



Data Center Cooling Solutions

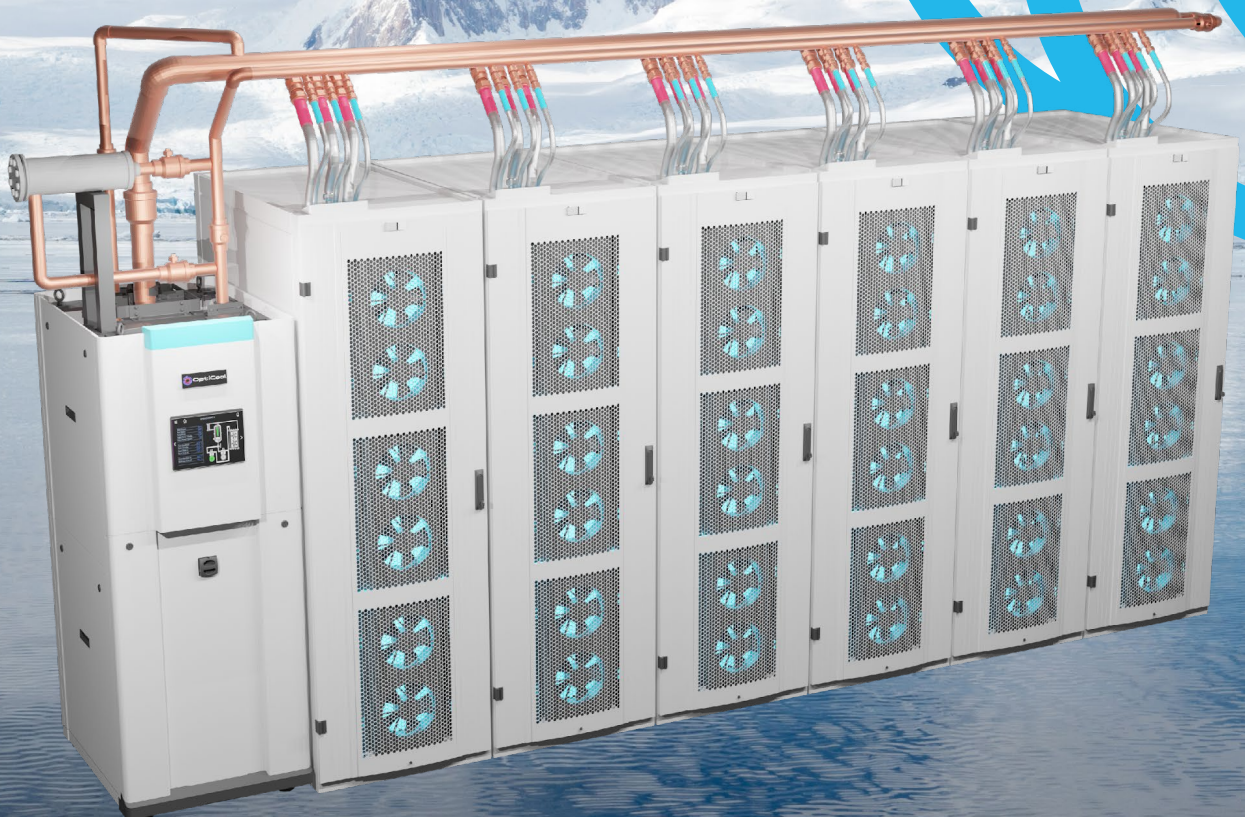
High efficiency 2-phase liquid cooling

Rear door heat exchangers (RDHx)

Refrigerant Pumps

Coolant Distribution Unit

Aisle Containment



Discover the OptiCool 2-Phase Liquid Cooling Advantage

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OptiCool takes a unique approach to cooling with its 2-phase liquid cooled rear door heat exchanger (RDHx) technology. This versatile system can be deployed standalone or in tandem with air-cooling and direct-to-chip. Cooling capacity is modular, scaling up to 120kW per rack of room-neutral cooling for demanding workloads.

With it's simple design, OptiCool's high-efficiency solution delivers significant savings in power consumption.



Internal rack space is not affected by the rear doors



"The OptiCool solution is far superior to any that I've ever encountered. Our service technicians are saying 'this can't be that simple!' and yet it truly is. Hot aisle containment, humidity issues and condensation, high pressure and low-pressure zones – these issues are all solved."

James Pluta
Director of Facilities, OLV Charities

Opticool System Overview



120kW liquid-cooled RDHx

Scalable and Modular

Deploy today and grow tomorrow. Our system scales at the rack level – *up to 120kW per rack*, providing room for growth as rack densities increase.



Refrigerant pumps, pipes and rear doors

High-Efficiency Savings

Our unique 2-phase liquid cooling technology delivers up to *90% savings in energy costs*.

Rapid Retrofits

Our versatile configurations can adapt to a *wide range of operating environments*, without the need to redesign existing infrastructure.



