CHILLDYNE

COOLING DISTRIBUTION UNIT
CDU-1500

LEAK-FREE HIGH-CAPACITY DIRECT LIQUID COOLING

Chilldyne's high-capacity CDU cools up to a 1,500 kW load in high-density data centers with efficient, leak-free liquid cooling. Negative pressure technology eliminates downtime from leaks. The CDU's dual pressure system supports positive pressure operation when required and automatically switches to negative pressure if a cooling loop is compromised, ensuring continuous and safe operation. Intelligent controls automate coolant management, while advanced software enables remote monitoring and control. Designed for AI and HPC workloads, the CDU-1500 offers reliable, scalable, energy-efficient cooling for data centers. Compatible with the latest NVIDIA rack specifications.

Chilldyne's patented negative pressure technology creates a vacuum to circulate water by pulling it through the cooling system. This approach removes the need for costly, heavy-duty plumbing to the racks, ensures easy setup and upkeep, and preventing coolant leaks with no single point of failure

FUTURE-PROOF YOUR DATA CENTERS

THE WORLD'S FIRST LEAK-PROOF LIQUID COOLING SOLUTION AT MEGAWATT SCALE FOR HPC AND AI WORKLOADS

RELIABILITY AND RESILIENCY

N+1 redundant configurations and zero downtime upgrades ensure continuous operation. Automated coolant quality control maintains optimal system performance. Maximize uptime for your mission-critical environments with uninterrupted, reliable cooling.

EASY TO INSTALL AND MAINTAIN

The CDU-1500 delivers the only onboard automatic leak testing and commissioning. Continues to provide cooling under negative pressure if an air ingress (<50 lpm) develops. Negative pressure secondary fluid loops offer lower cost and quicker installation.

SUSTAINABILITY IMPACT

Achieve up to 40% energy savings compared to traditional air cooling methods. Direct-to-chip liquid cooling significantly reduces CO_2 emissions versus alternative cooling solutions, aligning performance with sustainability goals.

The CDU-1500 can operate in either negative or positive pressure modes. Negative pressure liquid cooling eliminates coolant leak risks and is recommended for most applications, while positive pressure operation supports specific infrastructure needs. This flexibility makes it ideal for next-generation high-performance compute and legacy system retrofits.

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KEY FEATURES

- Continues to operate efficiently even with up to 50 liters per minute of air ingress from a compromised cooling loop, maintaining cooling performance
- Eliminates leaks by circulating coolant under negative pressure
- Delivers efficient heat transfer at low approach for thermal loads up to 1,500 kW
- Automatically monitors and optimizes coolant quality and temperature
- Easy-to-use interface with detailed logging and analytics
- Real-time performance tracking via touchscreen and network
- N+1 redundant configurations available to maximize uptime
- DCIM and BMS integrations support SNMP, Modbus, Syslog, Web API, and more
- Switches between positive and negative pressure modes on demand via software command, adapting to varying cooling and operational requirements

ZERO-LEAK COOLING
Negative pressure technology

DIRECT-TO-CHIP
1,500 kW cooling capacity

ENERGY EFFICIENT
Up to 40% savings

AI & ML READY
2,000+ watt CPUs/GPUs

EASY TO INSTALL
Easy to maintain

COOLING SOLUTIONS ACROSS INDUSTRIES

YOUR TRUSTED EXPERTS IN LIQUID COOLING TECHNOLOGY

With over a decade of experience, Chilldyne continues to pioneer data center cooling technology. From our first system deployment in 2012 to our first at-scale implementation in 2015, our advanced liquid cooling solutions are trusted by leading institutions and are featured in the list of TOP500 supercomputers. We deliver reliable, efficient, and scalable cooling solutions for a wide range of industries.

HPC · AI & ML · DATA CENTERS · TELECOM · FINANCE & BANKING

CLOUD PROVIDERS · HYPER-SCALERS · GOVT (DOD & DOE) · ACADEMIC & RESEARCH

The supercomputer at Sandia National Laboratories with the under-floor automatic switchover valves that enable the system's N+1 smart redundancy to maximize uptime.

