

VariCool™

- Variable Air Volume
- Self-Contained Air Conditioning System for New, Retrofit and Renovation Installations
- Floor-by-Floor Packaged Air Conditioning Unit
- Water-Cooled



United
CoolAir Corp™

www.unitedcoolair.com

Efficient Cooling for the 21st Century

The VariCool is a self-contained air conditioning system for use with floor-by-floor cooling applications. The unit addresses concerns for energy efficiency, reliability, sound and IAQ in today's commercial building environment. It offers a simple design solution that increases system redundancy with lower operating cost and ease of installation/operation.

Advantages Over Conventional Systems

The VariCool system requires less sophisticated maintenance than chiller or roof-top air handlers, and complete downtime is unlikely since units can be independently serviced. Indoor units have a longer life expectancy compared to outdoor equipment and require only a small mechanical room because of their compact size.

Greater Tenant Control and Satisfaction

Floor-by-floor system allows tenant metering for economy and use-flexibility to meet special requirements. Its central location on each floor minimizes tenant inconvenience during routine maintenance. The inherent reliability of the VariCool with its efficient design and redundancy minimizes system downtime, lowers maintenance costs and increases tenant satisfaction.

Flexible Installation Options

Because it is a floor-by-floor air conditioning system, one unit will satisfy the cooling requirements of a single tenant or for partial tenant occupancy. Multiple units can also be installed for higher cooling loads or to insure system redundancy.

ASHRAE 90.1 COMPLIANT

Applications

- Multi-Story Office Buildings
- Commercial/Retail Centers
- Hospitals/Medical Centers
- Laboratories
- Data Centers
- Schools and Colleges
- Banks/Financial Centers
- Manufacturing Facilities
- Studios
- Performing Arts Centers



Engineered for a Quiet Environment



The VariCool is engineered for operation in locations sensitive to sound and vibration. The welded frame and heavy-gauge sheet metal panels form a rattle-resistant structure, with two-inch, high-density insulation lining the inside panel walls. The unit incorporates a spring-isolated plenum fan and motor assembly, which allows for quiet air discharge in three directions.



Custom Tailored for Your Special Requirements

In addition to numerous standard features, the VariCool system can be custom tailored with many options and special features for your unique application. Operating efficiency can be greatly enhanced with the addition of a water-side or air-side economizer to take advantage of free cooling. Heating options include electric heat, hot water coil or steam coil.

Engineered for Easy Maintenance and Service

Modular design makes the VariCool easy to maintain. Hinged, removable doors located around the unit facilitate immediate access to all compartments. All major components are located out of the air stream allowing access even while the unit is operating. United CoolAir also uses standard components throughout to enhance system reliability.

Protects IAQ for a Healthier Environment

The VariCool air conditioning system protects the quality of the indoor air against particulates, mold and mildew. A double-sloped, stainless steel drain pan prevents standing water, and the tight-sealing insulated cabinet design prevents the infiltration of particulates back into the supply air stream. The unit comes equipped with 2" pleated filters accessible from both sides, with 4" high-efficiency filters available as an option.

Low Cost of Operation

United CoolAir engineered the VariCool for high-efficiency operation and to comply with ASHRAE 90.1 standards. Each unit has two to four scroll-type compressors no larger than 15 tons per circuit for exceptional part-load operation. Maximum Operating Pressure (MOP) Thermal expansion valves maintain the system across a wide operating range of temperature and humidity. The VariCool's variable frequency drive control further lowers kW consumption at part load conditions for high Variable Air Volume (VAV) savings.

VariCool Construction Features



Modular Design
Ships in three sections
for easy building access



High-Density Insulation
2" insulation on all sides



**Water-Cooled
Condenser**
Coaxial standard with
option for remote air-
cooled condenser



**Structural
All-Welded Frame**
Rigid construction
eliminates vibration



**Hinged,
Removable Doors**
Easy access to all
components



**Row-Split Evaporator
Configuration**
Provides uniform and precise
leaving air temperatures
under a variety of operating
conditions



**Stainless Steel Double-
Sloped Drain Pan**
Meets IAQ requirements

Independent VFD Compartment
Isolated from high voltage and electrical noise



VariCool Microprocessor Controls

United CoolAir's Marvel™ Plus controller provides sophisticated controls for today's Variable Air Volume (VAV) equipment. It is a self-contained, programmable controller capable of providing multiple features and options for a wide variety of VAV applications.