Hot/Cold aisle containment designs



The pump circulates refrigerant to rear door heat exchangers



1.5MW Coolant Distribution Unit for direct-to-chip liquid cooling

Opticool System Overview



1 Rear Door Heat Exchangers (RDHx)

Our rear doors fit any vendor's rack using a door transition kit, which is non-invasive and leaves internal rack space unchanged. Heat from IT equipment is removed at the source, with the variable-speed fans expelling room-neutral air.

2 Refrigerant Pipes

Supply and return pipes carry the refrigerant between the RDHx and the pump. The overhead design facilitates scalability and versatility, and eliminates the need for raised flooring. New racks can be added by extending the pipes up to a maximum of 185 feet from the pump. The pipe system is custom designed and manufactured to fit your space.



3 Refrigerant Pump

Pumps have a smaller footprint than standard racks and can be bookended at the end-of-row, up to 185 feet away. The inlet accepts facilities chilled water or external direct expansion (DX) units for external heat rejection. Pumps feature a touchscreen control panel and integration into BMS management systems.

4 External Heat Rejection

Heat never enters the data hall. The rear doors deliver room-neutral air, while the pump reconditions and removes heat seamlessly. Heat is removed from the racks and transferred to the pump, then rejected externally.

Our Technology



Our unique technology is 2-phase liquid cooled RDHx, and OptiCool is the only manufacturer in the industry offering this technology. What sets it apart is that it combines high cooling efficiency with high heat capacity, over a wide range of heat densities.

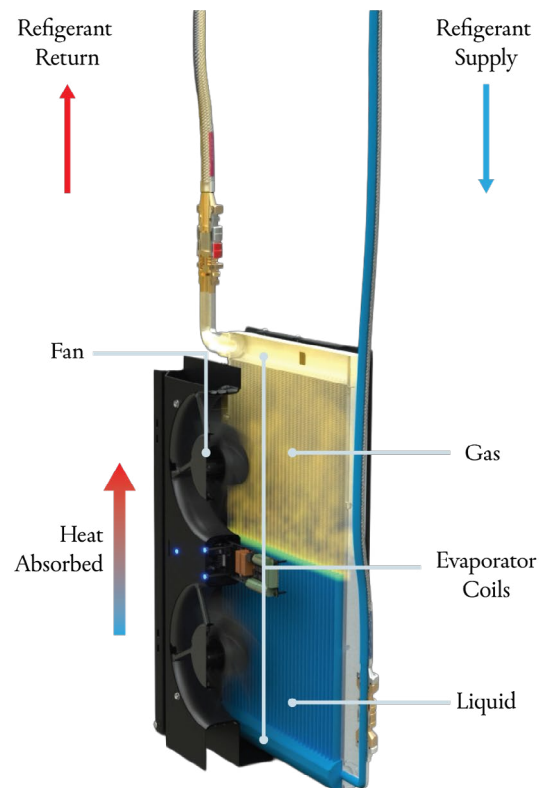
2-phase liquid cooling

Refrigerant circulates in the OptiCool system between the pump and the AHX units inside the rear doors of the rack, transferring the heat from the rack to the pump. The cool refrigerant enters the AHX heat exchanger as a liquid. As it absorbs heat, it vaporizes into a gas. At the pump, the heat is rejected and the refrigerant condenses back into a liquid.

2-phase refers to the cycling of the refrigerant between liquid and gas states. This is the key that unlocks the enormous heat absorption capacity available when operating near the vaporization point – the heat is used to vaporize the liquid instead of raising its temperature. OptiCool's technology taps into the *latent heat of vaporization* of the refrigerant.

The close proximity of the AHX unit to the heat source (the IT equipment) contributes to enhancing system efficiency. Heat is removed directly at the source and does not leave the rack, thus avoiding the losses and inefficiencies inherent in managing airflow in a data hall.

The use of 2-phase liquid cooling greatly simplifies system engineering and product design. It eliminates the need for power-hungry compressors and expansion valves used in CRAC and CRAH units and dramatically reduces energy costs. At the same time, system reliability improves thanks to a reduction in the number and complexity of mechanical cooling parts.



AHX Unit

Latent Heat of Vaporization

Latent heat of vaporization refers to the amount of heat needed to turn a liquid into a gas, which occurs at the boiling point of a liquid. Refrigerants have a low boiling point and leverage this thermodynamic property in the secondary cooling loop. Operating at the refrigerant's boiling point provides 5X more heat capacity compared to using water (single-phase) at a standard ΔT of 10°C.

Versatile Configurations



One of the core design principles of the OptiCool solution is that it must be easily adaptable to a variety of operating environments. This translates into a highly versatile solution:

- Able to handle rack and heat densities ranging from edge to colocation to AI/HPC
- Supports multiple airflow strategies
- Works together with direct-to-chip and air-cooled systems to optimize overall cooling

Versatile, modular, and scalability, OptiCool's technology enables an incremental approach to adding rack capacity and upgrading cooling systems. Instead of waiting until the next major infrastructure upgrade, the OptiCool solution can be quickly deployed to address market demand.



