SUBZERO
ENGINEERING

DESIGN

ENGINEER

MANUFACTURE

INSTALL

MONITOR

POLAR PRESS

The Industry Leader in Airflow Management

Catalog 2013

A Message From the CEO

Subzero Engineering is dedicated to optimizing the cooling of data centers. From 2005 to present day, our team of engineers has modeled thousands of data centers with the aim of lowering energy consumption, increasing AC cooling capacity and increasing the reliability of cold supply air to IT equipment. This pursuit has led to industry-changing products that facilitate airflow management.

Subzero's corporate office and manufacturing facility resides in Draper, Utah. From here, we build and ship our containment products worldwide. We currently have offices and containment demonstration facilities in four continents.

We invite you to stop by one of our showrooms. You will meet our amazing team and discover our passion toward airflow management.

Larry Mainers, CEO

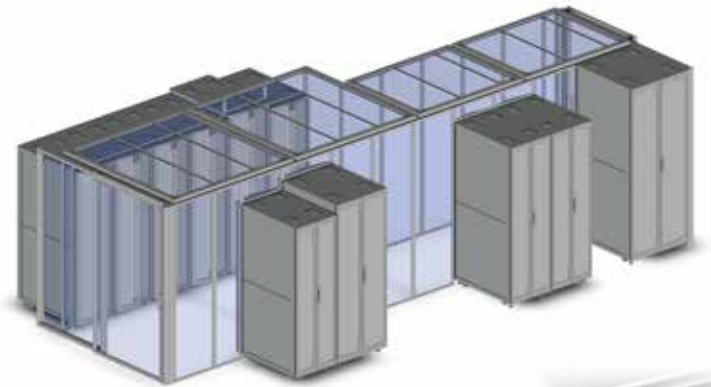# Table of Contents

SUB ZERO ENGINEERING
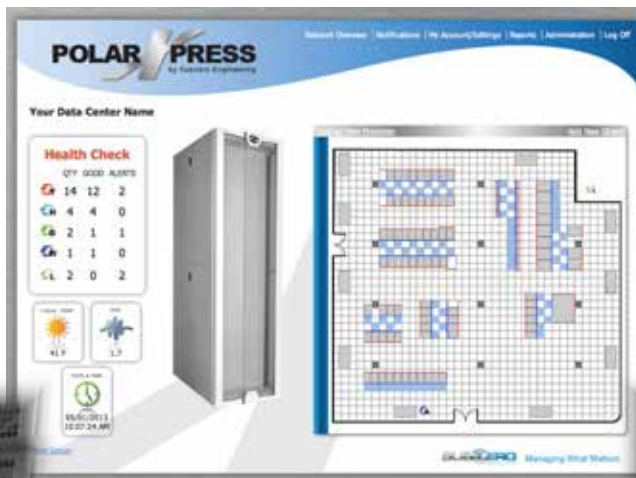
What We Do

ENGINEER   DESIGN

We create custom data center solutions through our unique blend of engineering, design, manufacturing, installation, and monitoring. Our creative team can provide simple, modular, or complex custom solutions. Subzero Engineering is the leader in data center airflow solutions.

# MANUFACTURE   MONITOR   INSTALL

Engineering

The first step to managing what matters as it relates to data center airflow is to understand the environment. Our United States Department of Energy trained engineers are qualified as Data Center Energy Practitioners (DCEP).

This enables Subzero to evaluate the energy status and efficiency opportunities in the data center. Our engineers assist our customers to identify areas for improvement, implementation of infrastructure and operations, best management practices, and the measurement of the Power Usage Effectiveness (PUE). We use tools such as Computational Fluid Dynamics (CFD) and the DOE Data Center Energy Profiler software Tool Suite (DC Pro). These tools enable our engineers to create a data center energy profile that gives our customers an idea of how energy is being used, as well as detailed energy assessments on critical data center systems such as cooling and electrical use.
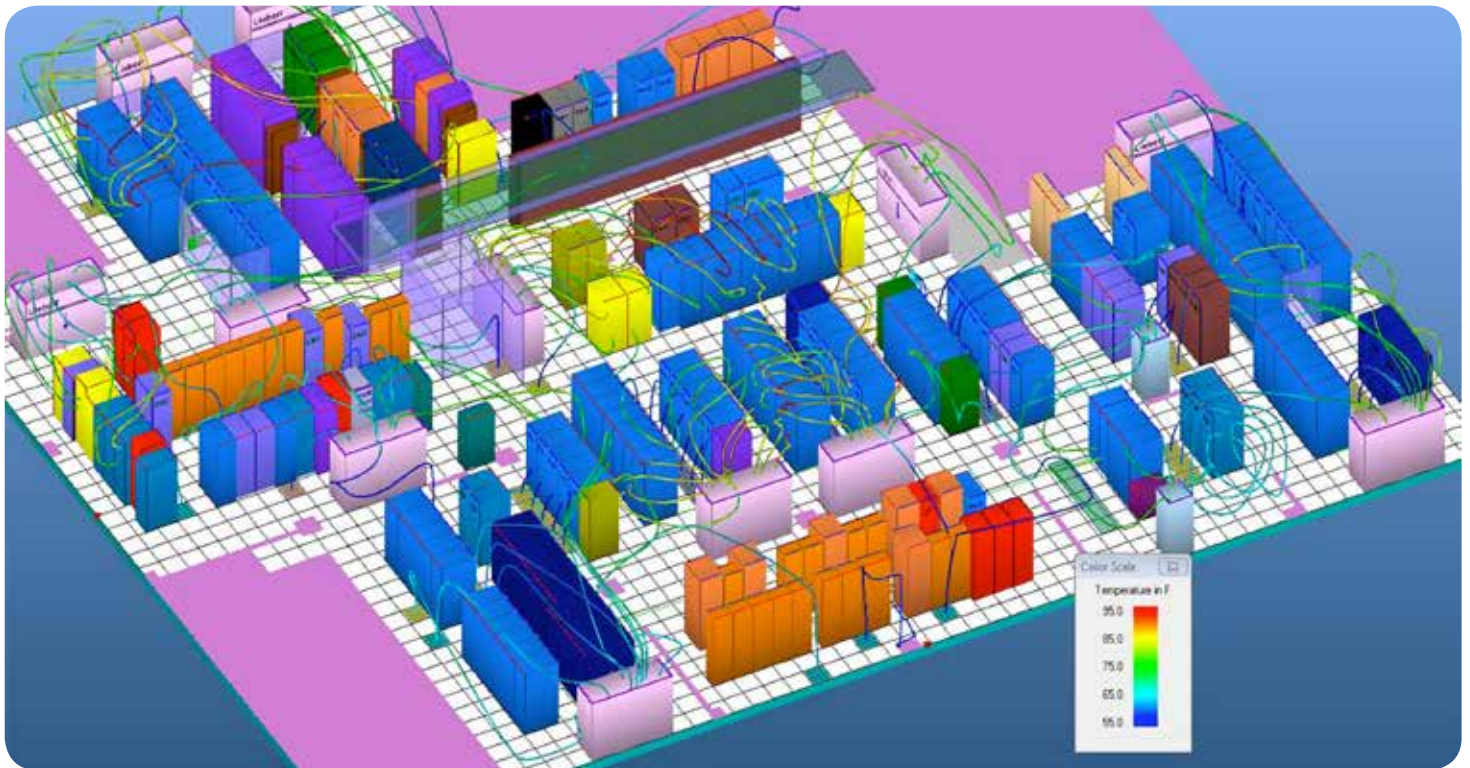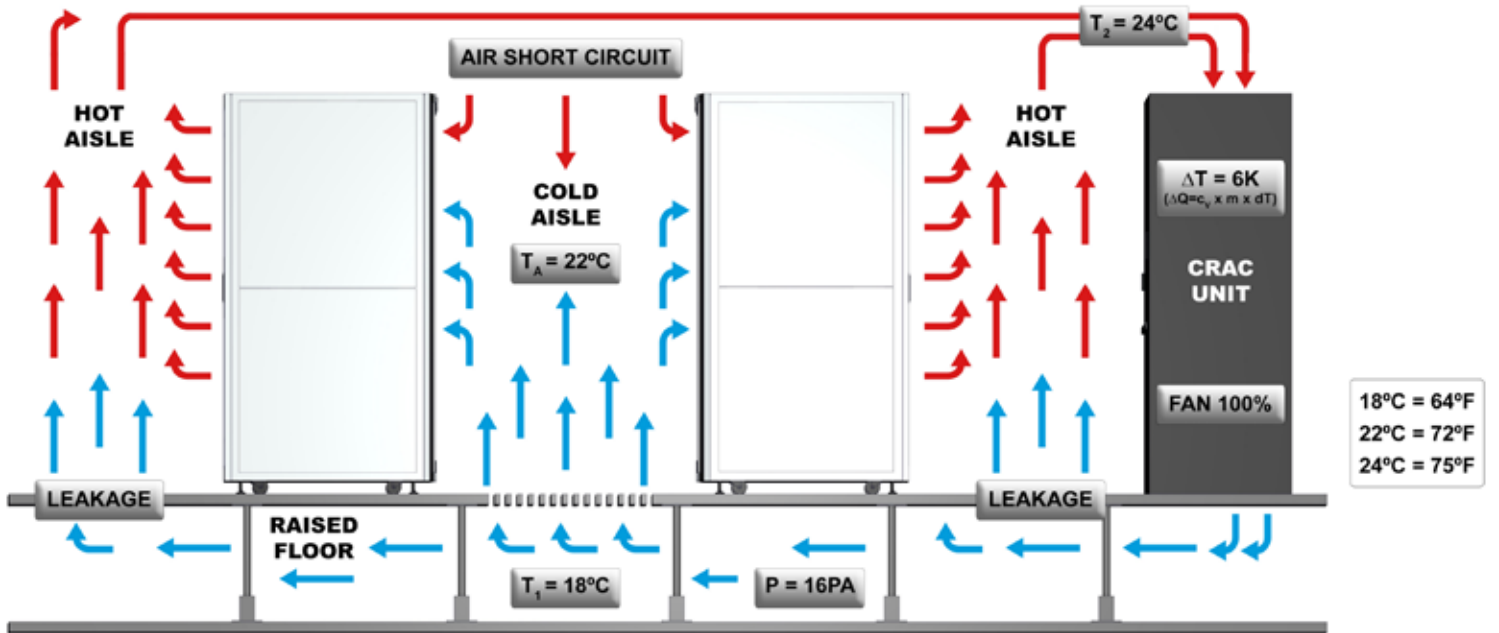
Subzero Engineering has performed over 1,000 CFD studies.

Gordon Johnson

DCEP/CFD
Professional

Design

Superior containment requires intelligent design. This ensures proper fit and finish. Our engineering department creates full-scale mechanical drawings of each containment POD. Depictions in 3D can also be created to help our customers see what their containment system will look like. Accurate drawings are the foundation of the process from quote to project completion.

These drawings are used by our installation teams for accurate on-site implementation.