The control features a 16-bit microprocessor operating at 16 MHz. Flash memory contains the application program and is utilized to ensure optimum performance, flexibility and capability.



Standard Features:

- Four line by 20 character LCD display
- Manual Control is possible for any system from the controller keypad
- Password Protection
- Automatic Restart from a power failure situation
- SCR Capability
- Real Time Clock
- BACNET, ECHELON, METASYS & MODBUS compatible without a Gateway
- Return Air Temperature Sensor
- Supply Air Temperature Sensor
- Water Temperature Sensor
- Water Flow Switch Input
- Modem Ready
- pLAN Network Capability (RS485)
- Air Pressure Transducer (static) Input
- Air Pressure Switch (high static) Input
- High & Low Refrigerant Pressure Switch Input
- 6MB Flash Memory
- 10 Analogue Inputs
- 18 Digital Inputs
- 6 Analogue Outputs
- 18 Digital Outputs
- Plastic Housing with standard DIN Rail Mounting
- Pop-Up Covers on housing that allows insertion of communication and printer boards
- Screw Down Plug-In Connectors
- Alarm history stored in memory
- Operating Conditions – 10° C to 60° C, <90% RH non-condensing

Alarms:

- High Static
- High & Low Refrigerant Pressure
- Loss of Water Flow
- Loss of Air Flow
- Evaporator Motor Overload
- High & Low Supply Air Temperature
- Dirty Filter
- Smoke Detector
- Firestat
- Drain Pan Overflow
- Heater High Limit

Options:

- LONWORKS & BACNET Compatible
- User Interface
- Relative Humidity Sensor
- Air Flow Switch
- Dirty Filter Switch
- Outside Air Temperature Sensor
- Outside Air Humidity Sensor
- Smoke Detector
- Firestat
- Freezestat
- Maintenance Run Times
- Printer Output

VariCool Modular Design

The VariCool is available in three cabinet sizes with a cooling capacity ranging from 9 to 70 nominal tons. United CoolAir Corporation uses only high-efficiency scroll compressors, backward-inclined plenum fans, EPACT motors, condensers and evaporator coils to reduce the operating cost.



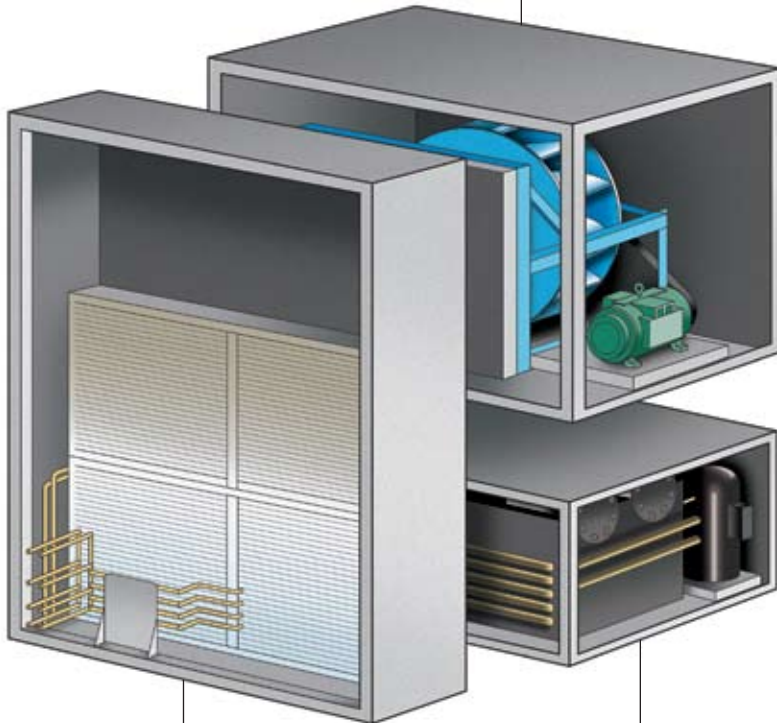
Blower Assembly

Blower bearings for the plenum blower are the pillow block type with an expected life of 200,000 hours.



