

DATA CENTER & IT COOLING

Coolant Distribution Units

motivair™
by Schneider Electric

Enable groundbreaking technology & meet business-critical demand

Deploy higher density, load diverse IT equipment in a smaller footprint, and improve efficiency.

A Coolant Distribution Unit (CDU) is designed to control and separate colder facility water supplies from the IT cooling infrastructure.

It allows you to deploy higher density, load diverse IT equipment in a smaller footprint & improve efficiency.

This action of "decoupling" allows the CDU to accurately monitor and control the flow and temperature of clean, cool fluid to all types of IT cooling systems, including Active and Passive Rear Door Heat Exchangers or Liquid-Cooled Computer Systems (Direct-to-Chip or On-Chip).

The CDU maintains a secondary loop water temperature above the dew point in the data center to eliminate the possibility of condensation.

COOLING UP TO 2.5MW

The Motivair® Coolant Distribution Unit (CDU) creates an isolated water loop and pumps this through the cooling system to operate at maximum efficiency.

It automatically adjusts the coolant flow and temperature to provide 100% sensible cooling from 102kW up to 2.5MW, depending on the model.

Each CDU uses a stainless-steel heat exchanger, which transfers the heat removed from the IT equipment in the secondary loop to the primary (building) chilled water supply.

The primary chilled water supply can be a chiller, cooling tower, or natural resource. The redundant dual pumps deliver a secondary coolant loop with water supply temperatures ranging from 55F - 113F+ (W1- W5), which removes up to 2.5MW of IT equipment waste heat.

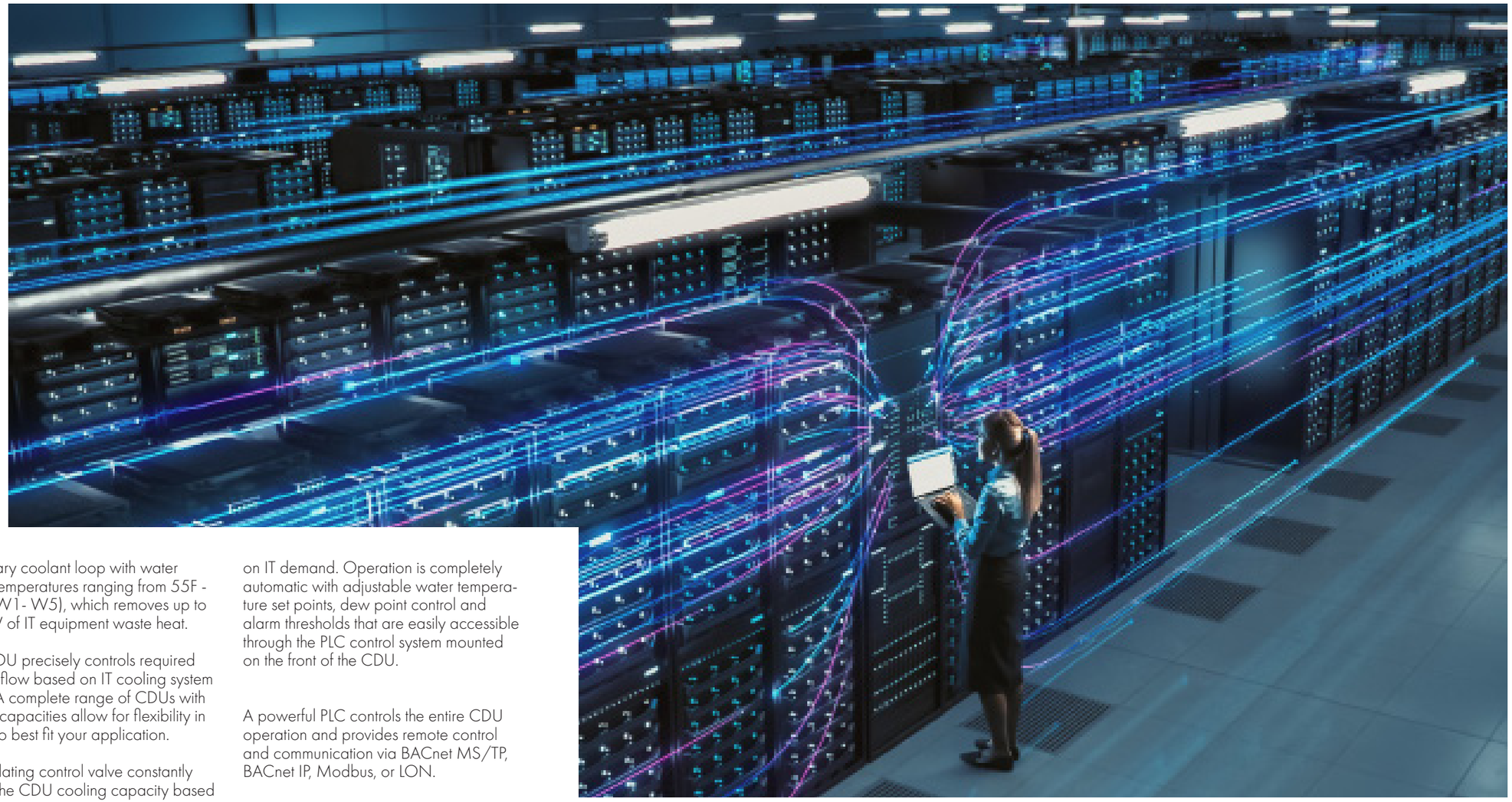
Each CDU precisely controls required coolant flow based on IT cooling system needs. A complete range of CDUs with varying capacities allow for flexibility in design to best fit your application.