Hybrid Retrofit

OptiCool's Rear Door Heat Exchangers seamlessly integrate into hybrid cooling designs. By supplementing direct-to-chip (DTC) systems, OptiCool lowers deployment costs while adding flexibility to meet varying rack densities.



Hot/Cold Aisle Containment

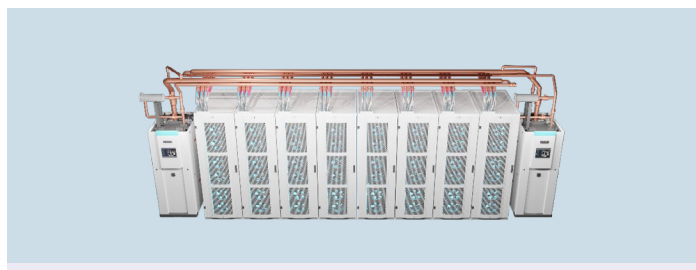
The next generation of aisle containment—featuring upgraded technology with the same flexibility and ease of deployment. AHX units mount directly to the top of the containment structure, boosting heat extraction by more than 30%.



Laminar Flow

Laminar flow is an ideal approach for greenfield builds or complete data hall redesigns. By arranging racks in a back-to-front configuration, OptiCool's Rear Door Heat Exchangers create a continuous, conditioned airflow.

As air moves down each row, progressively colder air is delivered to every rack. This significantly reduces—or even eliminates—the need for room-level CRACs and CRAHs.



Redundancy

OptiCool's system is built with flexibility to meet the most demanding uptime requirements. For operators who require redundancy, our pump architecture can be configured with supplemental units to ensure continuous performance. Even in the event of a component failure or changing environmental conditions, the system maintains heat extraction and reliability. This configurable redundancy reduces risk, increases resilience, and gives operators confidence that cooling will adapt as their environment evolves.

High-Efficiency Savings



The significant savings experienced by OptiCool customers is due to the low power consumption of the OptiCool solution. Customers can experience savings of up to 90% in their energy costs, compared to an air-cooled system of similar capacity.

Achieving such low-power operation is possible due to two reasons:

- **No waste:** Traditional air cooling is imprecise and cools room infrastructure in addition to cooling IT equipment. OptiCool's rear doors are located at the rack, right next to the heat-generating equipment. Heat is extracted directly at the source and does not circulate in the air.
- **2-phase liquid cooling:** By leveraging the latent heat of vaporization, natural thermodynamic processes do the heavy lifting of removing heat. This translates directly into lower power consumption.

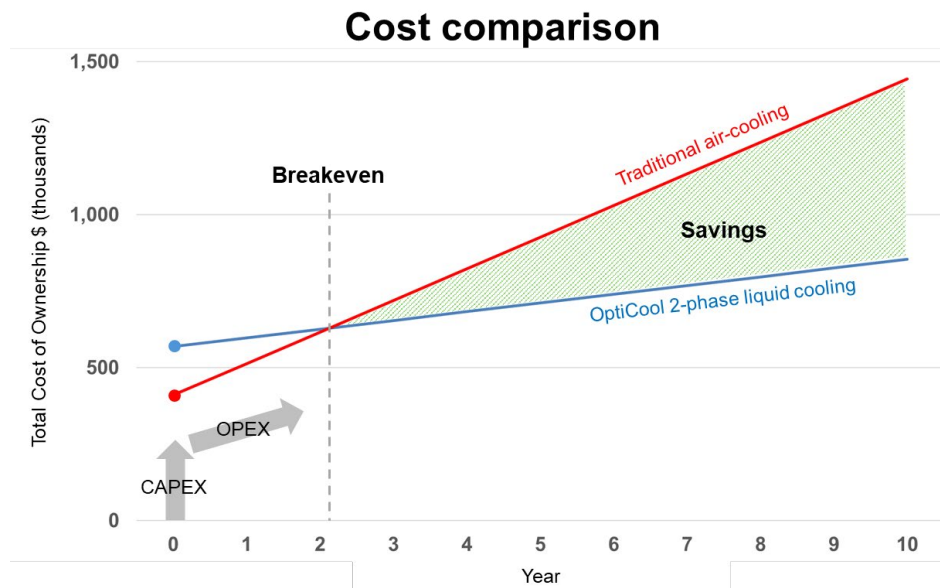
Comparing the costs: A TCO analysis

The following example compares the costs of an traditional air flow management system such as a CRAC or a CRAH solution to an OptiCool solution, for an actual project.

Total costs are a combination of capital expenditures (CAPEX) and operating expenses (OPEX). CAPEX includes the cost of the cooling equipment and any required construction work. OPEX includes power consumption and annual maintenance costs.

Project specifications

The project called for 240kW of total heat load distributed over 12 racks. The air-cooled solution consisted of 4 CRAC units while the OptiCool solution consisted of 12 rear doors and 2 refrigerant pumps in a redundant configuration. Redundancy was not part of the air-cooled solution, as simultaneous failure of 4 units was considered low probability. The cost of electricity was \$0.16 per kWh.