145.25

126.50

89.00

76.00

50.25

89.00

6
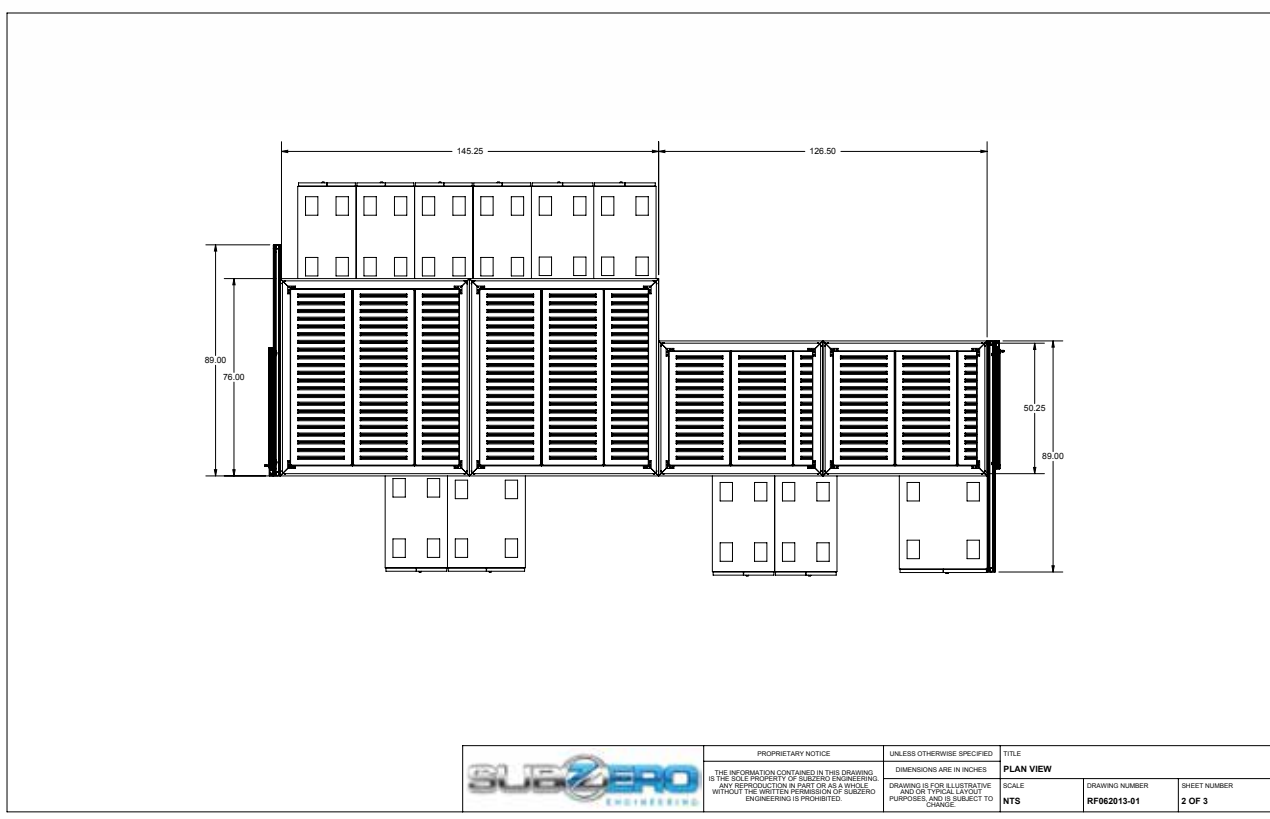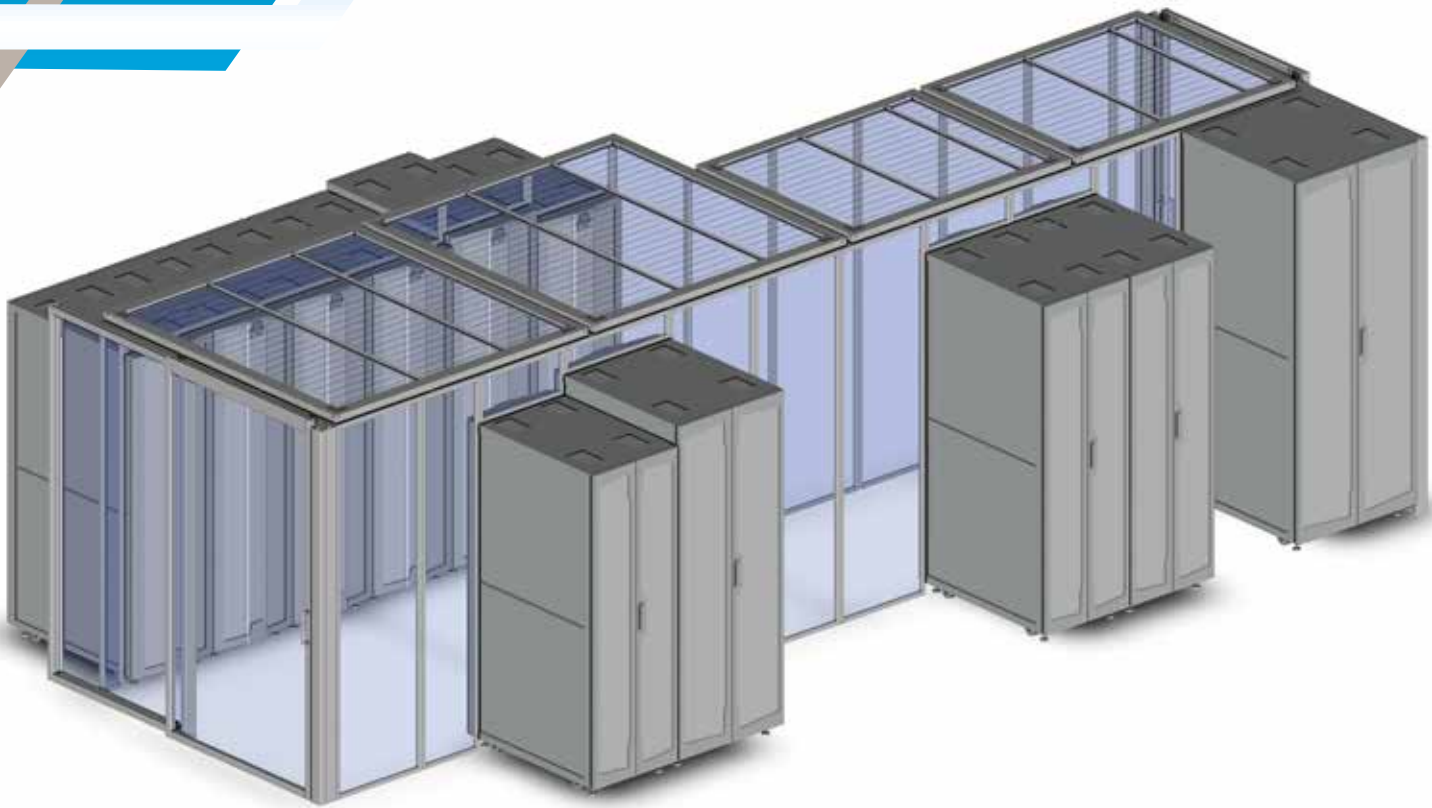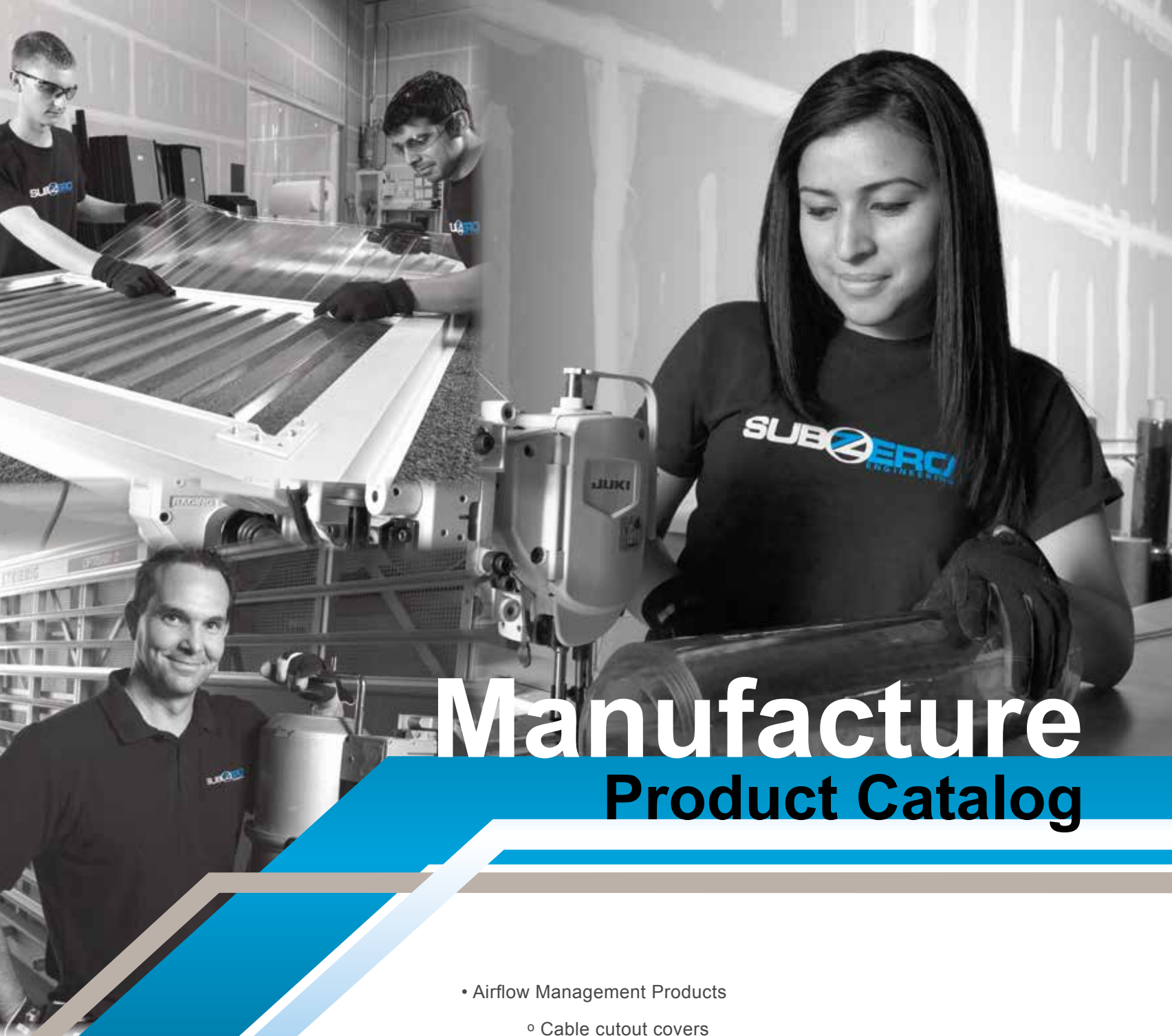
Manufacture
Product Catalog

- Airflow Management Products
    - Cable cutout covers
    - Subfloor velocity adjustors
    - Flow through ceiling grills
- Hot Aisle Containment
- Cold Aisle Containment
- Cabinets
- Power
- Monitoring and Sensors
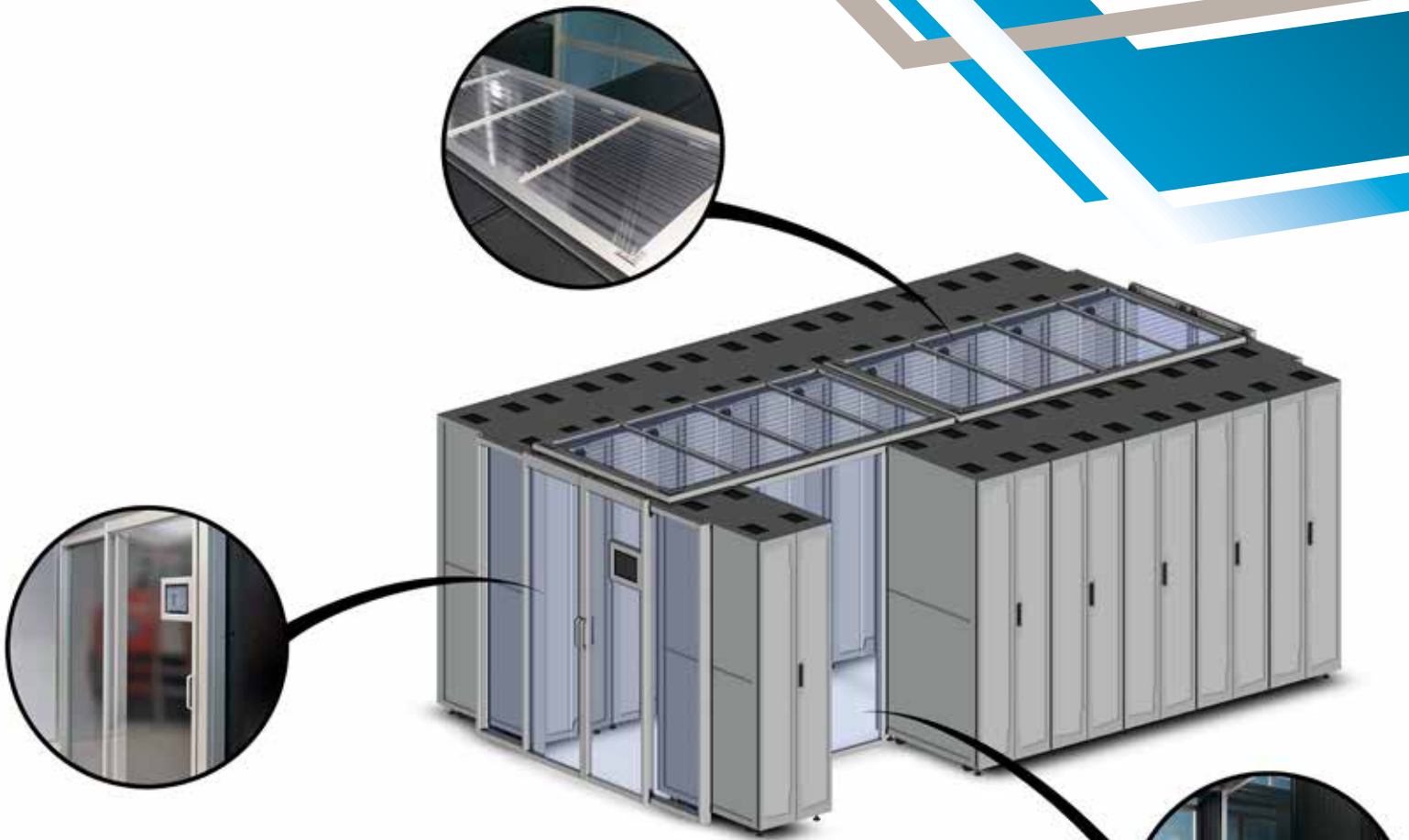
Doors

