Sensor
- Control Outputs
- Multiple Sensors can run on Canbus Network
- On-board Backlit Display with Current Readings
- Web Interface for Remote Access, Data Logging, & Programming
- Available as CO_2 Only with 75dB Audible Alarm
- Interior/Exterior Room LED Visual Alarm Option
- Optional Waterproof Washdown Casing
- Optional Oxygen Sensor

GC QUAD Sensor in Optional Washdown Casing (Inset: Closed)

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GC QUAD SENSOR

GC QUAD Sensor Web Interface

SPECIFICATIONS

UNIT SPECS

Operating Temperature	32°F - 122°F
Integrated Sensors	Carbon Dioxide, Temperature, Relative Humidity, Light
Power Source	10-24VDC
Power Consumption	12.5W + 1.08W per Audible/Visual Strobe Alarm Maximum
Communications	Eeb Data Upload, Modbus TCP
Dimensions	180.00mm x 180.00mm x 48.50mm (7.09in x 7.09in x 1.91in)

CARBON DIOXIDE SENSOR

Detection Range	360 - 10,000ppm CO_2
Detection Technology	Non-Dispersive Infrared (NDIR); Single Light Source, Dual Wavelength
Accuracy	±50ppm+3% of reading in the range of 360 - 5,000ppm CO_2
Pressure Dependancy	Approx 1% of reading/kPa
Response Time	90 seconds (Diffusion)

TEMPERATURE SENSOR

Accuracy	±0.9°F (-13°F - 185°F)

HUMIDITY SENSOR

Operating Humidity Range	0 - 100% RH (Maximal Dew Point = +185°F)
Accuracy	< ±3% RH (15 - 85% RH at +73.4°F)
	< ±5% RH (0% - 15% RH and > 85% RH at +73.4°F)
Response Time	< 5s (50 - 0% RH) at +185°F

LIGHT SENSOR

Detection Technology	Dual Diode
Lux Range*	188 uLux - 88,000 Lux

AUDIBLE/VISUAL STROBE ALARM (OPTIONAL)

Voltage	10-24VDC
Number of LEDs	54
Lens Color	Amber
Current Draw	90 - 350mA (Setting Dependent)
IP Rating	IP55

KILOWATCH EMS
COMPATIBLE PRODUCT

* Light sensor specifications are shown. Actual performance is dependant on angle of light source relative to the sensing element. Sensor is used in this device exclusively for identifying if grow lights are on or off.

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GC CO_2 SAFETY VALVES

Patented Interior Relief System with Exterior Filter

As more attention is paid to the cleanliness of flower, dry and even cure rooms, GC has raised the bar by dictating what clean air is allowed to enter the room from a single source. Our patented GC-CO2-SV Interior Pressure Relief allows an operator to rest easy knowing their valuable product is safe from pests and microbials.

A fan inside a room can also evacuate on demand via a CO_2 sensor input at any user-set alarm level. As a negative pressure is created by the fan, the air feeding the room is allowed to enter via the GC-CO2-SV Pressure Relief.

Advanced grow operations may be using low oxygen atmosphere for the flower cycle, or even low oxygen for preserving cured product. Another reason for very tight rooms is any CO_2 treatment needed for disenfestation.

Regardless of your needs, the GC-CO2-SV offers an airtight solution to save on CO_2 usage, or doubles as a pressure relief valve when flushing with nitrogen gas.

FEATURES

- US Patent No. 10184580
- Simple Contruction
- Economical and Reliable Solution
- Pre-Calibrated & Easily Adjustable
- Easily Serviceable
- Simple 6” PVC Piping Connection

Weighted Lid Valving

Patented Interior Relief System

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GC CO_2 SAFETY VALVES

GC Model EC-1 Fresh Air Blower in Grow Room

Blowers inside the rooms evacuate problematic air from the rooms to the outside, thereby allowing the GC-CO2-SV Pressure Relief Safety Valves to permit clean air to replace it from a single, controlled source. With three models available for all size rooms, our blowers can be piped to atmosphere or to facility air filtration/treatment systems.

While manual overide is always an option, CO2 sensors in the room can automatically trigger an air exchange cycle at any user-set alarm level via the CA Controller.

