



Aquilon DS TransCritical CO₂ Condensing Unit



Natural CO₂ refrigerant in a packaged system, ideal for smaller industrial applications.

The power behind **your mission**

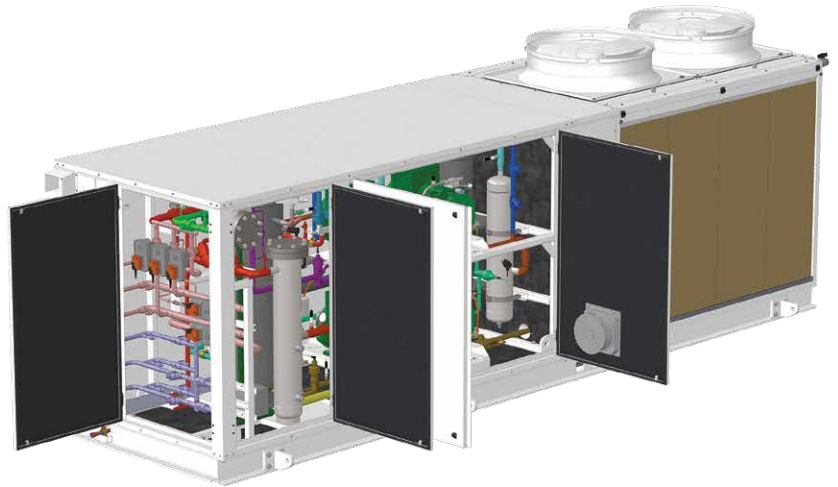
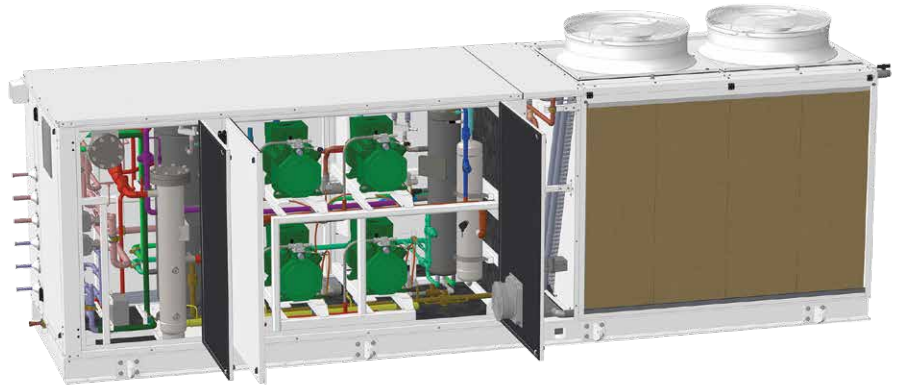




The Aquilon DS is a CO₂ condensing unit integrating system control with mechanical vapor compression, adiabatic-enhanced dry cooler heat rejection and controlled pressure direct expansion refrigerant feed to the low-side evaporators.

This unit is well suited for low-temperature and medium-temperature cold rooms, as well as fluid chilling.

The Aquilon DS is a natural refrigerant alternative and replacement for synthetic refrigerant split systems and offers an excellent opportunity for waste heat recovery.



Design features

- High-pressure design eliminates a need for a back-up generator or separate small condensing unit for off-cycle, over-pressure protection
- Multiple parallel booster and trans-critical, high-stage, semi-hermetic reciprocating compressors
- Variable-frequency drives on lead compressors
- High-efficiency oil management system with coalescing separators
- Integrated liquid subcooler
- Integrated dry or adiabatic gas cooler with EC fans
- Optional heat recovery circuits available
- Reverse-cycle, two-pipe hot gas evaporator defrost
- Direct expansion CO₂ liquid feed with motorized control valves
- Microprocessor-based package and system control with multiple level password parameter protection and extended computer-based application interface
- CO₂ leak detection
- Compressor saturated suction temperatures from -40°F to 30°F

Contractor benefits

- Single-point electrical power supply connection for the DS package
 - Optional power distribution with circuit breakers for remote evaporators
- Full access doors for commissioning, start-up, maintenance and service
- Pre-insulated refrigerant vessels and piping
- Easy rigging and mounting
- Integrated gas cooler minimizes field piping
- Evaporator isolation and control valves provided
 - Up to three evaporators – they are unit mounted
 - More than three evaporators – items are shipped loose for remote mounting