Single Sliding Door

Dual Sliding Door

**Hinged Door
with Side Panel**

SKU#	**I-40 Door Series**
Clear Anodized Finish	
4.1.401.10005	Single Sliding Door
4.1.401.10010	Double Sliding Door
4.1.401.10015	Hinged Door
4.1.401.10020	Hinged Door with Side Panel
4.1.401.10025	Dual Hinged Door
Black Anodized Finish	
4.1.402.10005	Single Sliding Door
4.1.402.10010	Double Sliding Door
4.1.402.10015	Hinged Door
4.1.402.10020	Hinged Door with Side Panel
4.1.402.10025	Dual Hinged Door

SKU#	**Lite Series Aisle End Doors**
Clear Anodized Finish	
4.1.101.10005	Single Sliding Door
4.1.101.10010	Double Sliding Door
Black Anodized Finish	
4.1.102.10005	Single Sliding Door
4.1.102.10010	Double Sliding Door

Note: All doors can be equipped with an auto closer system.

All doors are ordered with a custom height and width.

BEST SELLER!

The I-40 Single Sliding Door is designed with one sliding door and is recommended for both hot and cold aisle containment. The door can be designed to slide open to the left or right for easy access to the aisle. This design works perfectly where there are obstructions or where space is limited on the face of the cabinets. The no-threshold design prevents tripping hazards, and the quality material and sturdy construction ensures a superior product. The I-40 Single Sliding Door can be custom manufactured to fit any cabinet size. The black or clear anodized finishes also complement all rack colors.

Doors & Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 89.00" W x 80.00" H

Frame attaches to floor

Floor supports the total door weight

Nylon roller bearing wheels

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Shipping

PHYSICAL PROPERTIES

Property:	Result:
Weight	300 lbs. Approx.
Components	4 Major Components

Key Features

• Custom Sizes

• No Threshold

• Rigid Design

• Clear Panels for Better Visibility

• Smooth Actuation

• Included Installation Kit

• Self Supporting

Options

• Left or Right Hand Open

• Clear or Black Anodized Finish

• Digital/Keyed Lock

• Automatic Door Closer
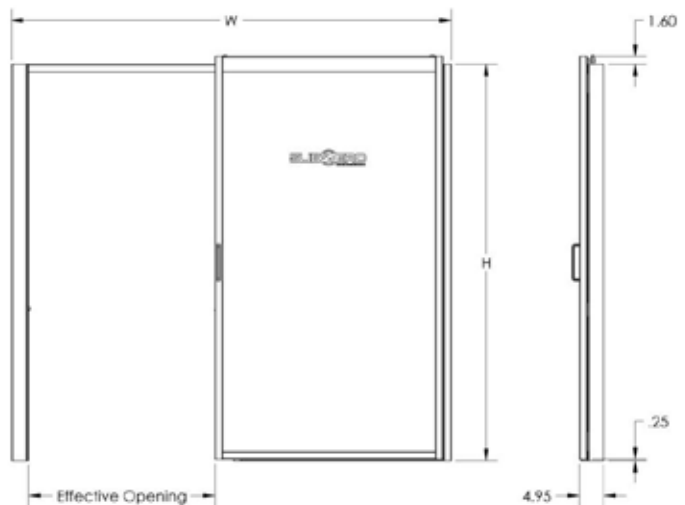
The I-40 Dual Sliding Door is designed with two sliding doors (one to the left and one to the right) and is recommended for both hot and cold aisle containment.

The no-threshold design prevents tripping hazards, and the quality material and sturdy construction ensures a superior product. The black or clear anodized finishes also complement all rack colors.

Doors & Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 89.00" W x 80.00" H

Frame attaches to floor

Floor supports the total door weight

Nylon roller bearing wheels

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Shipping

PHYSICAL PROPERTIES

| Property:	Result:
Weight	355 lbs. Approx.
Components	5 Major Components

Key Features

- Custom Sizes
- No Threshold
- Rigid Design
- Clear Panels for Better Visibility
- Smooth Actuation
- Included Installation Kit
- Self Supporting

Options

- Clear or Black Anodized Finish
- Digital/Keyed Lock
- Automatic Door Closer
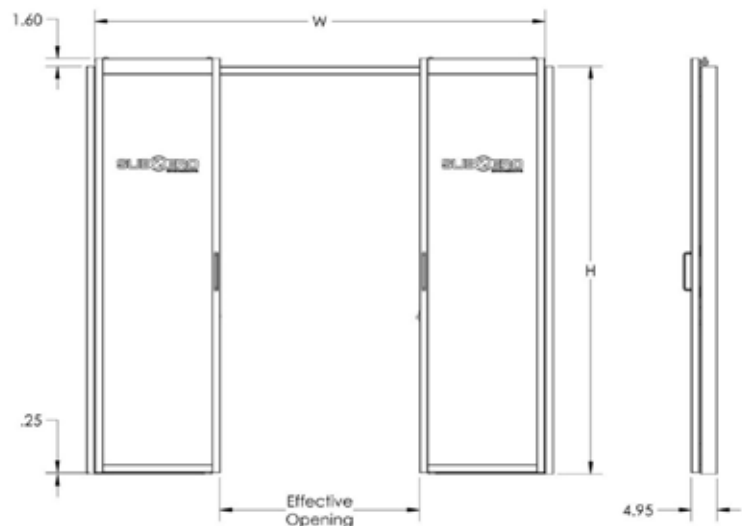
The I-40 Hinged Door system is designed to swing to the left or right depending on the need of the area. The I-40 Hinged Door is recommended for either hot aisle or cold aisle containment. The no-threshold design prevents tripping hazards, the quality material and sturdy construction ensures a superior product. It combines cost-effectiveness and sturdy construction which allows for maximum efficiency in containment. The black or clear anodized finishes also complement all rack colors.

Doors & Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 56.00" W x 80.00" H

Frame attaches to floor

Floor supports the total door weight

Lift off hinges

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Shipping

PHYSICAL PROPERTIES

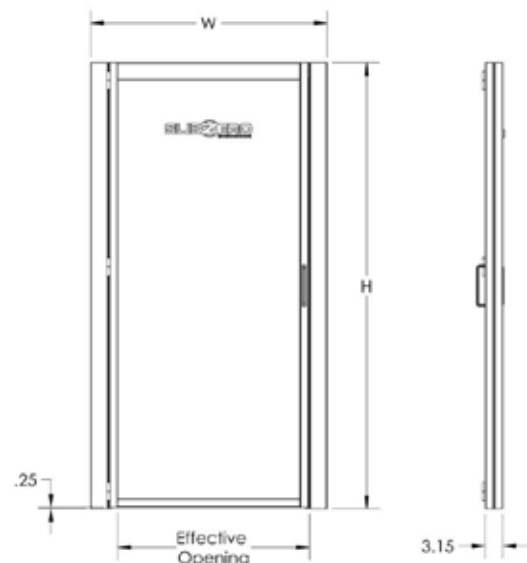| Property:	Result:
Weight	250 lbs. Approx.
Components	4 Major Components

Key Features

- Custom Sizes
- No Threshold
- Rigid Design
- Clear Panels for Better Visibility
- Smooth Actuation
- Included Installation Kit
- Self Supporting

Options

- Left or Right Hand Open
- Clear or Black Anodized Finish
- Digital/Keyed Lock
- Automatic Door Closer
- Side Panel Shown is Optional

Roof Systems

The Subzero Engineering Polar Cap and Polar Roof systems provide unique, economical, and energy efficient solutions for data center hot aisle and cold aisle containment. Our roof systems are low profile designed for ease of use and to work under fire suppression systems (NFPA).

KEY BENEFITS:
- Data center containment roofs prevent warm air from recirculating into the IT equipment intake.
- Low profile design to operate under cable tray obstructions.
- Designed to work under fire suppression systems.
- Modular design to attach to door and wall systems.
- Clear panels are designed to illuminate aisle.

Polar Cap (Retractable Roof System)

SKU#	Polar Cap (Retractable Roof System)	
3.1.002.21105	Polar Cap Retractable Roof	60" W x 20'L
3.1.002.21110	Polar Cap Retractable Roof	60" W x 30'L
3.1.002.21205	Polar Cap Retractable Roof	84" W x 20'L
3.1.002.21210	Polar Cap Retractable Roof	84" W x 30'L

Polar Roof (Drop Panel System)

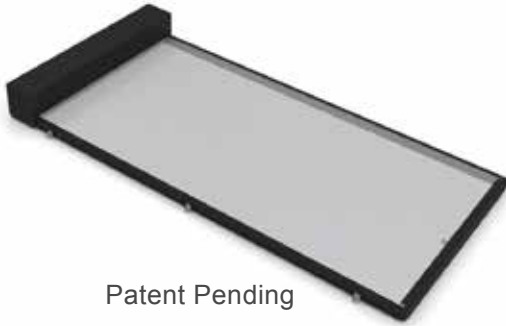| SKU#	Polar Roof (Drop Panel System)
4.1.001.51XXX	Polar Roof with Clear Anodized Aluminum Frame
4.1.002.51XXX	Polar Roof with Black Anodized Aluminum Frame

Note: The Polar Roof Drop Panel System is ordered in custom sizes. Polar roof ordered by the sq ft of your aisle.

Patent Pending

The Subzero Engineering Polar Cap (patent pending) is a retractable containment roof system that attaches to the top of the racks and forms a ceiling that prevents hot and cold air from mixing. The Polar Cap retractable roof system can be wired into a pre-action smoke detector system. The roof will roll up into the metal cassette in advance of the fire sprinkler. The Polar Roof can also be retracted during maintenance of lights and other periodic inspection items.

Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Modular design

SIZES

84" W x 30' L	84" W x 20' L
60" W x 30' L	60" W x 20' L

Key Features

- Modular Design
- Retracting Cover
- Standard Sizes
- Included Installation Kit
- Fire Rated Vinyl and Links

Options

- Electrically Actuated Fusible Link

Fire Suppression Link

PHYSICAL PROPERTIES

Property:	Units:	Result:
Heat Activation	Degrees F.	135°
Maximum Load	Lbs.	30
Minimum Load	Lbs.	1

Vinyl

FLAMMABILITY

Property:	Test:	Result:
Flame	UL94	V-0
NFPA	NFPA 701	Passed

Shipping

PHYSICAL PROPERTIES

Property:

Ships as packaged components ready for assembly

Polar Roof (Drop Panel System)
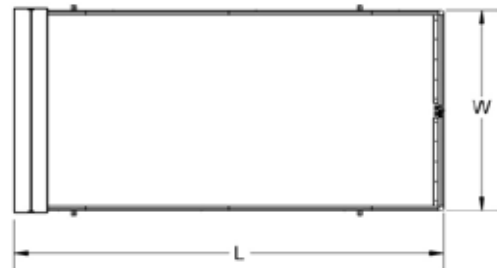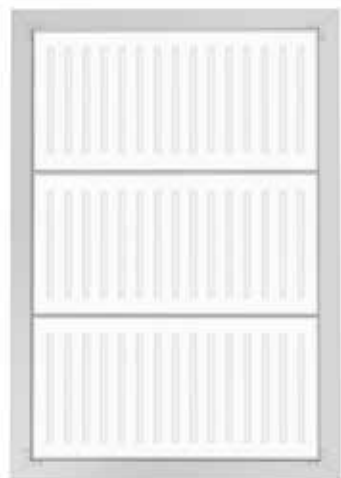
The Subzero Engineering Polar Roof system is uniquely designed to work under the fire suppression system by utilizing specially designed translucent panels.