The OptiCool solution costs more upfront (CAPEX), but costs much less to operate (OPEX) – almost \$75,000 per year less. The breakeven point occurs at 2 years. At 10 years, the OptiCool solution will have saved close to \$600,000.

Why OptiCool?



1

Modular, scalable cooling up to *120kW per rack.*

2

High-efficiency 2-phase liquid cooling uses up to *90% less power.*

3

We're a trusted supplier to top brands.



AT&T



pepsi

CREDIT SUISSE



Infinera

T Mobile

COMCAST

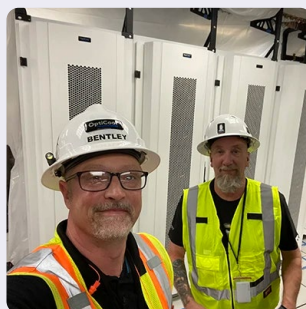


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4

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Rear Door Heat Exchangers (RDHx)



CDS-30

30kW heat capacity

396W power consumption

Up to 52U

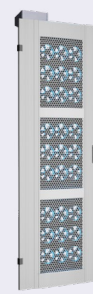


CDS-60

60kW heat capacity

790W power consumption

Up to 52U



CDS-120

120kW heat capacity

3834W power consumption

48U+

Facilities Chilled Water Refrigerant Pumps



RPW-60

60kW total heat

6.5A @480V
16A @230V

30"x82"x40"

RPW-120

120kW total heat

6.5A @480V
16A @230V

30"x82"x40"

RPW-230

230kW total heat

6.5A @480V
16A @230V

30"x82"x40"

Coolant Distribution Unit



CDU-15M

Supplies regulated chilled water to direct-to-chip liquid cooling systems

1.5MW heat capacity

30"x8

Outdoor DX Refrigerant Pumps



RPC-115

115kW total heat

6.5A @480V
16A @230V

30"x82"x40"



ODX-115

Matching outdoor unit

6.5A @480V
16A @230V

30"x82"x40"



RPC-230

230kW total heat

6.5A @480V
16A @230V

30"x82"x40"



ODX-230

Matching outdoor unit

6.5A @480V
16A @230V

30"x82"x40"

Aisle Containment



2-phase liquid cooling for hot/cold aisles

Heat exchangers mounted overhead

Up to 40kW of heat capacity per rack



CDS-30

30 kW COOL DOOR SYSTEM

Targeting and extracting heat at the source makes the OptiCool Cool Door System (CDS) the benchmark for reliable and efficient Data Center cooling.

The OptiCool CDS is an active rear door heat exchanger (RDHx) that can be mounted directly to the back of any standard equipment rack using a Door Transition Kit (DTK) that maintains the internal space of the rack. The design of the CDS provides the flexibility to install up to three Active Heat eXtractors (AHXs) per door. OptiCool's calibrated solution is engineered to maintain ambient room temperature to allow your equipment to perform as specified.

Active Heat eXtractor (AHX) units

The OptiCool AHX is a high performance, variable-speed unit that adjusts to the heat load within your equipment rack to maximize efficiency. AHX's are fed with a dual power distribution units and are placed in alignment with the heat load to extract heat from the rack. Each AHX moves air over its evaporator coils to remove the heat and provide a room-neutral temperature that minimizes the thermal impact of your equipment space. Each evaporator coil in the AHX is encased in a frame with a protective guard.

Our CDS can include blanking panels to ensure efficiency when the cooling application requires less than a full complement of AHX's per door. Additionally, clients who rely on hot aisle containment in their Data Centers can experience enhanced cooling efficiency with our AHX fan-only model. Streamlined and economical, this innovative solution optimizes white space conditions without the need for pump units or a coolant distribution network.



Specifications

# OF AHX SUPPORTED	0 to 3
AHX DIMENSIONS (EA)	22.7"x 13.7"x 6.13"
AHX UNIT WEIGHT (EA)	25 lb
TOTAL DOOR DEPTH	8.75" (2"DOOR + 6.75" DTK)
DOOR WEIGHT (EA)	35 lb to 57 lb
DTK WEIGHT	24 lb to 40 lb
PDU WEIGHT	6.5 lb
POWER INPUT	SINGLE or DUAL
MAX POWER CONSUMPTION PER AHX	131.5 WATT
INLET SENSORS	REDUNDANT A/B TEMP SENSORS
CERTIFICATION	ISO 9001-2015
NEBS SEISMIC COMPLIANT	YES
COLOR	BLACK or WHITE
DOOR HEIGHT	42/44U to 52U 24" to 32" RACKS

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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CDS-60

60 kW COOL DOOR SYSTEM

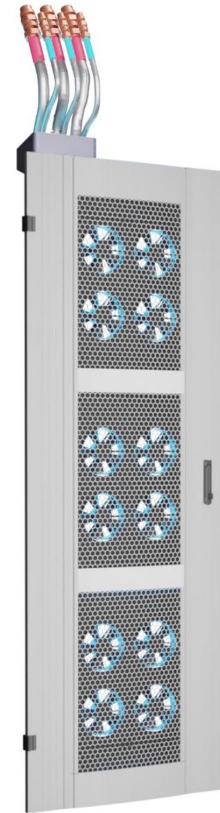
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Specifications