FEATURES

- Works in Concert with GC CO_2 Safety Valves
- Economical and Reliable Solution
- EC Technology
- Manual or Automatic Operation via CO_2 Sensors
- Piped to Atmosphere or Air Treatment Systems
- Installation Requirement: Schedule 40 PVC

GC CO2 Safety Valve in Dry/Cure Room

GC Model EC-3 Blower for Larger Capacity (1600CFM)

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GC GROWTIGHT DOORS

FEATURES

- Keeps Odor In and Light Out
- Reduces Microbial Load
- Prevents Vapor Drive in Humid Climates
- Conserves CO_2
- Air Tight for GC PA Flower Production
- Easy & Waterproof Washdown
- Stocked and Custom Sizes Available
- Horizontal Slide, Hinged, or Vertical Lifting Operation
- Optional Window with Blackout Cover
- Aluminum Construction
- Magnetic Lock (Optional)

Grow Controlled is proud to offer a range of doors, becoming the new standard for grow facilities. Our Growtight doors are either hinged or slide horizontally on the aluminum track. Having the ability to completely seal a room not only contains odor, but eliminates vapor drive, completely isolating the atmosphere within a room for ultimate control. This will also allow the operator to maintain our GC PA grow method, opening a new world of growing and dry/cure regimes.

All doors are constructed with an aluminum framework around the perimeter, and incorporates standard IMP for the leaf. The doors come completely assembled and ready to install.

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GC GROWTIGHT DOORS

Sliding Growtight Doors in Grow Facility Hallway

Interior of Grow Room with Gastight Door Installed

Growtight Door Manufacturing at GC Headquarters in Michigan

Sliding Example Growtight Door Seal at Corner

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CŪRPOD SPACE SAVR

CūrPod SpaceSavr Interior showing RPC Stacks & Hinged Door Seal

CūrPod SpaceSavr Exterior Rear & Front

FEATURES

- Automatic Curing
- Self-Contained Control of Low O_2 Atmosphere for Long Term Holding using N_2 Gas
- Automatic Operation & Full Data Recording
- Internal Sensors for O_2, CO_2, RH and Temperature
- Hydrate Dry Product
- Introduce Terpenes
- Standard Size for 18 RPCs (95 lbs)
- Cloud-Based Monitoring and Control
- Dashboard Showing Multiple CūrPods

The CūrPod SpaceSavr System is a hermetically sealed stainless steel enclosure with a gastight sealed door and a 95 pound capacity of product in 18 standard 15.5 x 23.5 x 7.75 inch plastic crates. The vertical design and hinged door focuses on compact design, maximizing dry/cure capability in existing spaces where space is at a premium.

- No Guessing
- No Burping
- No Recordkeeping
- No Labor
- Automatic Operation
- Full Data Recording

Each CūrPod is self-contained with built-in oxygen, carbon dioxide, temperature and relative humidity sensors with digital communications to a cloud site. Built-in control valves and blowers regulate the connected nitrogen, air, or humidity supply to accurately maintain the programmed levels.

- Customize & control O_2 & CO_2 levels
- Perfect your curing process for consistency
- Preserve product using nitrogen gas for up to 12 months
- Built-in scale for logging of weight

The individual measured data is regularly collected and can be displayed on a program that runs on the PC or can be exported to Excel or other common programs. The CūrPod SpaceSavr connects to an internet cloud-based dashboard, also accessible from any device. There, multiple CūrPods can be viewed at a glance from an overview screen, with individual data and setpoint adjustment available with a click. Historical data is available for export and download, as well, to aid in record-keeping.

- Breakdown chlorophyll and sugars, not terpenes
- More time growing; less time curing
- Reduce microbial contamination
- Increase average cost per pound
- Easily maintain fresh drop appearance for up to 12 months
- Consistent cure process
- Remarkable terpene retention

CūrPod® SPACE SAVR

 CONTACT US FOR MORE INFORMATION.

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CŪRPOD SPACE SAVR

CūrPod Cloud Interface

FEATURES & SPECIFICATIONS

MEASUREMENT & CONTROL RANGE

Oxygen: 0-25% or 0-2.5% Auto range Resolution: low range +/- 0.002% O_2 Electrochemical 4-year long life sensor
Carbon Dioxide: 0-50000 ppm Resolution: < 5% 0.002% >5% 0.02%

CONTROL INPUTS

Control Gases required: Nitrogen with an oxygen content lower than minimum required CA Oxygen.
Fresh Filtered Air. CO_2 if required. Gas supply inlet pressure 1 to 3 Bar (15 to 50 psi)

Automatic atmosphere control with included operations.
Control Setpoints for Oxygen and CO_2 adjustable to a 0.01% resolution. Gas control differentials 0.05%, CO_2 add differential 0.2%.
Air added for CO_2 control: Air flow adjustable 0.1 to 1 L/min
Nitrogen added when Oxygen is measured high or when CO_2 is high. Adjustable flow 0.2 to 2 L/min. Owner to supply N_2 bottle with regulator.
Additional flow rate adjustable from controller from 100% to 1% of maximum flow over a 5 minute period.
Descant tube for Humidity Control.