In the event of a fire, the panels shrink and drop away to preserve the fire sprinkler pattern. The lightweight drop-in panels have a thickness of only 0.0381 and are completely clear, allowing in the light from overhead lighting systems. Additionally, they can be removed for easy access for overhead maintenance. The panels can be easily customized according to specific length and width.

Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 55.50" W x 79.50" L

Frame attaches to top of server cabinets

FM Approved for use under sprinkler heads

Clear Panels

PHYSICAL PROPERTIES

Property:	Units:	Result:
Thickness	Mils	15 Mil
Material	-	Polyvinyl Chloride

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	170
Flame Spread	ASTM E84	20

Shipping

PHYSICAL PROPERTIES

Property:	Result:
Weight	25-50 lbs. Approx.
Components	5 Major Components
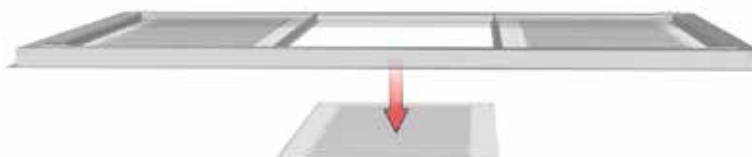
Key Features

- Custom Sizes
- Small Profile
- Light Weight
- Clear Panels
- Modular Design
- Included Installation Kit
- Fire Rated Drop Panels

Options

- Clear or Black Anodized Finish

Rack Hat
Soft Containment

Rack Hat Kit

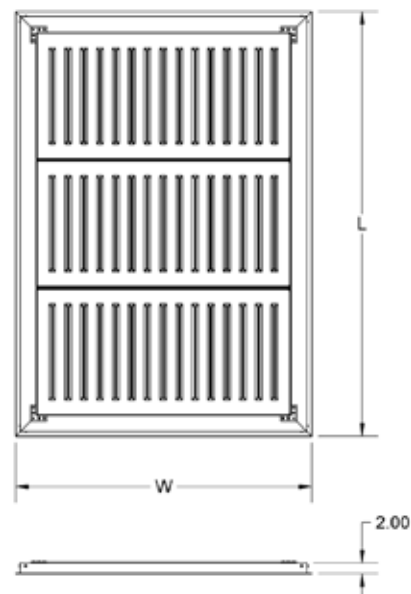| SKU#	Rack Hat Kit
3.2.001.10290	Rack Hat Corner 29"
3.2.001.10291	Rack Hat Kit 29" x 01'
3.2.001.10292	Rack Hat Kit 29" x 02'
3.2.001.10293	Rack Hat Kit 29" x 03'
3.2.001.10294	Rack Hat Kit 29" x 04'
3.2.001.10295	Rack Hat Kit 29" x 05'
3.2.001.10296	Rack Hat Kit 29" x 06'
3.2.001.10560	Rack Hat Corner 56"
3.2.001.10561	Rack Hat Kit 56" x 01'
3.2.001.10562	Rack Hat Kit 56" x 02'
3.2.001.10563	Rack Hat Kit 56" x 03'
3.2.001.10564	Rack Hat Kit 56" x 04'
3.2.001.10565	Rack Hat Kit 56" x 05'
3.2.001.10566	Rack Hat Kit 56" x 06'
3.2.001.10980	Rack Hat Corner 98"
3.2.001.10981	Rack Hat Kit 98" x 01'
3.2.001.10982	Rack Hat Kit 98" x 02'
3.2.001.10984	Rack Hat Kit 98" x 04'
3.2.001.11100	Rack Hat Corner 110"
3.2.001.11101	Rack Hat Kit 110" x 01'
3.2.001.11102	Rack Hat Kit 110" x 02'
3.2.001.11104	Rack Hat Kit 110" x 04'
3.2.001.11220	Rack Hat Corner 122"
3.2.001.11221	Rack Hat Kit 122" x 01'
3.2.001.11222	Rack Hat Kit 122" x 02'
3.2.001.11224	Rack Hat Kit 122" x 04'
3.2.001.11460	Rack Hat Corner 146"
3.2.001.11461	Rack Hat Kit 146" x 01'
3.2.001.11462	Rack Hat Kit 146" x 02'
3.2.001.11464	Rack Hat Kit 146" x 04'
3.2.001.11820	Rack Hat Corner 182"
3.2.001.11821	Rack Hat Kit 182" x 01'
3.2.001.11822	Rack Hat Kit 182" x 02'
3.2.001.11824	Rack Hat Kit 182" x 04'

Rack Hat Strip Doors

SKU#	Rack Hat Strip Doors
3.2.001.20981	Strip Door Kit 98" x 01'
3.2.001.20982	Strip Door Kit 98" x 02'
3.2.001.20983	Strip Door Kit 98" x 03'
3.2.001.20984	Strip Door Kit 98" x 04'
3.2.001.20985	Strip Door Kit 98" x 05'
3.2.001.20986	Strip Door Kit 98" x 06'
3.2.001.21101	Strip Door Kit 110" x 01'
3.2.001.21102	Strip Door Kit 110" x 02'
3.2.001.21103	Strip Door Kit 110" x 03'
3.2.001.21104	Strip Door Kit 110" x 04'
3.2.001.21105	Strip Door Kit 110" x 05'
3.2.001.21106	Strip Door Kit 110" x 06'
3.2.001.21221	Strip Door Kit 122" x 01'
3.2.001.21222	Strip Door Kit 122" x 02'
3.2.001.21223	Strip Door Kit 122" x 03'
3.2.001.21224	Strip Door Kit 122" x 04'
3.2.001.21225	Strip Door Kit 122" x 05'
3.2.001.21226	Strip Door Kit 122" x 06'
3.2.001.21461	Strip Door Kit 146" x 01'
3.2.001.21462	Strip Door Kit 146" x 02'
3.2.001.21463	Strip Door Kit 146" x 03'
3.2.001.21464	Strip Door Kit 146" x 04'
3.2.001.21465	Strip Door Kit 146" x 05'
3.2.001.21466	Strip Door Kit 146" x 06'
3.2.001.21821	Strip Door Kit 182" x 01'
3.2.001.21822	Strip Door Kit 182" x 02'
3.2.001.21823	Strip Door Kit 182" x 03'
3.2.001.21824	Strip Door Kit 182" x 04'
3.2.001.21825	Strip Door Kit 182" x 05'
3.2.001.21826	Strip Door Kit 182" x 06'

Rack Hat

The Subzero Engineering Rack Hat is the premium vinyl containment system that separates hot or cold airflow by hanging vinyl partitions from the ceiling. Aluminum tracks are mounted to the ceiling and uniquely sized vinyl is hung from the track. The fire resistant vinyl comes in these standard drop down sizes: 26", 52", 94", 106", 118", 142" and 178". The aluminum track comes in these standard lengths: 1', 2', 3', 4', 5' and 6'. The Rack Hat system provides a seamless corner for optimum efficiency and ideal aesthetics within the containment. The Rack Hat's modular and easy-to-assemble kit-based design makes it the industry's best, low-cost containment solution

Track

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Modular design

Several standard sizes

Fire Suppression Link

PHYSICAL PROPERTIES

Property:	Units:	Result:
Heat Activation	Degrees F.	135°
Maximum Load	Lbs.	45
Minimum Load	Lbs.	3

Vinyl

FLAMMABILITY

Property:	Test:	Result:
Flame	UL94	V-0
NFPA	NFPA 701	Passed

Shipping
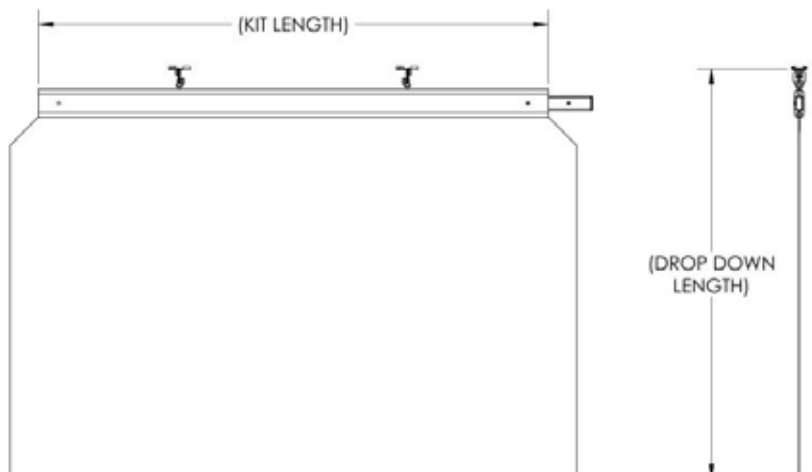
PHYSICAL PROPERTIES

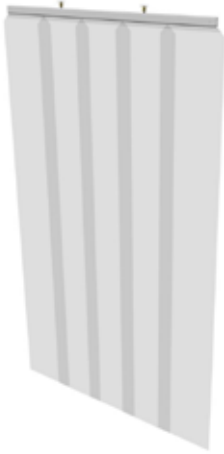| Property:	Result:
Ships as a packaged kit	
Components	5 Major Components

Key Features

- Modular Design
- Fire Resistant Vinyl (NFPA)
- ESD Resistant
- No Tools Required
- 360º Ceiling Grid Attachment
- All Inclusive Kits
- FM/UL Listed Links
- Seamless Corner System

Options

- Corner Kit
- Electro Thermal Link (ETL)

Strip Door

The Strip Door kit includes a high-grade aluminum track, UL/FM rated fire suppression links, and an electrostatic discharge (ESD) fire resistant vinyl. The door is custom fit to your aisle ends, and it can be installed on a drop-ceiling grid or be hung onto any stationary ceiling system such as cable trays, U-Channel, or directly into a variety of ceiling materials. Our Strip Door system can be used in a variety of applications to create partitions while allowing access. The Strip Door can attach to the ceiling on the same aluminum track system as the Rack Hat partition system. Components slide together easily, securely and can quickly be reconfigured. The ESD fire resistant clear vinyl hangs down from ceiling to floor.

Vinyl

FLAMMABILITY

Property:	Test:	Result:
Flame	UL94	V-0
NFPA	NFPA 701	Passed

Key Features

- Modular Design
- Fire Resistant Vinyl (NFPA)
- ESD Resistant
- No Tools Required
- 360º Ceiling Grid Attachment
- All Inclusive Kits
- FM/UL Listed Links

Panels
Hard Containment

Custom sized panels can be used to contain aisles that have fire suppression systems within it. Panels can be made out of a variety of standard materials or custom materials of your choice.

The entire Subzero Engineering product line is modular in design. This allows us to connect one piece to another without any problems. Doors, walls, roofs, even our cabinets all connect together with the same system.

SKU#	I-40 Panels
Clear Anodized Finish	
4.1.401.30005	I-40 Floor Panel (under 9")
4.1.401.30010	I-40 Floor Panel (9" - 25")
4.1.401.30015	I-40 Floor Panel (25" - 50")
4.1.401.31005	I-40 Over Rack Panel (under 9")
4.1.401.31010	I-40 Over Rack Panel (9" - 25")
4.1.401.31015	I-40 Over Rack Panel (25" - 50")
4.1.401.31020	I-40 Over Rack Sliding Access Panel (9" - 25")
4.1.401.31025	I-40 Over Rack Sliding Access Panel (25" - 50")
4.1.401.32005	I-40 Roof Panel (under 9")
4.1.401.32010	I-40 Roof Panel (9" - 25")
4.1.401.32015	I-40 Roof Panel (25 - 50")
Black Anodized Finish	
4.1.402.30005	I-40 Floor Panel (under 9")
4.1.402.30010	I-40 Floor Panel (9" - 25")
4.1.402.30015	I-40 Floor Panel (25" - 50")
4.1.402.31005	I-40 Over Rack Panel (under 9")
4.1.402.31010	I-40 Over Rack Panel (9" - 25")
4.1.402.31015	I-40 Over Rack Panel (25" - 50")
4.1.402.31020	I-40 Over Rack Sliding Access Panel (9" - 25")
4.1.402.31025	I-40 Over Rack Sliding Access Panel (25" - 50")
4.1.402.32005	I-40 Roof Panel (under 9")
4.1.402.32010	I-40 Roof Panel (9" - 25")
4.1.402.32015	I-40 Roof Panel (25" - 50")

SKU#	I-25 Panels
Clear Anodized Finish	
4.1.251.30005	I-25 Floor Panel (under 9")
4.1.251.30010	I-25 Floor Panel (9" - 25")
4.1.251.30015	I-25 Floor Panel (25" - 49")
4.1.251.31005	I-25 Over Rack Panel (under 9")
4.1.251.31010	I-25 Over Rack Panel (9" - 25")
4.1.251.31015	I-25 Over Rack Panel (25" - 49")
4.1.251.32005	I-25 Roof Panel (under 9")
4.1.251.32010	I-25 Roof Panel (9" - 25")
4.1.251.32015	I-25 Roof Panel (25" - 49")
Black Anodized Finish	
4.1.252.30005	I-25 Floor Panel (under 9")
4.1.252.30010	I-25 Floor Panel (9" - 25")
4.1.252.30015	I-25 Floor Panel (25" - 49")
4.1.252.31005	I-25 Over Rack Panel (under 9")
4.1.252.31010	I-25 Over Rack Panel (9" - 25")
4.1.252.31015	I-25 Over Rack Panel (25" - 49")
4.1.252.32005	I-25 Roof Panel (under 9")
4.1.252.32010	I-25 Roof Panel (9" - 25")
4.1.252.32015	I-25 Roof Panel (25" - 49")

Note: SKUs are determined by smallest width or height measurement. So if you have a panel that measures 5" x 58" it will fall under the SKU for (under 9"). If you have a panel that measures 32" x 58" it will fall under the SKU for (25" - 49").