# OF AHX SUPPORTED	0 to 3
AHX DIMENSIONS (EA)	22.7"x 19.5"x 8.25"
AHX UNIT WEIGHT (EA)	35 lb
TOTAL DOOR DEPTH	8.75" (2"DOOR + 6.75" DTK)
DOOR WEIGHT (EA)	35 lb to 57 lb
DTK WEIGHT	24 lb to 40 lb
PDU WEIGHT	6.5 lb
POWER INPUT	SINGLE or DUAL
MAX POWER CONSUMPTION PER AHX	263 WATT
INLET SENSORS	REDUNDANT A/B TEMP SENSORS
CERTIFICATION	ISO 9001-2015
NEBS SEISMIC COMPLIANT	YES
COLOR	BLACK or WHITE
DOOR HEIGHT	42/44U to 52U 24" to 32" RACKS

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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CDS-120

120 kW COOL DOOR SYSTEM

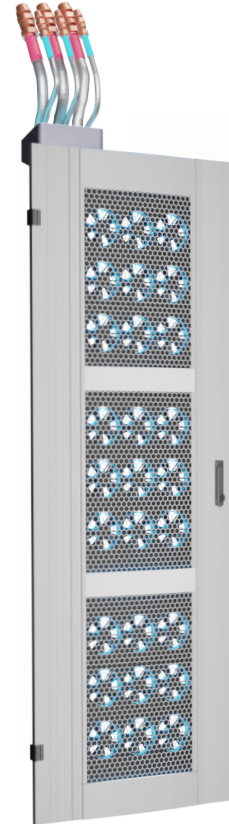
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Active Heat eXtractor (AHX) units

The OptiCool AHX is a high performance, variable-speed unit that adjusts to the heat load within your equipment rack to maximize efficiency. AHX's are fed with a dual power distribution units and are placed in alignment with the heat load to extract heat from the rack. Each AHX moves air over its evaporator coils to remove the heat and provide a room-neutral temperature that minimizes the thermal impact of your equipment space. Each evaporator coil in the AHX is encased in a frame with a protective guard.

Our CDS can include blanking panels to ensure efficiency when the cooling application requires less than a full complement of AHX's per door. Additionally, clients who rely on hot aisle containment in their Data Centers can experience enhanced cooling efficiency with our AHX fan-only model. Streamlined and economical, this innovative solution optimizes white space conditions without the need for pump units or a coolant distribution network.



Specifications

# OF AHX SUPPORTED	0 to 3
AHX DIMENSIONS (EA)	22.7"x 19.5"x 9.00"
AHX UNIT WEIGHT (EA)	42 lb
TOTAL DOOR DEPTH	8.75" (2"DOOR + 6.75" DTK)
DOOR WEIGHT (EA)	35 lb to 57 lb
DTK WEIGHT	24 lb to 40 lb
PDU WEIGHT	8 lb
POWER INPUT	SINGLE or DUAL
MAX POWER CONSUMPTION PER AHX	1.278 Kw
INLET SENSORS	REDUNDANT A/B TEMP SENSORS
CERTIFICATION	ISO 9001-2015
NEBS SEISMIC COMPLIANT	YES
COLOR	BLACK or WHITE
DOOR HEIGHT	48U to 52U 30" to 32" RACKS

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Blanking Panels are used if a full compliment of AHX's are not needed per door.
-  Temperature sensors to control variable speed fans in the AHX
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  4 Monitoring cable configuration options for multiple AHX units.
-  Up to 3 AHX units can be installed per door.



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RPW-060

CHILLED WATER EXTERNAL HEAT REJECTION

The OptiCool RPW-060 system provides best-in-class precision cooling in any mission-critical infrastructure where chilled water is available.

The OptiCool RPW-060 is a highly efficient low-pressure pumped 513a refrigerant system supporting up to 40 Active Heat eXtractor (AHX) units for applications achieving 60 kW of non-condensing 100% sensible cooling. Employing a pumped R-513a solution ensures a highly reliable, oil-free, non toxic, non-conductive, and non corrosive sustainable cooling ecosystem to efficiently extract heat at the source.

The RPW-060 pump is part of a system and requires other OptiCool products for effective heat transfer out of the room.

The RPW-060 system is paired with a chilled water system for its external heat rejection. That chilled water system is typically existing infrastructure with the capacity to handle the additional load for the RPW-060 system, or it can be a new chilled water package provided by a third party.