OPERATION OF INTERNAL FANS

ON when control gases being added. With no gas addition, adjustable over range 1 to 5 minutes on every 5 minutes.

TEMPERATURE MEASUREMENT

Probe with a typical accuracy of 0.1°F available for measuring and recording the CūrPod temperature

PRESSURE RELIEF

The flow of correction gases into the CūrPod are automatically discharged to atmosphere through a vent.

DATA COLLECTION

O_2, CO_2 and temperature recorded to cloud site. CSV downloadable app or desktop web interface.

LEAKTIGHTNESS

Oxygen at typically 1% in a static CūrPod (no product, no correcting gas) will remain within 1.0% O_2 over a period of 24 hours.

DIMENSIONS

Standard Size: 18 x RPC crates (Typical Single RPC size: 40 x 60 x 20 cm), Approx. 95 lbs capacity
18 RPCs: 33.75”W x 42”D x 78.75”H (with Casters)

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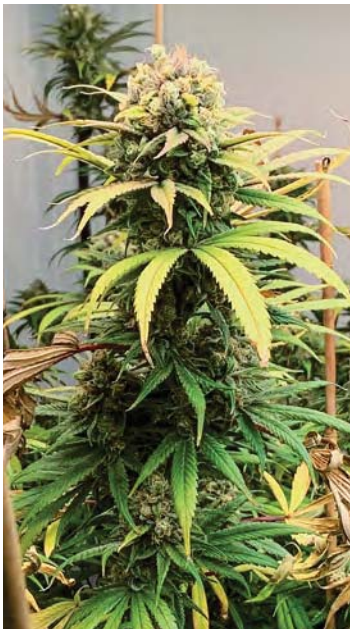
GC PA GROW ROOMS



Product Detail in Patent Pending GC Pressure Atmosphere Grow Rooms

GC PA Grow Room w/ GC Gastight Door & IMP Gastight Envelope

FEATURES

- Patent-Pending GC PA
- Increased Yield and Consistency with GC PA Grow Rooms
- Oxygen-Reduced Rooms to Simulate Higher Altitude Growing
- GC Advantage GC Gastight Seal System on IMP Room Envelope
- GC Gastight Doors with Egress Hatches
- Oxygen, Carbon Dioxide, RH, Temperature, and Lighting Control
- GC KiloWatch for Automation and Remote Access

At Grow Controlled LLC, we are always looking for ways to improve and implement the best growing practices. Historically, cannabis products have grown very well in mountainous regions. With modern technology, we can simulate those higher altitude growing environments by simply reducing the oxygen available to the plants, letting them breathe as easily as they do in the mountains.

When altering the oxygen, our in-house laboratory trials have proven 15-20% more flower production. We continue to push the cannabis plant into higher production by using automated control of oxygen and carbon dioxide levels. The possibilities also exist to alter light cycles, which allows for substantial energy savings, or even the ability to squeeze in an extra grow cycle every couple of years. These patent-pending pressure atmosphere concept and GC PA grow rooms, enhance the production, decrease microbial activity, and offer quick payback for the extra steps needed to complete the GC PA process.

Ultimately, we are changing the partial pressure on the plants by simulating the atmosphere of a higher altitude. Creating a gastight room envelope is key to economically and reliably replicating these conditions. Our proprietary GrowTight Doors and GC Advantage IMP sealing methods completely isolate the growing environment. Our refrigeration systems using reheat coils also effectively regulate humidity without the need for traditional dehumidifiers. With our GC KiloWatch controlling all of these parameters, GC PA grow rooms deliver not only a yield and quality increase, but cleaner, consistent product.

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GC PA GROW ROOMS

ALTITUDE TO OXYGEN CHART

The chart below shows how the oxygen and air pressure levels can change at different elevations. The combination of the difference in available oxygen levels and related atmospheric pressures, left uncompensated, can result in differing growth results.