Missing cabinets, uneven aisle ends, and cityscape cabinet heights presents a challenge to many containment designs.

Subzero Engineering Wall Panels easily fill in all sizes of gaps to create one continuous containment solution.

Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Frame attaches to floor

Ships fully assembled

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Shipping
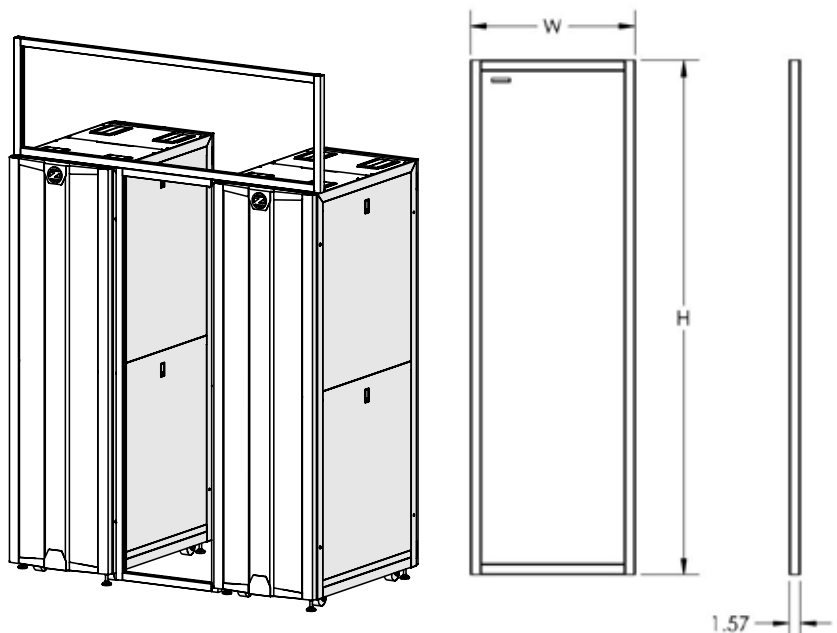
PHYSICAL PROPERTIES

Property:	Result:
Weight	15-17 lbs. Approx.
Components	1 Major Component

Key Features

- Custom Sizes
- Rigid Design
- Clear Panels
- Modular Design
- Included Installation Kit
- Attaches to other Subzero Engineering Products

Options

- Clear or Black Anodized Finish
- Over Rack or Floor Mounted

The Subzero Engineering I-25 Wall Panels feature the same gap filing capabilities as the I-40 panels, with a thinner, lighter design.

Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Frame attaches to floor

Ships fully assembled

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Shipping
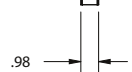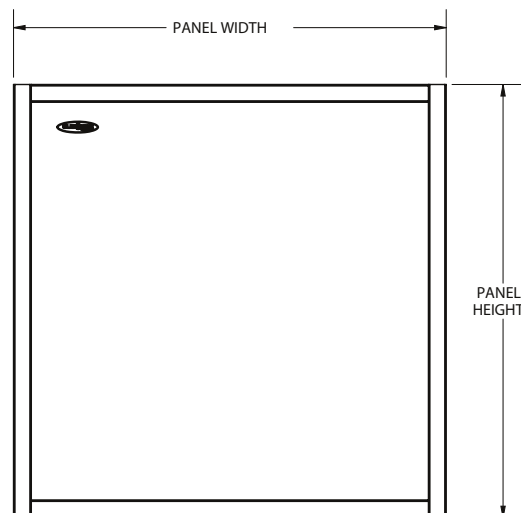
PHYSICAL PROPERTIES

Property:	Result:
Weight	15-17 lbs. Approx.
Components	1 Major Component

Key Features

- Custom Sizes
- Rigid Design
- Clear Panels
- Modular Design
- Included Installation Kit
- Attaches to other Subzero Engineering Products

Options

- Clear or Black Anodized Finish
- Over Rack or Floor Mounted

PANEL WIDTH

PANEL HEIGHT

.98

Airflow Management
Products

The Cube (Cable Cutout Cover)

SKU#	Fire Proof Cutout Cover
3.4.000.10404	Fire Proof Cube 4" x 4"
3.4.000.10424	Fire Proof Cube 4" x 24"
3.4.000.10440	Fire Proof Cube 4" x 40"
3.4.000.10606	Fire Proof Cube 6" x 6"
3.4.000.10612	Fire Proof Cube 6" x 12"
3.4.000.10618	Fire Proof Cube 6" x 18"
3.4.000.10624	Fire Proof Cube 6" x 24"

SKU#	Fire Proof Cutout Cover (continued)
3.4.000.10640	Fire Proof Cube 6" x 40"
3.4.000.10678	Fire Proof Cube 6" x 78"
3.4.000.10909	Fire Proof Cube 9" x 9"
3.4.000.10914	Fire Proof Cube 9" x 14"
3.4.000.10918	Fire Proof Cube 9" x 18"
3.4.000.10924	Fire Proof Cube 9" x 24"
3.4.000.11212	Fire Proof Cube 12" x 12"
3.4.000.11218	Fire Proof Cube 12" x 18"
3.4.000.11224	Fire Proof Cube 12" x 24"
3.4.000.11616	Fire Proof Cube 16" x 16"
3.4.000.11620	Fire Proof Cube 16" x 20"
3.4.000.11624	Fire Proof Cube 16" x 24"
3.4.000.12024	Fire Proof Cube 20" x 24"
3.4.000.12424	Fire Proof Cube 24" x 24"
3.4.000.12430	Fire Proof Cube 24" x 30"

Custom sizes available.

CRACup AC Extension

SKU#	CRACup AC Extension
3.1.000.40005	CRACup AC Extension
3.1.000.40010	CRACup AC Extension Door

Velocity Adjustor

SKU#	Velocity Adjustor
3.4.000.20005	Velocity Adjustor 6" x 24"
3.4.000.20010	Velocity Adjustor 12" x 24"
3.4.000.20015	Velocity Adjustor 18" x 24"
3.4.000.20020	Velocity Adjustor 24" x 24"
3.4.000.20025	Velocity Adjustor 24" x 32"

Polar Booth

SKU#	Polar Booth Isolated Equipment Containment
4.1.151.35005	Polar Panel Booth Clear Anodized (under 25")
4.1.151.35010	Polar Panel Booth Clear Anodized (25"-50")
4.1.151.35015	Polar Panel Booth Clear Anodized (over 50")

Egg Crate Ceiling Grille

SKU#	Egg Crate Ceiling Grille
3.4.000.30005	2' x 2' Pkg of 30
3.4.000.30010	2' x 4' Pkg of 15

The Cube (Cable Cutout Cover)
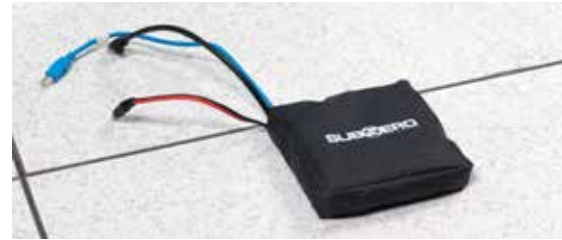
The Subzero Engineering Cube cable cutout cover is the most effective way to fill-in openings in your raised floor. The Cube comes in a variety of sizes that will cover any opening required.

The Cube is made of a fireproof material and installation is easy. Simply compress or squeeze The Cube, place into the opening, and release! The Cube will instantly fill-in all around the raised floor opening (top, bottom, and side). The Cube is specifically engineered with a 5-1/2" depth so that it fully seals the floor penetration.

Outside Cover

PHYSICAL PROPERTIES

Property:	Units:	Result:	
Thread Count	#/in	Warp: 54	Fill: 48
Tensile Strength	Lbs/in	Warp: 180	Fill: 175
Thickness	Mils	5-6	
Afterglow Time	Seconds	Warp:1.5	Fill: 1.5
Char Length	Inches	Warp: .70	Fill: 1.5
After flame	Seconds	Warp: 1.0	Fill: 1.0
Tearing Strength	Lbs.	Warp: 8.0	Fill: 7.5

STANDARD SIZES

4" x 4"	6" x 6"	9" x 9"	12" x 12"
4" x 24"	6" x 12"	9" x 14"	12" x 18"
	6" x 18"	9" x 18"	12" x 24"
	6" x 24"	9" x 24"	
	6" x 40"		

16" x 16"	18" x 18"	20" x 24"	24" x 24"
16" x 20"	18" x 24"		24" x 30"
16" x 24"			

FEATURES
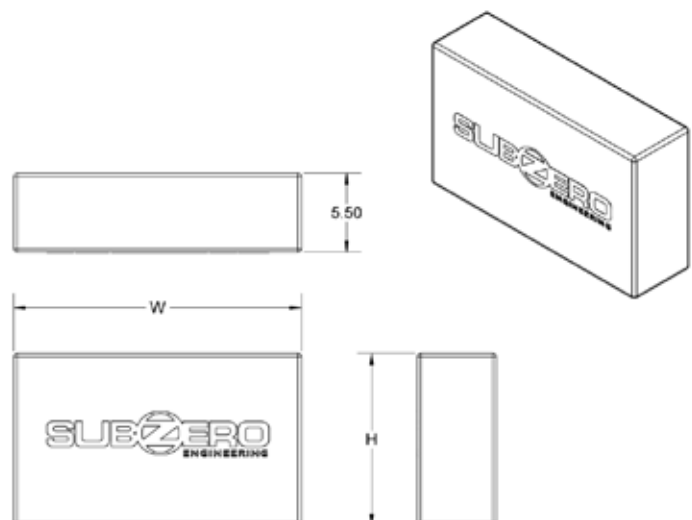
Will not ignite

Will not melt

Will not drip

Flexible

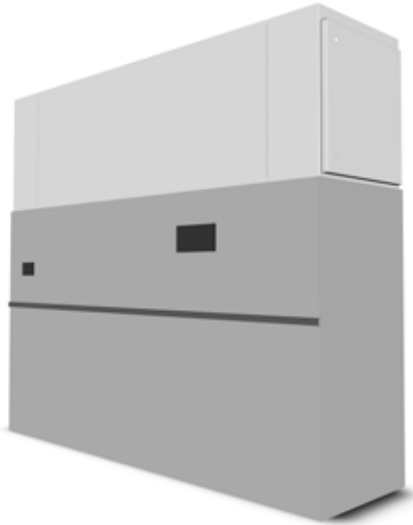Will not shrink or stretch

Will not rot

Minimal smoke emission

FLAMMABILITY

Designed to meet:

NFPA 258

NFPA 701 (UL-214) Small Scale

Key Features

- Stock Sizes
- Custom Sizes Available
- Fire Rated
- Easy to Install
- No Tools Required
- Versatile

5.50

W

H

CRACup AC Extension

The Subzero Engineering CRACup is an extension used on the Computer Room Air Conditioning (CRAC) unit and is a key element in the separation of hot and cold airflow.

The CRACup is designed to prevent the mixing of the CRAC unit intake air with the ambient air and exclusively directs the hot exhaust air coming from the server racks directly into the CRAC unit intake. Studies have shown that the cooling capacity of the CRAC unit increases when hotter and dryer air is going into the CRAC.