VIDEO DEMO: WATCH OUR LEAK-PROOF TECHNOLOGY IN ACTION

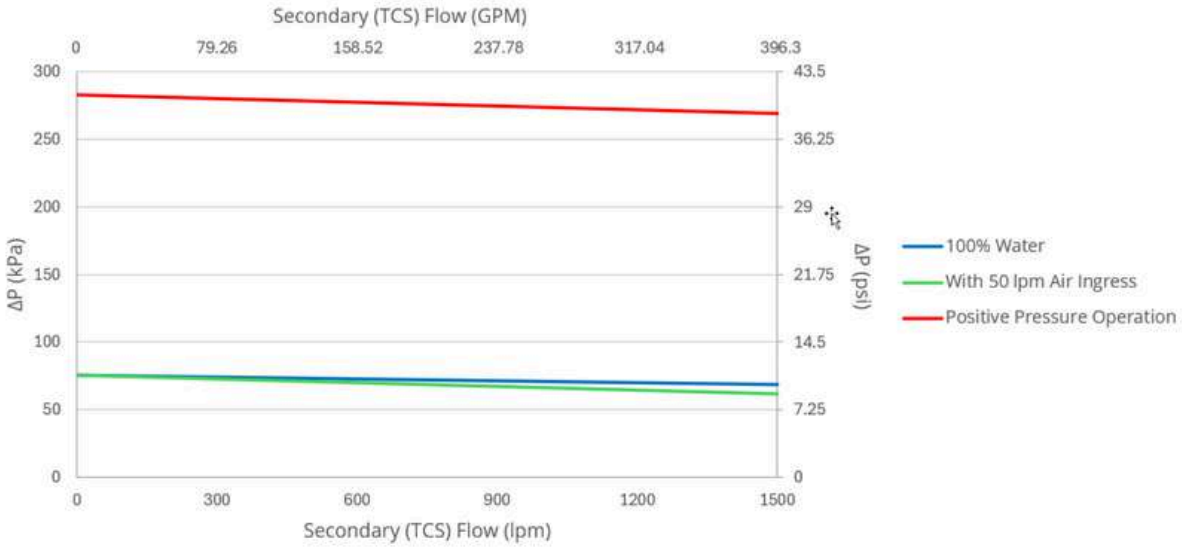
U.S. DEPARTMENT OF ENERGY · arpa·e awardee · COOLERCHIPS