A modulating control valve constantly adjusts the CDU cooling capacity based on IT demand. Operation is completely automatic with adjustable water temperature set points, dew point control and alarm thresholds that are easily accessible through the PLC control system mounted on the front of the CDU.

A powerful PLC controls the entire CDU operation and provides remote control and communication via BACnet MS/TP, BACnet IP, Modbus, or LON.

KEY REASONS TO USE A MOTIVAIR COOLANT DISTRIBUTION UNIT

1. **DECOUPLE** Isolate computer cooling loop from facility cooling water
2. **CONTROL** Exact temperature and flow to IT cooling system above room dew point
3. **MONITOR** Record, trend and report updates on cooling system profiles
4. **REDUNDANCY** Redundant pumps ensure reliable cooling to server equipment
5. **BUILT-IN SCALABILITY** Adapt cooling system in real time with server load demand



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Liquid cooling technology accelerating innovation

The widest range and highest capacity of standard and custom OEM CDUs available

FLOOR MOUNT FEATURES

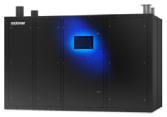
- PLC Control System with simple navigation, adjustable set points and alarms provide individual setup, control and monitoring
- LED Status Indicator provides the data center team with visual CDU status
- Redundant Variable Speed Drives
- Stainless Steel Heat Exchanger
- Redundant Pumps
- Made in the USA
- UL/CSA/CE



IN-RACK F EATURES

- Cooling capacity up to 102 kW
- 4U In-Rack Design - Placement in top or bottom of any standard 19" rack enclosure
- Redundant Circulating Pumps
- Built in redundancy and resiliency features
- Advanced PLC control and safety system
- Made in USA
- UL/CSA/CE

FLOOR MOUNT MODELS

WCDU COOLING CAPACITY: **UP TO 3.5MW**	MCDU-70 COOLING CAPACITY: **UP TO 2.5MW**	MCDU-55 COOLING CAPACITY: **UP TO 2.1MW**	MCDU-50 COOLING CAPACITY: **UP TO 1.7MW**	MCDU-45 COOLING CAPACITY: **UP TO 1.5MW**	MCDU-40 COOLING CAPACITY: **UP TO 1.2MW**	MCDU-25 COOLING CAPACITY: **UP TO 606KW**
						