Shell

PHYSICAL PROPERTIES

Property:	Results:
Material	22 Gauge Steel
Size	36" H x 72" W x 32" D
Weight	100 lbs. Approx

FEATURES

Custom Colors

Shipping

PHYSICAL PROPERTIES
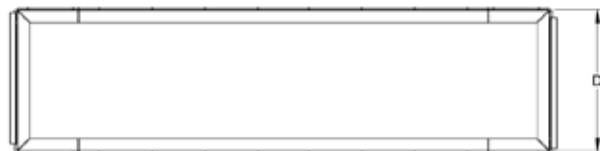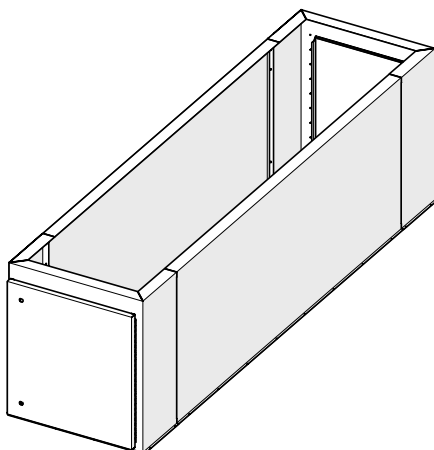
Property:	Result:
Ships as a packaged kit	
Components	4 Major Components

Key Features

- Custom Sizes
- Included Installation Kit

Options

- Access Doors

Velocity Adjustor

The Subzero Engineering Velocity Adjustor is the most efficient way to balance subfloor air pressure in data centers.

The Velocity Adjustor is designed to lower velocity at the AC discharge to eliminate subfloor vortices that are formed when two high velocity currents of air converge. Slowing the air increases pressure, and this in turn creates a consistent supply of air to any part of the data center. The supply airflow through the subfloor plenum is the foundation of any cooling program.

Outside Cover

PHYSICAL PROPERTIES

Property:	Units:	Result:	
Thread Count	#/in	Warp: 54	Fill: 48
Tensile Strength	Lbs/in	Warp: 180	Fill: 175
Thickness	Mils	5-6	
Afterglow Time	Seconds	Warp:1.5	Fill: 1.5
Char Length	Inches	Warp: .70	Fill: 1.5
After flame	Seconds	Warp: 1.0	Fill: 1.0
Tearing Strength	Lbs.	Warp: 8.0	Fill: 7.5

FEATURES

Will not ignite

Will not melt

Will not drip

Flexible

Will not shrink or stretch
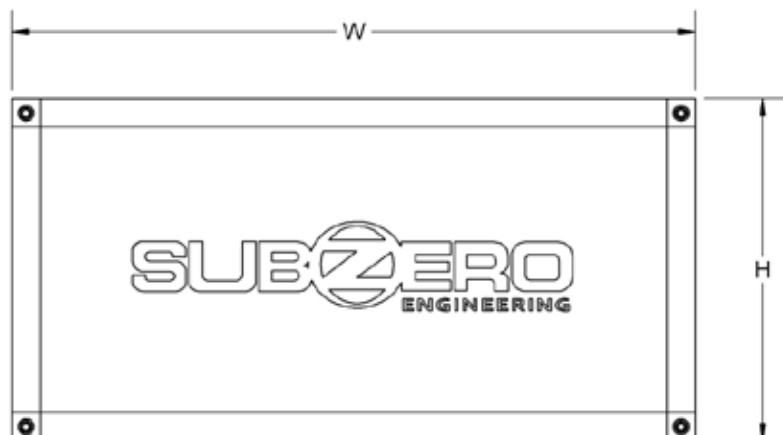
Will not rot

Minimal smoke emission

FLAMMABILITY
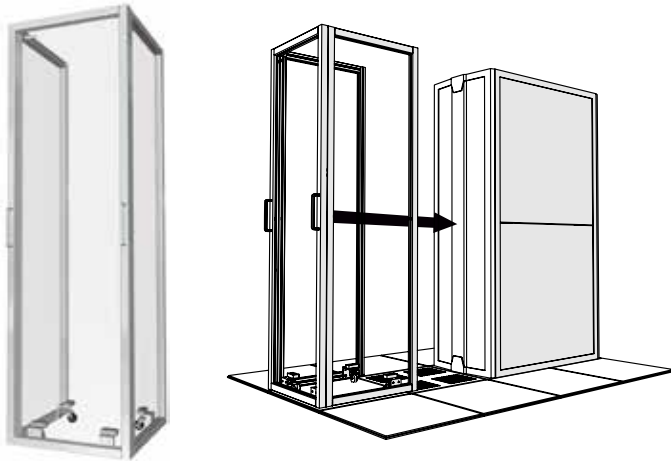
Designed to meet:

NFPA 258

NFPA 701 (UL-214) Small Scale

STANDARD SIZES

6" x 24"	24" x 24"
12" x 24"	24" x 32"
18" x 24"	

Key Features

- Easy to Install
- Constructed of Non-flammable Material
- Provides Consistent Air Supply
- Custom Sizes Available

Polar Booth

A common problem is supplying cold air to equipment that is not in a rack row or aisle. The Polar Booth contains the supply air to the equipment intake only and ensures both a uniform and predictable temperature to all isolated IT equipment.

The Polar Booth can be used to contain either cold supply air, or direct hot exhaust air away, making it a perfect solution for equipment that is not in a dedicated hot or cold aisle configuration.

Frame

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Rolls easily on casters

Clear Panels

PHYSICAL PROPERTIES

Property:	Test:	Result:
Thickness	-	.125"
Rockwell H.	ASTM D785	M-100
Tensile Strength	ASTM D638	11M psi
Light Trans.	ASTM D1003	91-92%

FLAMMABILITY

Property:	Test:	Result:
Smoke Dev.	ASTM E84	385
Flame Spread	ASTM E84	140
Horizontal Burn	ASTM D635	1.18 in/min
UL Horizontal	UL94	94 HB

Key Features:

- Custom Sizes
- Rigid Design
- Clear Panels
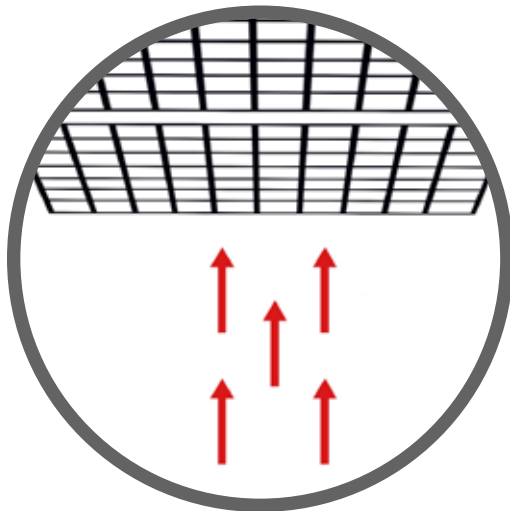- Moves and Positions Easily

Options:

- Clear or Black Anodized Finish

Egg Crate Ceiling Grille
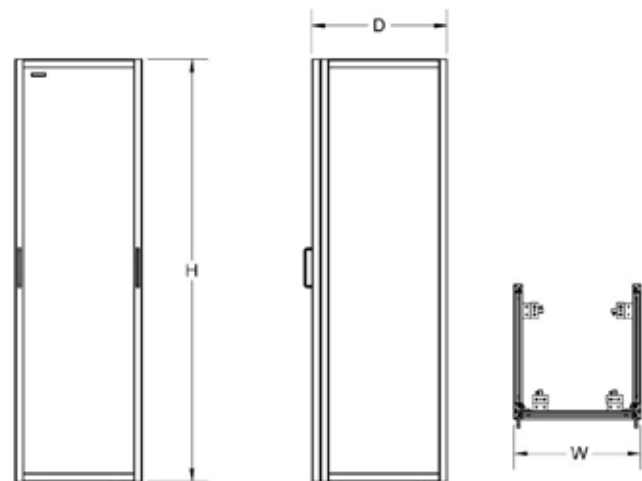
Our Egg Crate Ceiling Grille airflow management solution is an important tool in helping design an energy efficient data center. It is designed to work with the natural properties of rising hot air.

The Subzero Engineering Egg Crate Ceiling Grille is used most effectively with hot aisle containment to allow hot IT equipment exhaust air to pass into the drop ceiling void and be directed back to the AC unit. This allows for warmer, dryer air to return to the AC unit. As a result, the AC unit functions more efficiently and can provide increased cooling.
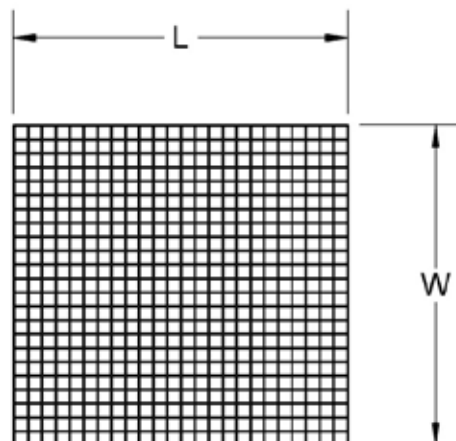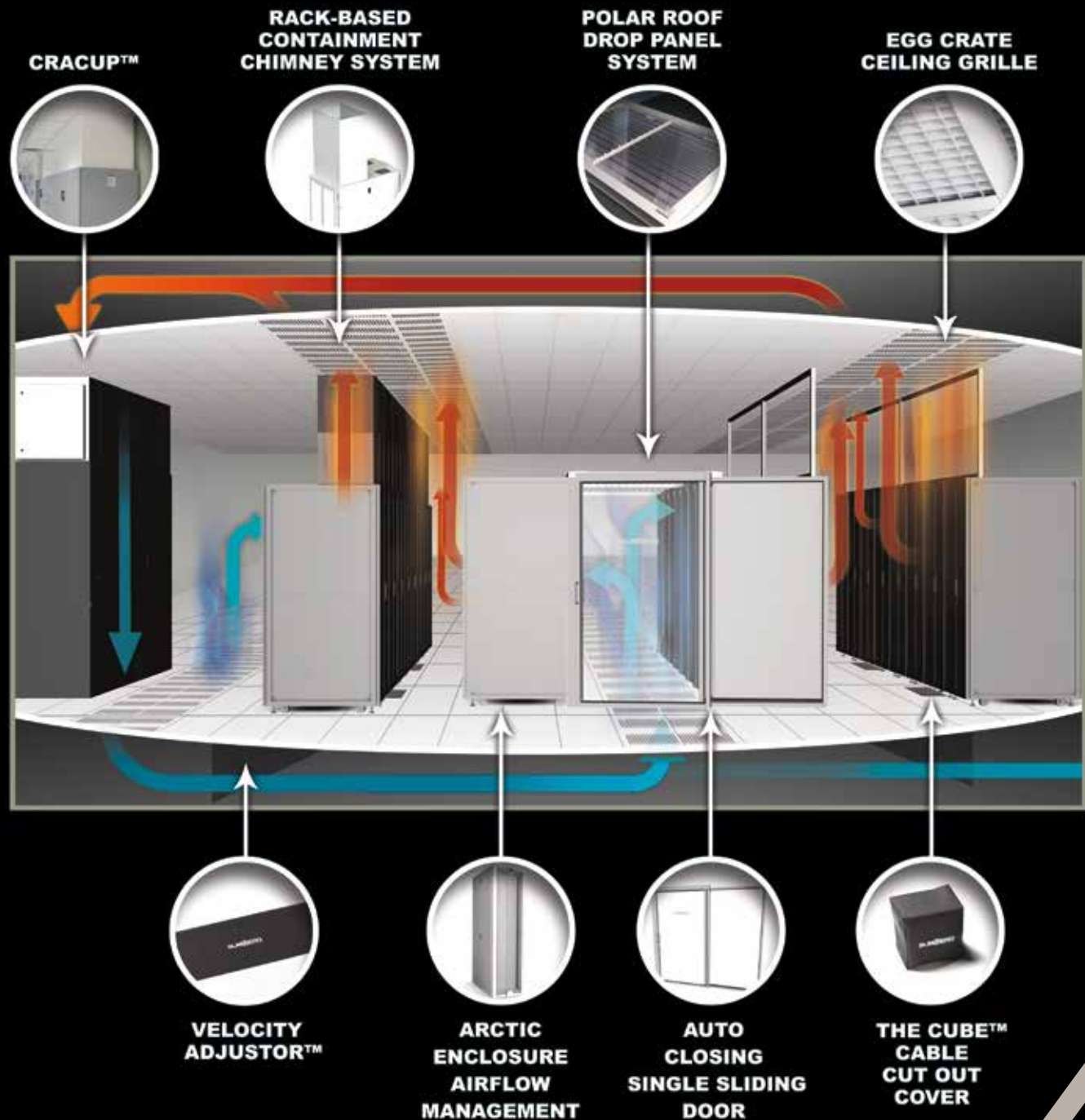
Key Features:

- Easy Installation
- Standard Sizes

Options:

- 2' W x 2' L
- 2' W x 4' L

CRACUP™

RACK-BASED CONTAINMENT CHIMNEY SYSTEM

POLAR ROOF DROP PANEL SYSTEM

EGG CRATE CEILING GRILLE

VELOCITY ADJUSTOR™

ARCTIC ENCLOSURE AIRFLOW MANAGEMENT

AUTO CLOSING SINGLE SLIDING DOOR

THE CUBE™ CABLE CUT OUT COVER

Airflow Management
Products

The diagram above shows how Subzero Engineering's airflow management products can be used effectively in directing hot and cold airflow within a data center.