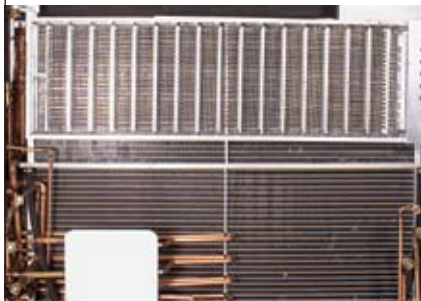
Microprocessor Control System

Microprocessor controls can be stand-alone or interface with various building automation systems like BACnet®, LonTalk™ and other protocols to enable remote monitoring. It includes a user-friendly interface that permits control, monitoring and diagnostic evaluation of the VariCool system.



High-Capacity Evaporator Coil

Row-split evaporator configuration provides uniform and precise leaving air temperatures under a variety of operating conditions.



Refrigeration Module

All critical components are located outside the air stream for longer life, and the unit may be serviced while in operation.



Water or Air Economizer Reduces Operating Cost

For even greater operating efficiency, the VariCool can be specified with an air-side economizer and/or a water-side economizer option to further enhance the unit's operating efficiency. The air-side economizer function takes advantage of cooler and dryer outside air to either assist mechanical cooling or provide total cooling if the outdoor air is cool enough.

The water-side economizer uses the low condenser water temperature supplied by the cooling tower to reduce the load on the mechanical refrigeration system. It accomplishes this by pre-cooling the entering air, assisting in mechanical cooling or providing total system cooling.

Retrofit and Renovation Installations



Features and Modular Design for Fast and Easy Installation

The VariCool was designed and engineered specifically for fast, trouble-free installation in renovation and retrofit applications. The modular, knock-down, three-piece construction allows easy access through standard doorways and elevators preserving the building's architectural integrity. It also eliminates unnecessary construction, saving both time and money.

The unit is shipped in three sections and fully charged with R-410a refrigerant eliminating brazing, evacuation and charging in the field. All components are pre-wired for reduced installation time and expense without sacrificing reliability.

Because of its small footprint and vertical design, the VariCool requires minimal mechanical room space. It has single-point power and water connection from the top of the unit simplifying utility routing and labor. In applications replacing chiller cooling, the existing chilled water lines can be connected to the unit's condenser, eliminating pipe runs. All units are factory functionally tested before shipping to ensure a trouble-free start-up and unit commissioning.