Specifications

MIN/MAX kW CAPACITY	5 kW / 60 kW
EXTERNAL HEAT REJECTION	CHILLED WATER OR GLYCOL MIX
NUMBER OF AHX SUPPORTED	3 TO 40 PER PUMP
POWER OPTIONS	480 V, 3 Phase, 60Hz 208 V / 230 V, 1 Phase, 60Hz
FULL LOAD AMPS	480 V, 6.5 amp 208 V / 230 V, 16 amp
PUMP DRY WEIGHT	1,300 lb
PUMP DIMENSIONS	30 in x 82 in x 40 in
REFRIGERANT DISTRIBUTION NETWORK EQUIVALENT SUPPLY LENGTH (MAX)	185 ft
COMMUNICATION / MONITORING	MODBUS, BACNET, OR SNMP
CERTIFICATION	ISO 9001
CHILLED WATER FLOW RATE	140 GPM
MAX SUPPLY PRESSURE	100 PSIG
RPW CHILLED WATER DELTA AT FULL LOAD	12°F
CHILLED WATER SUPPLY TEMP	45°F
WATER CONNECTION SIZE	2.5in NOM (2.625in ODF)
ALLOWABLE WATER PRESSURE DIFFERENTIAL	15-75 PSID

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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RPW-120

CHILLED WATER EXTERNAL HEAT REJECTION

The OptiCool RPW-120 system provides best-in-class precision cooling in any mission-critical infrastructure where chilled water is available.

The OptiCool RPW-120 is a highly efficient low-pressure pumped 513a refrigerant system supporting up to 40 Active Heat eXtractor (AHX) units for applications achieving 120 kW of non-condensing 100% sensible cooling. Employing a pumped R-513a solution ensures a highly reliable, oil-free, non toxic, non-conductive, and non corrosive sustainable cooling ecosystem to efficiently extract heat at the source.

The RPW-120 pump is part of a system and requires other OptiCool products for effective heat transfer out of the room.

The RPW-120 system is paired with a chilled water system for its external heat rejection. That chilled water system is typically existing infrastructure with the capacity to handle the additional load for the RPW-120 system, or it can be a new chilled water package provided by a third party.



Specifications

MIN/MAX kW CAPACITY	5 kW / 120 kW
EXTERNAL HEAT REJECTION	CHILLED WATER OR GLYCOL MIX
NUMBER OF AHX SUPPORTED	3 TO 40 PER PUMP
POWER OPTIONS	480 V, 3 Phase, 60Hz 208 V / 230 V, 1 Phase, 60Hz
FULL LOAD AMPS	480 V, 6.5 amp 208 V / 230 V, 16 amp
PUMP DRY WEIGHT	1,300 lb
PUMP DIMENSIONS	30 in x 82 in x 40 in
REFRIGERANT DISTRIBUTION NETWORK EQUIVALENT SUPPLY LENGTH (MAX)	185 ft
COMMUNICATION / MONITORING	MODBUS, BACNET, OR SNMP
CERTIFICATION	ISO 9001
CHILLED WATER FLOW RATE	140 GPM
MAX SUPPLY PRESSURE	100 PSIG
RPW CHILLED WATER DELTA AT FULL LOAD	12°F
CHILLED WATER SUPPLY TEMP	45°F
WATER CONNECTION SIZE	2.5in NOM (2.625in ODF)
ALLOWABLE WATER PRESSURE DIFFERENTIAL	15-75 PSID

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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RPW-230

CHILLED WATER EXTERNAL HEAT REJECTION

The OptiCool RPW-230 system provides best-in-class precision cooling in any mission-critical infrastructure where chilled water is available.

The OptiCool RPW-230 is a highly efficient low-pressure pumped 513a refrigerant system supporting up to 40 Active Heat eXtractor (AHX) units for applications achieving 230 kW of non-condensing 100% sensible cooling. Employing a pumped R-513a solution ensures a highly reliable, oil-free, non toxic, non-conductive, and non corrosive sustainable cooling ecosystem to efficiently extract heat at the source.

The RPW-230 pump is part of a system and requires other OptiCool products for effective heat transfer out of the room.

The RPW-230 system is paired with a chilled water system for its external heat rejection. That chilled water system is typically existing infrastructure with the capacity to handle the additional load for the RPW-230 system, or it can be a new chilled water package provided by a third party.



Specifications

MIN/MAX KW CAPACITY	5 kW / 230 kW
EXTERNAL HEAT REJECTION	CHILLED WATER OR GLYCOL MIX
NUMBER OF AHX SUPPORTED	3 TO 40 PER PUMP
POWER OPTIONS	480 V, 3 Phase, 60Hz 208 V / 230 V, 1 Phase, 60Hz
FULL LOAD AMPS	480 V, 6.5 amp 208 V / 230 V, 16 amp
PUMP DRY WEIGHT	1,500 lb
PUMP DIMENSIONS	33 in x 82 in x 40 in
REFRIGERANT DISTRIBUTION NETWORK EQUIVALENT SUPPLY LENGTH (MAX)	185 ft
COMMUNICATION / MONITORING	MODBUS, BACNET, OR SNMP
CERTIFICATION	ISO 9001
CHILLED WATER FLOW RATE	220 GPM
MAX SUPPLY PRESSURE	100 PSIG
RPW CHILLED WATER DELTA AT FULL LOAD	12°F
CHILLED WATER SUPPLY TEMP	45°F
WATER CONNECTION SIZE	3 in NOM (3.125 in ODF)
ALLOWABLE WATER PRESSURE DIFFERENTIAL	18-87 PSID

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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RPC-115

DIRECT EXPANSION (DX) EXTERNAL HEAT REJECTION

The OptiCool RPC-115 system provides best-in-class precision cooling in any mission-critical where Direct eXpansion (DX) cooling applications are required.