IN-RACK MODELS

MCDU-10 COOLING CAPACITY: **UP TO 203KW**	MCDU-4U COOLING CAPACITY: **UP TO 100KW**
	

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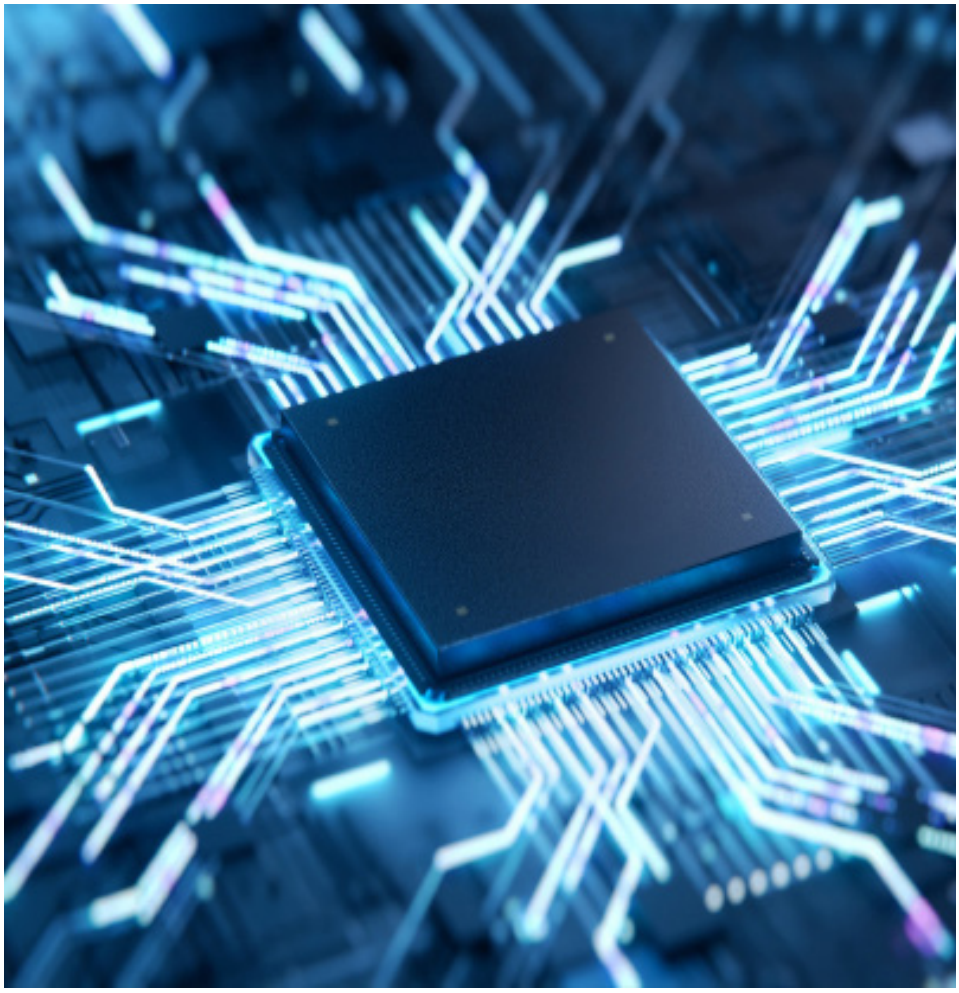
A billion, billion reasons to trust our cooling technology



KEY USES FOR EXASCALE COMPUTING

1. **DISCOVERING NEW CURES FOR DISEASES**
2. **COMBATING CLIMATE CHANGE**
3. **RELIABLE AND EFFICIENT PLANNING OF THE POWER GRID**
4. **OIL EXPLORATION**
5. **UNDERSTANDING ORIGINS OF THE UNIVERSE**

Our cooling technology enables the world's first exascale system, helping it perform a quintillion calculations per second

The world's next generation of supercomputers have been designed with intense processing power that requires direct liquid cooling (DLC).

Motivair's cooling technology can be found in the worlds first Exascale supercomputers --Lawrence Livermore National Laboratory's El Capitan, Argonne National Laboratory's Argonne, and Oak Ridge National Laboratory's Frontier-- as well as multiple Top 500 Supercomputer systems.