VariCool Mechanical Data

Physical Data

	Nominal Tons	9	11	13	18	23	27	29	35	36	42	47	51	54	57	63	70	
Capacity(a)	Total	114.4	141.8	163.7	219.0	279.2	334.2	355.6	432.5	440.3	507.7	575.2	618.9	662.6	688.2	770.3	852.4	
	Sensible	83.5	104.2	135.7	161.7	200.9	245.3	262.6	313.8	326.2	373.8	421.3	455.8	490.3	516.3	559.9	603.4	
Blower Type	AIR FOIL PLENUM FAN																	
	Max Size (Dia.)	14"	16"	16"	20"	20"	22"	25"	25"	25"	28"	32"	32"	32"	32"	36"	36"	
	CFM Range	2400-3200	3000-4000	3600-4800	4800-6400	6000-8000	7200-9600	7800-10400	9000-12000	9600-12800	10800-14400	12000-16000	13200-17600	14400-19200	15600-20800	16800-22400	18000-24000	
Filter Type (All filters 2" Thick)	PLEATED THROWAWAY																	
	Size	25x20 / 25x16			20x20 / 20x16		25x20 / 25x25			20x20 / 20x25								
	Qty	2 / 1			4 / 2		2 / 4			3 / 6		9 / 3			12 / 4			
	Efficiency	30%																
Evaporator Type	ROW SPLIT																	
Coil	Face(sq ft)	7.2	9.0	9.0	12.6	17.7	21.1	21.1	24.4	25.6	29.9	34.1	37.0	39.9	39.9	42.7	45.5	
	Rows	6																
	FPI	12					10			12								
Condenser Type	COAXIAL																	
	Diameter	6-5/8				8-5/8				6-5/8"		(2)6-5/8/ (2)8-5/8		8-5/8				
	Length	28"			40"													
	Work. Pres.	150 psig Water Side																
Return Air	Duct Size	25x56			40x56		50x70			60x70		60x85			80x85			
Supply Air	Duct Size	16x26		18x32			20x36		20x44			30x42			30x52			
Compressor Type	HERMETIC SCROLL																	
	Qty	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	
	HP	4	5	6	8	10	12	13	15	8	(2) 8/ (2) 10	10	(2) 10/ (2) 12	12	13	(2) 13/ (2) 15	15	
Refrigerant Type	R-410a																	
	Lbs-Ozs	17-8	20-0	23-2	28-1	44-5	48-12	48-12	56-2	57-8	72-10	87-12	91-14	96-0	96-0	103-1	110-2	
Weight(b) (Net Oper.)	Evaporator	525	550	565	620	860	955	955	990	1260	1325	1390	1425	1480	1490	1535	1595	
	Condenser	595	645	735	800	910	1050	1200	1225	1700	1675	1850	1900	1945	2230	2250	2290	
	Blower	590	620	700	760	1135	1270	1305	1305	1735	1790	1805	1955	1955	2090	2155	2155	
	Assembly	1710	1815	2000	2180	2905	3275	3460	3520	4695	4790	5045	5280	5380	5810	5940	6040	

(a) Capacity based on 80°F DB / 67°F WB with 85°F EFT and 3 GPM / Ton.

(b) Basic unit only. Options will add weight.

Dimensions

	9-18 Tons	23-35 Tons	36-70 Tons
Evaporator	68" H x 68" W x 32" D	80" H x 80" W x 35" D	98" H x 100" W x 35" D
Condenser	30" H x 68" W x 32" D	32" H x 80" W x 35" D	36" H x 100" W x 52" D
Blower	38" H x 68" W x 32" D	48" H x 80" W x 35" D	62" H x 100" W x 52" D
Assembly	68" H x 68" W x 64" D	80" H x 80" W x 70" D	98" H x 100" W x 87" D

VariCool Options and Accessories

- Plate Heat Exchanger or Shell and Tube
- Cupro-Nickel Water Condenser
- Corrosion-Proof Coils
- Water Regulated Head Pressure Control
- Modulating Hot Gas Bypass
- Chilled Water Coil
- Cleanable Chilled Water Coil
- Water-Side Economizer
- Hot Water Coil or Steam Coil
- Electric Heat (open coil or finned tubular, staged or modulating)
- Air-Side Economizer
- Green Refrigerants
- Chilled Water Only Unit with Plenum Fan Configuration
- High-Efficiency Filters
- 300 psig Water Side



Contact your local sales organization to discuss the particulars of your application and other possible options.

United CoolAir Corporation

Other Quality Systems



C-Series

Horizontal air-cooled, water-cooled or chilled water configurations. The industry's most flexible split-able packaged systems.



VertiCool

Vertical air-cooled, water-cooled or chilled water systems. Available as a single package or split-able.



CoolSpot

Ceiling grid air conditioners available in air-cooled, water-cooled or chilled water configurations.



VertiCool Space-Saver

Self-contained water-cooled units can be used for ducted or "free blow" configurations. Remote air-cooled condenser or condensing systems available.



MiniCool

Ductless high-wall evaporators matched with an indoor condensing section (air-cooled or water-cooled) that can be split up to 250 feet.

United CoolAir excels at providing a basic unit and then tailoring the product to meet your specific requirements. Please contact your local sales organization to discuss the particulars of your application.

FACTORY TESTED - Each unit is functionally run-tested to verify control and component operation.

LIMITED WARRANTY - United CoolAir units are backed by a (one) 1 year limited warranty on parts and a (five) 5 year limited warranty on the compressor (labor not included). Maintenance items such as filters and belts are excluded under this limited warranty.



Labeled & Listed

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