Arctic Enclosure
Racks & Cabinets

No airflow management offering would be complete without having an enclosure that emphasizes airflow management practices. Remember in a contained environment 60%+ of your containment integrity is based on the enclosures themselves! Check out the Arctic Enclosure and see why it was designed with airflow in mind!

The Subzero Engineering Arctic Enclosure has the market-leading open area in our door systems. Moreover the enclosure was engineered out of the box to ensure supply air can only pass through the IT load. Simply stated, the exhaust airflow is prevented from passing back across this barrier.

Additionally, our enclosures boast some of the strongest static and dynamic load ratings in the industry. We are also offering a turnkey solution where we can pre-configure rail locations, cable management solutions and even power offerings.

Arctic Enclosure

The Subzero Arctic Enclosure was designed to support the dynamic needs of today's data centers by supporting airflow management needs out of the box. This enclosure can support all types of data center demands from low density, to high density; data closets, to enterprise data centers. All potential air leakage areas around the front perimeter of the enclosure are completely closed off. Our market leading 81%+ open perforation pattern on all perforated door options will be the most robust feel; you will be hard pressed to find this stability even in other solid door types. This enclosure is completely customizable and can be configured with all the cable management, power, accessories and so much more as a complete turnkey solution directly to you.

Enclosure features:

- Enclosure designed from the start ensuring all 5 airflow fault areas are sealed
- Sleek, one of a kind, push-to-open standard offering (alternative handles also available)
- Market leading 81%+ perforation pattern
- Assorted door styles available:
    - Single full perforated
    - Split full perforated
    - Split solid
- Market leading dynamic & static load rating
- Simple & easy integration to all containment solutions
- Top panel with customizable opening areas that have day 2 removability
- Full assortment of divider and side panel offering available including cable pass-through options
- 19 inch EIA-310 vertical mounting rails with RU designated markings
- Our own mesh cable management offering available, and can be pre-installed where you want
- Grounding pre-installed
- Color: Subzero polar white, black, & color matching available (Multi-color capabilities - enclosure frame, mesh, door frame, accessories, etc.)
- Shipping weight: 318 lbs.

Key Features
- EIA 310-D compliant for 19" equipment
- Mounting Hardware:
  #10-32 cage nuts and screws (qty. 50)
- Static weight load capacity: 3,000 pounds
- Dynamic weight load capacity: 2,400 pounds

INTERNAL HEIGHT	EXTERNAL HEIGHT	EXTERNAL WIDTH	EXTERNAL DEPTH
42U	80.65" (2048.51 mm)	24" (609.60 mm)	42.36" (1075.95 mm)
		30" (762 mm)	
		24" (609.60 mm)	48.36" (1228.35 mm)
		30" (762 mm)	
45U	85.9" (2181.86 mm)	24" (609.60 mm)	42.36" (1075.95 mm)
		30" (762 mm)	
		24" (609.60 mm)	48.36" (1228.35 mm)
		30" (762 mm)	
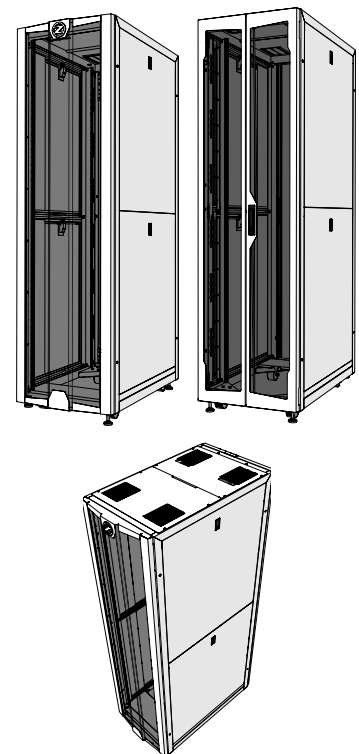
Rack-Based
Containment

An airflow management portfolio is not complete without incorporating all three varieties of containment system options: cold aisle, hot aisle, and rack-based containment.

Our chimney solutions are fully height adjustable to minimize impact on site conditions without having to drill or allow for penetrations within the airflow pathway. The chimney offering is near tool-less and installs in a minute or less on all of our enclosures, even Day 2. Our rack-based containment solutions can be used 1 to 1 (1:1) directly connected to the return plenum, but can also support a 1 to many (1:n) configuration through a shared rear plenum within our enclosures.

The possibilities are endless with Subzero Engineering.

The Rack-Based Containment System is a chimney solutions that is completely height adjustable to minimize impact on site conditions without having to drill or allow for penetrations within the airflow pathway.

The chimney offering is near tool-less and installs in a minute or less on all Subzero Arctic Enclosures, even Day Two (2).

The Rack-Based Containment solutions can be used 1 to 1 (1:1) directly connected to the return plenum, but can also support a 1 to many (1:n) configuration through a shared rear plenum within our enclosures.

Key Features

- Can be mounted on all Subzero Arctic Enclosures on Day 1 or 2 and can adapt to all 3rd Party Enclosures
- Mounting hardware: included and system is fully height adjustable and installs in a minute or less
- For enclosure densities up to 25kW and beyond
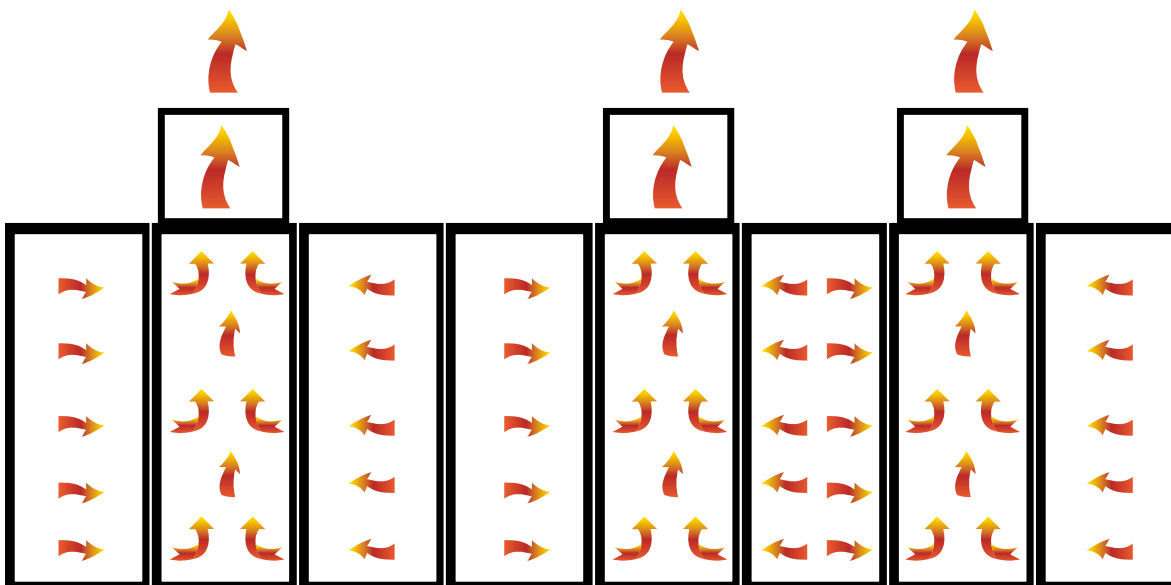
Chimney systems can be adapted to allow more than one cabinet
to discharge heat through one chimney.

Professional
Installation

Even great product requires professional installation. One thing we have learned over the years is that nothing is perfectly plumb. Often an installation requires working around cabinets that are not set properly, ceilings that are not flat, floors that are not square and gaps that are not called out in drawings.

Let our professional team work through all the fit and finish issues. The end result will be a great looking functional system that will last a long, long time. In fact, use our installers, double your warranty!

Easy to Read
Easy to Deploy

- **Temperature**
- **Humidity**
- **Open/Closed**
- **Water**
- **Light**
- **Motion**
- **and more...**

LOCAL TEMP
41 F
LOCAL TEMP COMPARISON

PUE
1.7
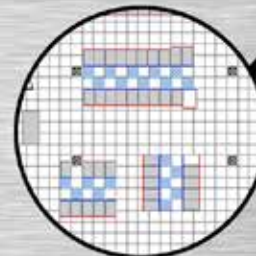**PUE**

GRAPHIC CHANGES WITH EQUIPMENT

CUSTOM ROOM LAYOUT

Wireless Monitoring
Environmental Monitoring System

Data Center Infrastructure Management (DCiM) is a growing trend that helps data center managers keep track of power, cooling, and IT equipment requirements and changes. Subzero Engineering simplifies the tracking of the power and cooling environmental information. Our PolarXpress system can be monitored at your desktop, iPhone, or even on our Intelligent Containment Environment (ICE) Door.

With just a glance you can determine if any cabinet intake temperature, relative humidity, or PUE is within acceptable operating conditions.

Inexpensive, accurate, easy to deploy, easy to read.

Easy to read, easy to deploy.

PolarXpress is a wireless, web-based environmental monitoring system with real time PUE measurement. It allows you to monitor:

- Temperature
- Humidity
- Power usage effectiveness
- Water leak detection
- Object presence with IR motion
- Open/closed positions of racks or doors
- Data center lighting status

It provides Email and SMS alerts if any user set threshold is crossed. It trends and graphs the various changes to any of the data points monitored.

The sensors are wireless, allowing for quick and easy set up. We do all of the set up work before any hardware arrives. Your specific data center floor plan is developed and uploaded into the data base. Your racks are then created and placed on the floor plan. Sensors are logged in to the appropriate places on the racks within the program and then tagged so that they can be installed in the appropriate location on the floor. Once the gateways are plugged in the system immediately starts reporting back to the web based user interface. And best of all, we take care of all of it for you. You pay as little as $10 a month per sensor and we manage it for you. Sensor failure…not your problem we send a new one free. New sensors become available, no worries we will add them in at no charge, only their monthly cost. Trouble shooting and tech support are included.

PolarXpress™

Environmental Monitoring

Easy Wireless Sensor Deployment

Notification & Alerting

PUE Measurement & Trend

Subscription Based

ICE Door

Patent Pending

Intelligent Containment Environment

Subzero Engineering introduces a cutting-edge product that gives you an information access portal at the end of every aisle – the patent pending ICE Door.

Maintain your airflow management integrity and reap the most from your containment solution. The ICE Door provides an information access portal for your entire aisle at the aisle end door. By providing you access to the critical information you demand outside the aisle you can dramatically reduce the number of times you break your containment barrier.

ICE Door

At Subzero Engineering we are advocates of the philosophy that the best way to reduce energy consumption and increase cooling capacity is to install a custom designed containment solution in your data center. We also uphold the philosophy that you should maintain the integrity of your containment solution by limiting how often you break the containment barrier. The ICE Door provides an information access portal for your entire aisle at the aisle end door. By providing you access to the critical information you demand outside the aisle, instead of inside the aisle, you can dramatically reduce the number of times you break your containment barrier.

The ICE Door provides an aisle end door-mounted tablet computer capable of displaying information relevant to the environmental and operational conditions existing within the containment area. This information can include rack inlet and outlet temperature and humidity, above and below raised floor differential pressure, rack doors open and closed indication, light presence, motion presence and water leak detection. Depending on the hardware and software utilized in conjunction with the tablet computer display, the potential also exists to provide control commands to the data center cooling chain such as CRAC and CRAH temperature and humidification set points, chilled water set points, fan speed set points and pump speed set points.

Many DCiM software platforms are web-enabled, allowing you the capability to present their data by means of any web browser that has been provided access to the platform. The ICE Door can utilize any browser supported by the tablet computer to monitor and control the data provided by the DCiM operational platform that is web-enabled and allows this feature. With multi platform functionality, you can decide which tablet computer works best for your data center.