Exascale systems are designed to crunch a quintillion, 10^{18}, floating point operations per second (FLOPS). They're vital in reaching discoveries faster, giving scientists a new tool for addressing some of the biggest challenges, from climate change to understanding cancer to designing new kinds of materials.

Unlike its standard Coolant Distribution Units, Motivair's Exascale-Class CDUs are customized to allow for direct communication with both the supercomputer and the building's primary cooling infrastructure, which ensures reliable operation and maximum efficiency. Multiple levels of redundancy, resiliency and safeties have been built in to support and protect these incredibly complex systems.

Exascale-class systems need CDU's that are capable of managing dense thermal loads and communicating directly with the computer itself to ensure maximum performance and reliability. As a trusted partner to the leading chip and computer manufacturers, Motivair has earned the distinct honor of cooling the world's first exascale computer systems.

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Technical Specifications

Models:	MCDU-4U	MCDU-10	MCDU-25	MCDU-40	MCDU-45	MCDU-50	MCDU-55	MCDU-70	WCDU2500 CORE	WCDU2500 PRO
Rated Cooling Capacities (kW)[1]:										
Primary (Building) Supply @ 90F Secondary Supply/Return 25% PG @ 113F/149F	100	203	606	1213	1567	1718	2192	5040	6000	7000
Primary (Building) Supply @ 105.8F Secondary Supply/Return 25% PG @ 113F	73	131	231	965	853	1516	728	2500		
Primary (Building) Supply @ 90F Secondary Supply/Return 25% PG @ 112F/122F	28	56	168	336	435	477	608	1400	1900	2100
Primary (Building) Supply @ 45F Secondary Supply/Return @ 60F/84F	70	140	403	805	1081	1193	1486	3478	4000	4500
Coolant Fluids Available (Type)[2]:	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol	Water, Glycol
Nominal [Primary | Secondary] Flowrate (GPM | GPM)	30 | 20	45 | 40	185 | 120	280 | 240	308 | 308	420 | 340	312 | 431	1025 | 991	710 | 1185	830 | 1383
Primary & Secondary Connections (Inch)[3]:	1-1/2"	1-1/2"	2-1/2"	4"	3"	4"	4"	6"	6"	6"
Primary & Secondary Connection Locations (Type):	Rear	Rear	Top/Bottom	Top/Bottom	Top/ Bottom	Top/Bottom	Top	Top	Top	Top
Nominal Available Pump Head Pressure (Psi):	22	7	15	32	29	30	51	42.2	36	36
Number of Pumps (Std.|Optional):	2	2	2|1	2|1	2	2|1	2	2	3	4
Integrated Variable Speed Drives (VFD's):	√	√	√	√	√	√	√	√	√	√
Number of Power Feeds (Qty.):	2	1	2	2	2	2	2	2	2	2
MCDU Dimensions (Inch):										
Height :	6-15/16"	7.36"	73-5/8"	80-1/2"	91- 3/4"	80-1/2"	93"	90"	78.74	78.74
Length:	36-11/16"	33.1/2"	42-1/2"	61-5/8"	48"	61-5/8"	48-7/32"	48-1/8"	62.99	62.99
Width:	17-3/4"	21"	31-1/2"	36"	36"	36"	43-5/16"	63"	125.80	125.80
Electrical Power Supply Options Available (V/Ph/Hz):										
48VDC	N/A	√	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
230V/1PH/60HZ	√	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
230V/3PH/50-60HZ	N/A	N/A	√	N/A	N/A	N/A	N/A	N/A	Only 460/3/60	Only 460/3/60
380V-480V/3PH/50-60HZ	N/A	N/A	N/A	√	√	√	√	√	√	√
Redundant A/B Power Connections	√	√[5]	√	√	√	√	√	√	√	√
Full Load Amps (FLA) (460V/3PH/60HZ):	2.8[4]	48[6]	8.89	18	48.1 (480V)	23.7	N/A	TBD	N/A	N/A
Full Load Amps (FLA) (400V/3PH/50HZ):	N/A	N/A	N/A	15.4	20.3	20.6	31.3	TBD	118.5	158
PLC Controls:	√	√	√	√	√	√	√	√	√	√
Communication Platforms Available (Type):	BACnet, SNMP, Modbus, Redfish	Modbus, SNMP, REDFISH	BACnet, SNMP, Modbus	BACnet, SNMP, Modbus, Redfish	SNMP, Modbus	BACnet, SNMP, Modbus, Redfish	SNMP, Modbus	BACnet, SNMP, Modbus, Redfish	SNMP and BaACnet MSTP Modbus RTU and TCP/IP	SNMP and BaACnet MSTP Modbus RTU and TCP/IP
Sound Data Rated at 3 ft [1m] (dBa):	<55 dBA	<55 dBA	<68 dBA	<70 dBA	TBD	<75 dBA	TBD	TBD	89.6 dBA	90.2 dBA
Safety Approvals:	UL/CSA/ CE	UL/CSA/ CE	UL/CSA/ CE	UL/CSA/CE	CE/UL	UL/CSA/ CE	CE	UL/CSA/ CE	CE	CE
Leak Detection (WDS Single|Redundant):	Std.| Optional	Optional | Std.	Optional | Std.	Optional | Std.	Std	Optional | Std.	Std	Std	Std	Std
Dew Point Monitoring	√	√	√	√	√	√	√	√	√	√
Optional Secondary Strainer	N/A	Std.	√	√	√	√	√	√	√	√
Primary Flow Meter	Standard	√	√	√	√[8]	√	N/A	√	√[9]	√[9]
Optional Primary Strainer	N/A	N/A	N/A	N/A	√	N/A	N/A	N/A	N/A	N/A
Secondary Flow Meter	√[7]	√	√[7]	√[7]	√[7]	√[7]	√[7]	√		