The OptiCool RPC-115 is a highly efficient low-pressure pumped 513a refrigerant system supporting up to 40 Active Heat eXtractor (AHX) units for applications achieving 115 kW of non-condensing 100% sensible cooling. Employing a pumped R-513a solution ensures a highly reliable, oil-free, non toxic, non-conductive, and non corrosive sustainable cooling ecosystem to efficiently extract heat at the source.

The RPW-115 pump is part of a system and requires other OptiCool products for effective heat transfer out of the room. Each RPC-115 pump also requires an Outdoor Heat eXpansion unit (ODX-115).



Specifications

MIN/MAX kW CAPACITY	12 kW / 115 kW
EXTERNAL HEAT REJECTION	DIRECT EXPANSION (DX) R-410a
NUMBER OF AHX SUPPORTED	3 TO 40 PER PUMP
POWER OPTIONS	480 V, 3 Phase, 60Hz 208 V / 230 V, 1 Phase, 60Hz
FULL LOAD AMPS	480 V, 6.5 amp 208 V / 230 V, 16 amp
PUMP DRY WEIGHT	1,300 lb
PUMP DIMENSIONS	30 in x 82 in x 40 in
REFRIGERANT DISTRIBUTION NETWORK EQUIVALENT SUPPLY LENGTH (MAX)	185 ft
COMMUNICATION / MONITORING	MODBUS, BACNET, OR SNMP
CERTIFICATION	ISO 9001

Features



Assembled in the USA



Industry standard hardware and software for easy BMS integration



Aesthetic design with flexible location and compact footprint



Energy-efficient redundant pump motor, and VFD with automatic changeover



System designed with cooling capacity management to effectively handle load change fluctuations



Intuitive 10-inch touchscreen controls



Dynamic self-balancing pressure independent flow control valve for precise capacity control



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RPC-230

DIRECT EXPANSION (DX) EXTERNAL HEAT REJECTION

The OptiCool RPC-230 system provides best-in-class precision cooling in any mission-critical where Direct eXpansion (DX) cooling applications are required.

The OptiCool RPC-230 is a highly efficient low-pressure pumped 513a refrigerant system supporting up to 40 Active Heat eXtractor (AHX) units for applications achieving 230 kW of non-condensing 100% sensible cooling. Employing a pumped R-513a solution ensures a highly reliable, oil-free, non toxic, non-conductive, and non corrosive sustainable cooling ecosystem to efficiently extract heat at the source.

The RPW-230 pump is part of a system and requires other OptiCool products for effective heat transfer out of the room. Each RPC-230 pump also requires an Outdoor Heat eXpansion unit (ODX-230).



Specifications

MIN/MAX kW CAPACITY	22 kW / 230 kW
EXTERNAL HEAT REJECTION	DIRECT EXPANSION (DX) R-410a
NUMBER OF AHX SUPPORTED	3 TO 40 PER PUMP
POWER OPTIONS	480 V, 3 Phase, 60Hz 208 V / 230 V, 1 Phase, 60Hz
FULL LOAD AMPS	480 V, 6.5 amp 208 V / 230 V, 16 amp
PUMP DRY WEIGHT	1,500 lb
PUMP DIMENSIONS	33 in x 82 in x 40 in
REFRIGERANT DISTRIBUTION NETWORK EQUIVALENT SUPPLY LENGTH (MAX)	185 ft
COMMUNICATION / MONITORING	MODBUS, BACNET, OR SNMP
CERTIFICATION	ISO 9001

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Aesthetic design with flexible location and compact footprint
-  Energy-efficient redundant pump motor, and VFD with automatic changeover
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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ODX-115

OUTDOOR DIRECT EXPANSION (ODX) UNIT

The OptiCool ODX-115 unit pairs with a single OptiCool RPC-115 pump to create a high quality system that provides precision cooling in any mission critical infrastructure where Direct eXpansion (DX) cooling applications are required.

The OptiCool ODX-115 unit manages the transfer of heat from the RPC-115 pump to the outdoors using R-410A refrigerant. The unit has variable capacity compressors, which allow for low and fluctuating heat loads. The ODX-115 unit is air-cooled condenser that can be roof or ground-mounted.

The ODX-115 unit is part of a system and requires other OptiCool products for effective heat transfer out of the room. Each ODX-115 unit also requires an OptiCool RPC-115 pump.