End-user benefits

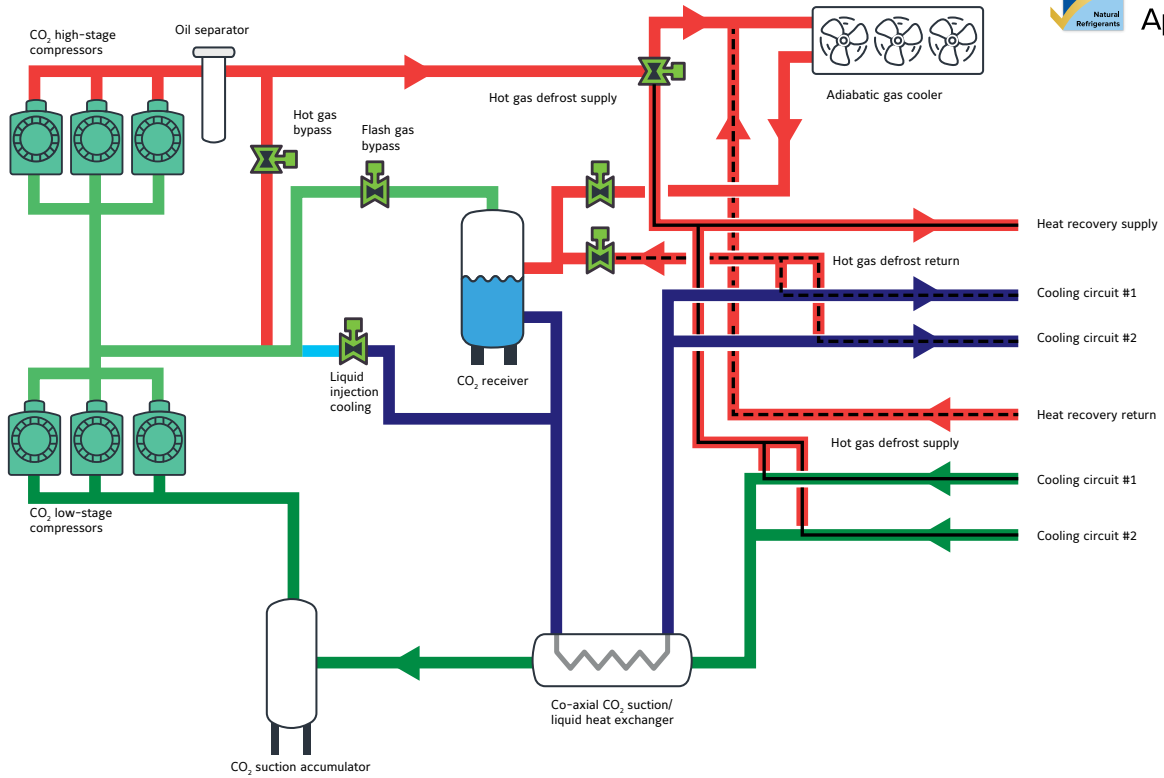
- Long-term, environmentally friendly, natural refrigerant that costs \$1/lb to \$1.50/lb on average
- Regulatory associated costs and compliance burden are significantly reduced
- Reduce energy costs
 - Operating at higher suction temperatures
 - Floating head pressure
 - Intelligent and efficient heat recovery
- Reduce evaporative cooling water consumption by using adiabatic-enhanced dry air coolers
- Significant reduction in maintenance
 - Semi-hermetic compressors do not require inspections for shaft seal replacements
 - Potential for no condenser/gas cooler water treatment
 - Potential for no condenser/gas cooler wastewater sewer costs
 - Direct drive EC gas cooler fans eliminate belt drive maintenance
- Indoor design units available – require a separate outdoor gas cooler
- Significant energy reclaim opportunities available

Aquilon DS packaged system micro-controller

- Built using commercially available hardware to aid resiliency
- Process sensors and transmitters strategically located to enhance diagnostic trending, improve control accuracy and long-term reliability
- Optimized high-pressure valve and flash-gas valve control for maximum energy efficiency at any ambient conditions
- Built in safeties to provide comprehensive system protection
- Advanced evaporator controls with refined superheat monitoring minimizes energy consumption
- Email alarm notification and remote access (network connection required)
- On-board Ethernet port
- Optional Modbus
- Comprehensive user-adjustable setpoints



System diagram



Technical data: Medium temperature^{1, 4, 5}

Model	GC Fans	Compressors	HP	Operating Weight (lbs)	Dry Weight (lbs)	Dimensions (in.)			MCA/MOP ² (A)		Capacity (TR) ^{3, 7}
						L	W	H	MCA	MOP	24°F/85°F
AQU-DS-20M	1	2	20	9,600	9,100	172	60	78	66	90	18
AQU-DS-35M	2	2	40	10,850	10,350	211	60	78	111	160	36
AQU-DS-50M	3	2	50	12,200	11,700	250	60	78	154	220	54
AQU-DS-65M	4	3	80	14,175	13,675	289	60	78	195	260	70
AQU-DS-80M	5	3	90	15,500	15,000	328	60	78	219	280	80

Technical data: Low temperature^{1, 4, 6}

Model	GC Fans	Compressors	HP	Operating Weight (lbs)	Dry Weight (lbs)	Dimensions (in.)			MCA/MOP ² (A)		Capacity (TR) ^{3, 7}
						L	W	H	MCA	MOP	-20°F/85°F
AQU-DS-15L	1	4	32	9,875	9,375	172	60	78	90	120	15
AQU-DS-30L	2	4	79	11,475	10,975	211	60	78	181	240	30
AQU-DS-45L	3	6	108	15,450	14,950	272	60	78	245	300	45
AQU-DS-60L	4	6	139	17,050	16,550	311	60	78	299	360	60

1. Selections for MT only or LT only solutions
2. 460v/3/60, excluding evaporator power. 575v/3/60 available upon request
3. SST (°F) at the evaporator
4. Receiver surge volume: 3.3 ft³

5. Surge capacity: 178lbs @ 50°F liquid temperature
6. Surge capacity: 189lbs @ 35°F liquid temperature
7. Capacities at 100°F dry bulb and 70 °F wet bulb. Consult M&M Carnot for operation outside these conditions

Visit www.johnsoncontrols.com for more information and follow [@johnsoncontrols](https://www.instagram.com/johnsoncontrols) on social platforms.

Form 800.100-SG1 (2024-06) Supersedes: M&M Carnot 1022 Publication · Subject to change without notice · Printed in USA · 07/24 · PDF

© 2024 Johnson Controls. All Rights Reserved.



The power behind your mission