CDU-1500 TECHNICAL SPECIFICATIONS

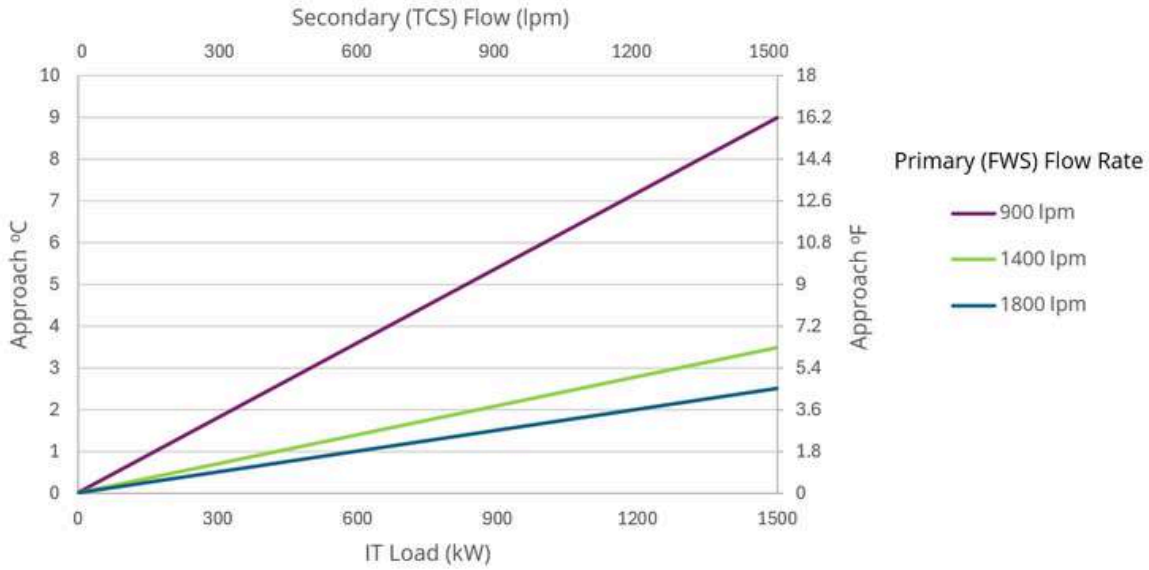
Cooling Capacity	**Rated Cooling Capacity* [kW]** Primary Supply @ 45°C (113°F) Secondary Supply @ 48°C (122°F) Secondary Return @ 62°C (147°F)	1,500 kW (1,500 lpm @ 15°C ΔT)
	Approach ΔT 1,500 kW [°C]	3°C (1500 lpm FWS flow)
	Coolant Fluids Available	Water, Glycol Mix
	Response Time Load 0-100%-0	Temperature rise max 0.5°C/second for 2 seconds, 1.5°C max overshoot/undershoot
	Transient Specification	Settle to within 1°C of setpoint within 5 seconds
Nominal Flow Rates	**Primary (FWS) Loop**	400 GPM (1,500 lpm) or 25% more than TCS loop max 8 psi (55 kPa) ΔP
	Secondary (TCS) Loop	400 GPM (1,500 lpm) @ 10-39 psi (69-269 kPa) ΔP
Pump	**Nominal Pump ΔP (Negative Pressure Operation)**	10 psi (69kPa) (4 in Hg vacuum supply, 25 in Hg return at sea level @ 400 GPM/1,500 lpm)
	Nominal Pump ΔP (Positive Pressure Operation)	39 psi (29 psi supply, -21 in Hg (-10 psi) return @ 1,500 lpm)
	Air Leak Tolerance	50 lpm (2 CFM) with less than 5% reduction in flow
	Integrated Variable Speed Drives (VFD)	Yes
	Filtration	40 microns standard, 10 or 20 microns optional
Connections	**Primary/Secondary Connections****	4-inch 150# flanges on supply & return / 2 sets of 2 x 4-inch FNPT on supply & return
	Connection Locations	Top or Bottom
Power	**Number of Power Feeds**	1 (2 with ATS)
	Electrical Power Supply Options Available (V/Ph/Hz)	208-240V/3Ph/60Hz; 415-480V/3Ph/60Hz; 380-400V/3Ph/50Hz
	Power Consumption	9 kW (Negative Pressure Operation, Full Flow); 15.5kW (Positive Pressure Operation, Full Flow)
	Redundant A/B Power Connections	Yes
	Full Load Amps (FLA) (460V/3Ph/60Hz)	26A
Compliance and Warranty	**Agency Approvals & Certification**	UL, CE, RoHS
	Standard Warranty	15,000 hours or 2 years
Physical and Communication Details	**Dimensions [L x W x H] [inches]**	60" x 48" x 74"
	Weight, Dry [lbs]	2,800
	Noise Level at 3 ft. (1 m) [dBa]	< 72
	Leak Detection (WDS Single/Redundant)	Standard / Optional
	Dew Point Monitoring	Yes
	Primary Strainer	300 microns
	Primary Flow Meter	Yes
	Communication	Touchscreen GUI, local web-based GUI and local web API, Telnet and RS-232/485 command lines, SNMP and Modbus TCP/IP, Syslog (UDP), FTP file transfer. Redfish.1x Fast Ethernet, RJ45 / 8p8c

PERFORMANCE

CDU-1500 Flow vs ΔP



CDU-1500 Approach vs Load (@1.0 kW/lpm)



CHILLDYNE

Chilldyne delivers reliable, leak-proof direct-to-chip (DTC) liquid cooling solutions. Our patented, fail-safe systems use advanced negative pressure technology and smart redundancy to prevent leaks and maximize uptime. Easy to install and maintain, Chilldyne delivers reliable, efficient, and sustainable liquid cooling systems that offer superior heat removal performance, significantly reducing carbon emissions, while minimizing environmental impact.

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