Information Access Portal

Monitor Poll Control

Multi-platform Functionality

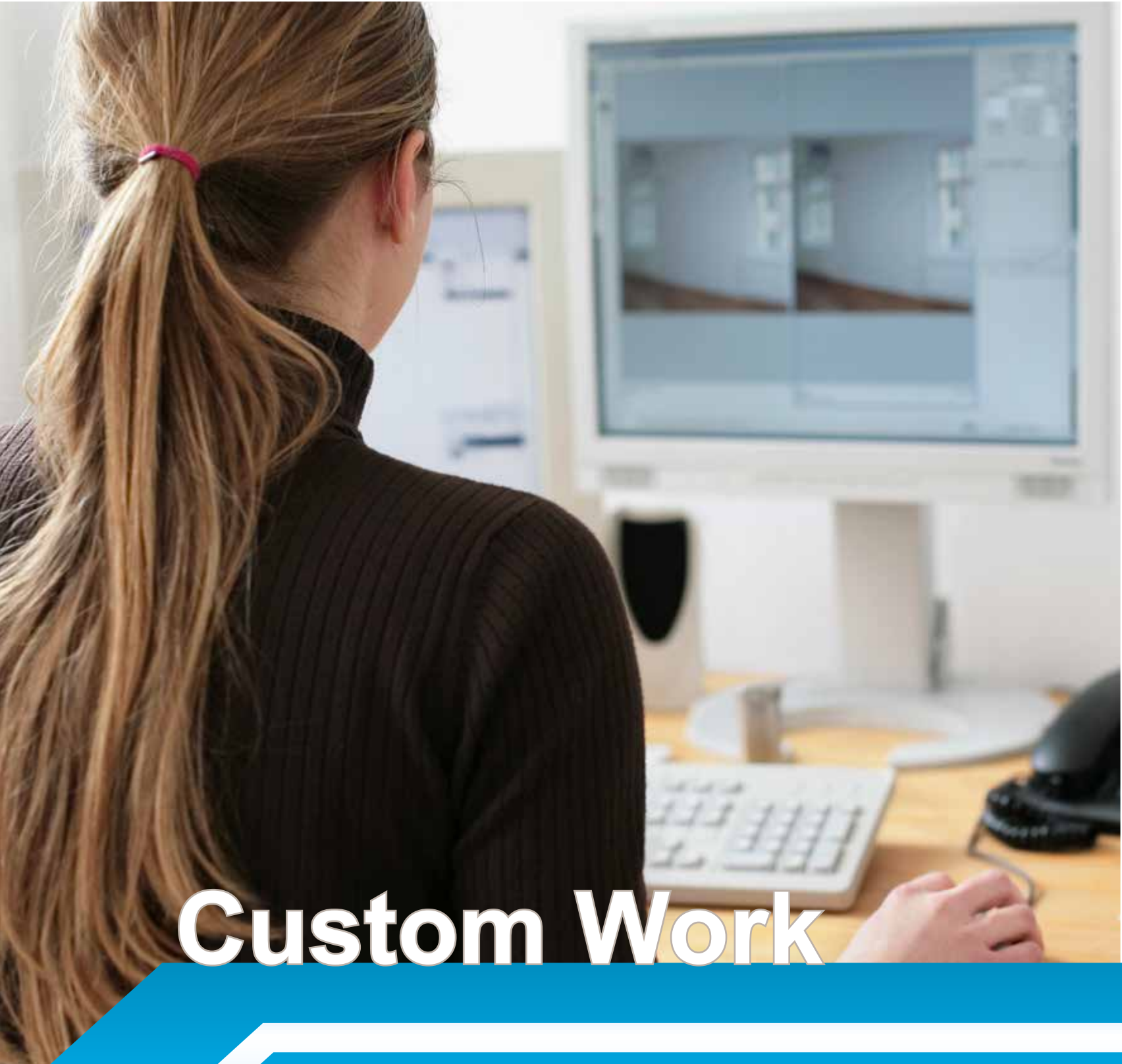**Maintains Containment Integrity**

Aisle End Monitoring

Increased Security

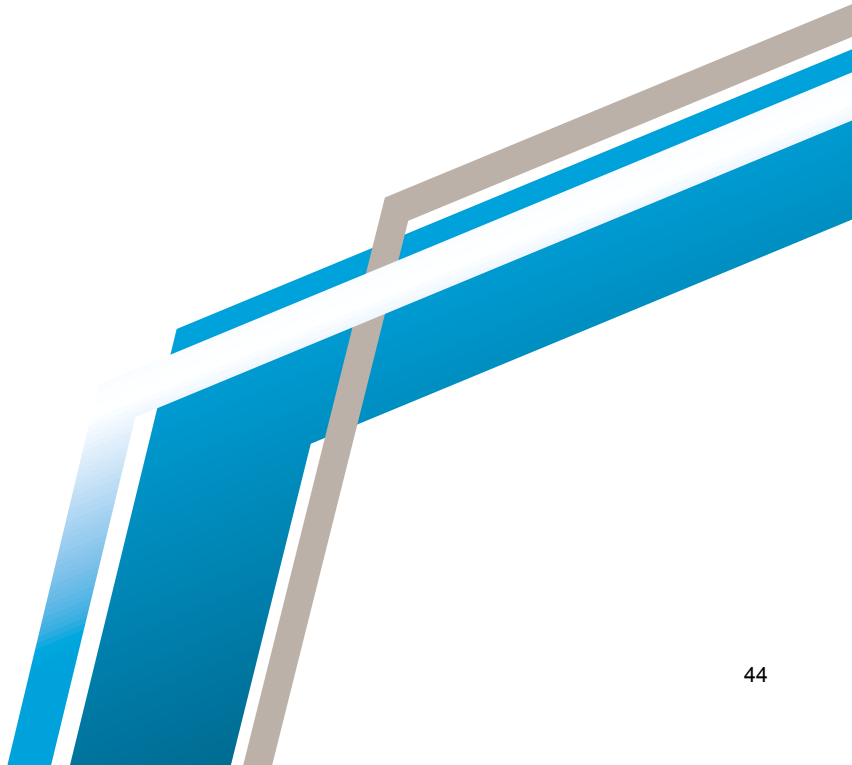**Endless Apps**

Patent Pending

Custom Work

Agility, Innovation, and Custom Design.

Our design and manufacturing process allows for unique and custom solutions. Our teams have designed and created graphics and displays that resemble Hollywood movie sets.

Tell us what you envision. We will make it into a reality

Technical Furniture

Subzero Engineering introduces a new line of technical furniture designed to enhance workflow in the data center environment. Utilizing our industry expertise, Subzero has designed a unique line of technical furniture that is perfectly suited for the data center environment. Each item is fully customizable and is made of aluminum to ensure full recyclability.

Combined, our team of designers and our manufacturing prowess gives us the ability to create numerous technical furniture solutions.

- Technical Lab Benches
- Flat Panel Work Stations
- Modular Cart Solutions
- Custom Wall and Privacy Panels
- Custom Furniture

The Data Center Display Desk features a modular design that can be incorporated with a host of options allowing you to build a custom display solution. The electronic height-adjustable work surface offers adjustments with just a touch of a button and allows the user to save 3 positions in memory.

The Data Center Display Desk chassis is comprised of aluminum construction, with a non-magnetic, non-corrosive, non-toxic design, superior strength, and is entirely recyclable.

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 47.00" L x 23.00" W 30.00" H

Supports up to 900 lbs.

Fixed shelves

OPTIONS

Monitor Holder

Tool Holder

Upright

Overhang

Lights

Power Distribution

Key Features

- Supports 450 - 900 lbs
- Multiple flat panel display arms to create a custom solution
- Power distribution units (PDU)
- Integrated cable management
- Uninterruptible power supplies (UPS)
- Modular hardwired power systems
- Technical storage
- Suspended CPU caddies
- Computer docks

Shipping

PHYSICAL PROPERTIES

Property:	Result:
Weight	250 lbs. Approx.
Components	5 Major Components

Data Center Lab Bench
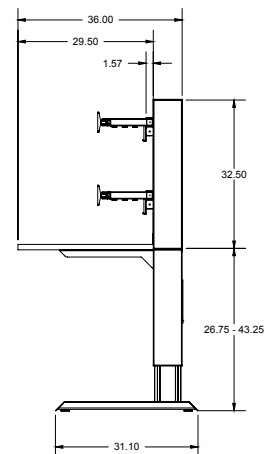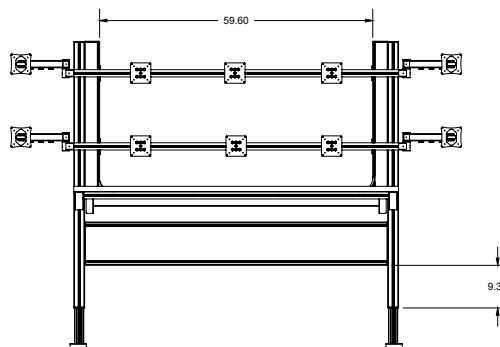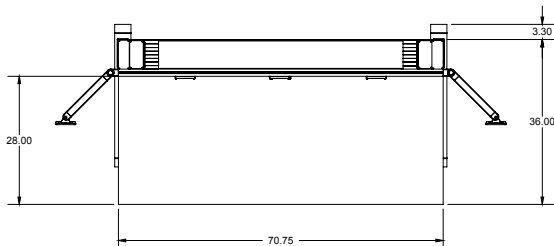
The Data Center Lab Bench is easy to use and can be customized to meet your technical and environmental needs. Four desk models are available with multiple size variations including options that provide an automatic height adjustment system with just a touch of a button.

Data center furniture accessories provide complete flexibility and include options in shelving and storage, cable and tool management, power, lighting, and wallboards. The Data Center Lab Bench chassis is comprised of aluminum construction, with a non-magnetic, non-corrosive, non-toxic design, superior strength, and is entirely recyclable.

PHYSICAL PROPERTIES

Property:	Material:	Result:
Tensile Strength	Aluminum	22,000 psi

FEATURES

Typical size of 47.00" L x 23.00" W 30.00" H

Supports up to 900 lbs.

Fixed shelves

OPTIONS

Monitor Holder

Tool Holder

Upright

Overhang

Lights

Power Distribution

Shipping

PHYSICAL PROPERTIES

Property:	Result:
Weight	250 lbs. Approx.
Components	5 Major Components

Key Features

- Lightweight
- Exceptional Carrying Capacity
- Optimized Chassis
- Ergonomic
- Flexible
- Lots of Accessories

Options

- Monitor Holder
- Tool Holders
- Fixed Shelves
- Lights
- Document Holders
- Auto or Manual Height Adjustment
- Parts Containers
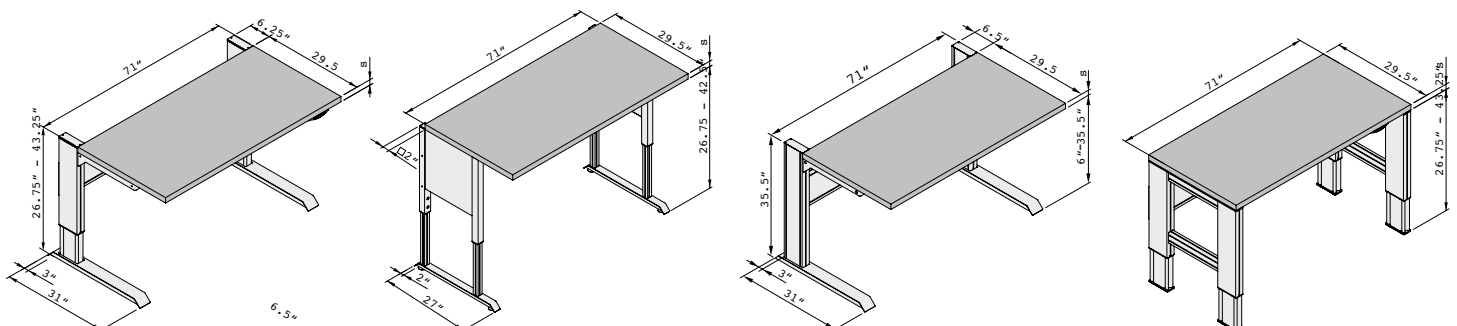
Our Mission

Design, construct, and install quality, custom, intelligent products so as to ensure customer satisfaction and efficient, profitable operations while establishing Subzero Engineering as the industry leader.

Managing What Matters

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