1. Capacities are rated with 100% Water - Capacities will vary depending on application. 2.Consult Factory for Custom Fluids. 3. Consult Factory for optional connection types. 4. Full Load Amps (FLA) at 230V/1PH/50-60HZ. 5. Redundancy is internal to the unit at the pump level. 6. FLA at 48V DC. 7. Secondary flow rate is calculated using system differential pressure. 8. Embedded only if pressure independent valve is selected. 9. embedded only if pressure independent valve is selected

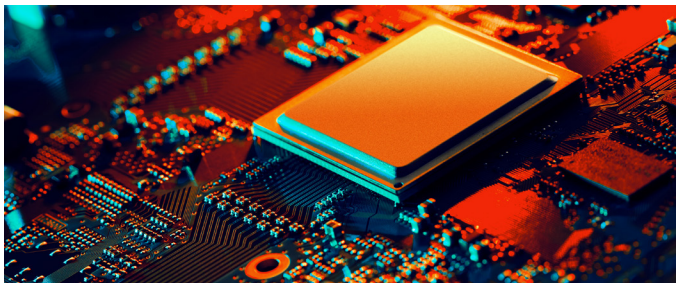
We cool the most advanced technology on the planet

We discover, design, and develop resilient thermal technologies and strategies, and convert that into actionable insights and unparalleled value for our clients.

From climate research to finance, cloud to artificial intelligence, customers trust Motivair's cooling technologies so they can break new boundaries and help deliver tomorrow's innovations faster.

We're helping our clients discover cures for diseases, combat climate change, and make tomorrow's data-driven services more reliable and accessible.

We are touching millions of lives each day by providing the critical cooling technology to support productivity and innovation that is changing our world.



DIRECT-TO-CHIP COOLING

Supercomputing isn't just in the lab anymore.
The power of high-performance computing is scaling out as more enterprises and corporations look to utilize artificial intelligence for advanced decision-making and accelerate digital transformation.



DATA CENTER & IT COOLING

Designed for and used by the enterprise data center and supercomputer owners and operators, our cooling technology is engineered to help you leap forward in scale, quality, and speed.



THERMAL MANAGEMENT

When it comes to cooling your critical infrastructure, we work to customize specialty chiller technology for you, rather than selecting from a catalog



CLIENT SERVICES GROUP

Manage every aspect of your cooling infrastructure, from planning and design to start up, commissioning and post-sale performance. Your business depends not only on our products but also our ability to respond when you need us.

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