ALTITUDE (ft)	ALTITUDE (m)	OXYGEN LEVEL (%)	BAROMETER (inHg)	SIMILAR LOCATION
SEA LEVEL	SEA LEVEL	20.9	29.9	STANDARD/BASE READING
1000	304	20.1	28.9	GC HEADQUARTERS
2000	609	19.4	27.8	
3000	914	18.6	26.8	CHAMONIX, FRANCE
4000	1219	17.9	25.8	SALT LAKE CITY, UTAH
5000	1524	17.3	24.9	BOULDER, COLORADO
6000	1828	16.6	24.0	STANLEY, IDAHO
7000	2133	16.0	23.1	FLAGSTAFF, ARIZONA
8000	2438	15.4	22.2	ASPEN, COLORADO
9000	2743	14.8	21.4	HUMBOLDT COUNTY, CALIFORNIA
10000	3048	14.3	20.6	LEADVILLE, COLORADO
11000	3352	13.7	19.8	CUSCO, PERU
12000	3657	13.2	19.0	LA PAZ, BOLIVIA
13000	3962	12.7	18.3	
14000	4267	12.3	17.6	PIKES PEAK, COLORADO
15000	4572	11.8	16.9	MOUNT RAINIER, WASHINGTON
16000	4876	11.4	16.2	
17000	5181	11.0	15.6	MOUNT EVEREST BASE CAMP, NEPAL
18000	5486	10.5	14.9	
19000	5791	10.1	14.3	MOUNT KILIMANJARO, TANZANIA
20000	6096	9.7	13.7	MOUNT DENALI, ALASKA
21000	6400	9.4	13.1	
22000	6705	9.0	12.6	
23000	7010	8.7	12.1	ACONCAGUA, ARGENTINA
24000	7315	8.4	11.6	
25000	7620	8.1	11.1	HINDU KUSH, PAKISTAN
26000	7924	7.8	10.6	
27000	8229	7.5	10.1	CHO OYU, TIBET
28000	8534	7.2	9.5	K2, PAKISTAN
29000	8839	6.9	8.9	MOUNT EVEREST, NEPAL

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Controlling atmospheres in fruit and vegetables for the past 39 years has been the core mission of Storage Control Systems that led to the creation of a dedicated company for growing indoors. Grow Controlled, LLC was formed by Jim in 2016, implementing the known technologies of SCS into a defined focus of growing in the perfect environment. GC has the advantage of SCS's years of experience in this parallel industry.

At the Sparta Michigan headquarters, SCS and GC have laboratory facilities for pre- and post-harvest experiments. Jim finds R&D vital to the growth of his companies. Currently, GC operates 4 small scale rooms testing light types, light cycles, CO2 PPM, and even reduced oxygen levels in flower, which is proving very beneficial. Grow Controlled LLC sets itself apart by offering gastight rooms and doors, precise instrumentation, and cooling coils with reheat that dehumidify the grow room or greenhouse. These room coils use cold and warm HTC secondary fluid loops that are continually modulating to create the grower's dream conditions.

As SCS and GC evolves, this computerized control is a high priority for both companies. Today, we have in house PLC programmers, design staff, as well as electrical and mechanical engineers to help make our companies as encompassing as possible. Our Kilowatch Energy Management System controls millions of bushels of apple fruit around the world, but now controls grow cycles under the Grow Controlled company. With our attention to the customer's requests, we can work in detailed and custom requests almost immediately. Our cloud dashboard can auto-schedule events such as Temp and RH bi-weekly changes for the grower. Temperatures from 80-45F are achievable as well as RH from 75-45% which make for an assured growing environment that is totally under automatic and remote control.

FAMILIAR FACES FOR YOUR UPCOMING PROJECT

Jim Schaefer is the president and sole owner of Storage Control Systems, Inc. located in Sparta, Michigan and owner of Storage Control Systems, Ltd, in Paddock Wood, Kent UK. His father Caryl started SCS in 1982, and Jim began working there as a senior in high school. After receiving his BS degree in computer information systems, he returned and now has grown SCS to an international company with four offices and distributors around the world.

The future is here every day at Jim's companies. We keep pushing science and technology, and we thrive with an innovative and resourceful spirit.

Mike Laraway has been a part of the design and innovation team for over 18 years. As the architect of the Kilowatch control platform he obsesses over precise control and energy reduction. Mike is constantly incorporating new technology. He is not satisfied with simply meeting the industry standard, and the energy efficiency dollars that his projects have been awarded reflect that. Going above-and-beyond is what separates him and his team of controls engineers from other controls companies.

Mike's areas of expertise include electrical controls design, refrigeration design and controls, system integrations, sensor design and technology, and project management.


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