Specifications

ODX POWER CONSUMPTION**	41 Kw
ODX WEIGHT	1,800 lb
ODX DIMENSIONS	45 in x 98 in x 100 in
COMPRESSORS (BLDC SCROLL)	2
AMBIENT OPERATING RANGE	-40°F TO 120°F
MINIMUM LOAD REQUIRED***	12 kW
ODX/RPC EQUIVALENT SUPPLY LENGTH (MAX)***	185 ft
SECONDARY CIRCUIT REFRIGERANT	R-410a
MCA	480 V, 3 Phase, 75 amp 208 V / 230 V, 3 Phase, 165 amp
MOPD	480 V, 3 Phase, 100 amp 208 V / 230 V, 3 Phase, 225 amp
CERTIFICATION	ISO 9001

** 100% @ Rated Condition of 95°F

*** Minimum load may vary with line length and elevation

Features



Assembled in the USA



Integrated communication with RPC for data monitoring



Aesthetic design and light-weight with compact outdoor footprint



Redundant capable with multiple compressors



Variable speed compressors for precise temperature control and minimal power consumption



ODX-230

OUTDOOR DIRECT EXPANSION (ODX) UNIT

The OptiCool ODX-230 unit pairs with a single OptiCool RPC-230 pump to create a high quality system that provides precision cooling in any mission critical infrastructure where Direct eXpansion (DX) cooling applications are required.

The OptiCool ODX-230 unit manages the transfer of heat from the RPC-230 pump to the outdoors using R-410A refrigerant. The unit has variable capacity compressors, which allow for low and fluctuating heat loads. The ODX-230 unit is air-cooled condenser that can be roof or ground-mounted.

The ODX-230 unit is part of a system and requires other OptiCool products for effective heat transfer out of the room. Each ODX-230 unit also requires an OptiCool RPC-230 pump.



Specifications

ODX POWER CONSUMPTION**	82 Kw
ODX WEIGHT	3,600 lb
ODX DIMENSIONS	90 in x 98 in x 101 in
COMPRESSORS (BLDC SCROLL)	4
AMBIENT OPERATING RANGE	-40°F TO 120°F
MINIMUM LOAD REQUIRED***	22 kW
ODX/RPC EQUIVALENT SUPPLY LENGTH (MAX)***	185 ft
SECONDARY CIRCUIT REFRIGERANT	R-410a
MCA	480 V, 3 Phase, 139 amp 208 V / 230 V, 3 Phase, 313 amp
MOPD	480 V, 3 Phase, 150 amp 208 V / 230 V, 3 Phase, 350 amp
CERTIFICATION	ISO 9001

** 100% @ Rated Condition of 95°F

*** Minimum load may vary with line length and elevation

Features



Assembled in the USA



Integrated communication with RPC for data monitoring



Aesthetic design and light-weight with compact outdoor footprint



Redundant capable with multiple compressors



Variable speed compressors for precise temperature control and minimal power consumption





CDU-M15 COOLING DISTRIBUTION UNIT

OptiCool Coolant Distribution Units: Liquid Cooling for AI High-Performance Computing

OptiCool's Coolant Distribution Units (CDU) are purpose-built to decouple facility chilled water systems from IT cooling infrastructure, delivering precision liquid cooling solutions for high-density, AI driven Data Centers.

OptiCool's 1.5 MW CDU ensures efficient heat removal, while supporting seamless integration into any Data Center environment.

With Customizable configurations and precision control systems, OptiCool's CDU's provide scalable, resilient cooling that meets today's demands, while future-proofing your Data Center for tomorrow's capacity needs.

Whether supporting direct-to-chip cooling, rear door heat exchangers, or next generation IT workloads, OptiCool CDU's are the ultimate solution for optimizing your Data Centers performance and efficiency.



Specifications

EXTERNAL HEAT REJECTION	CHILLED WATER OR GLYCOL MIX
NORMAL CAPACITY	1,500 kW @ 6.5°F ATD
MAX SECONDARY FLOW	440 GPM
MAX SECONDARY EXTERNAL PRESSURE DROP	65 PSI
SECONDARY TEMPERATURE RANGE	45°-130°F
PRIMARY INTERNAL PRESSURE DROP	13 PIS @ 320 GPM
MAX POWER CONSUMPTION	17.2 kW
COMMUNICATION/MONITORING	MODBUS, BACNET, or SNMP
DIMENSIONS	66 in x 79 in x 39 in
DRY WEIGHT	2,700 lb

Features

-  Assembled in the USA
-  Industry standard hardware and software for easy BMS integration
-  Redundant and Autonomous Operation
-  Optional, internal Dual Power Feed (ATS)
-  System designed with cooling capacity management to effectively handle load change fluctuations
-  Intuitive 10-inch touchscreen controls
-  Dynamic self-balancing pressure independent flow control valve for precise capacity control



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AISLE CONTAINMENT

OptiCool's AHX-Integrated Aisle Containment solution combines the efficiency of active cooling with the scalability and familiarity of traditional aisle containment systems. By integrating our intelligent Active Heat Exchange (AHX) units directly into the containment structure, we provide a modular, high-performance solution designed to meet the demands of today's densifying data centers.

Whether you're retrofitting an existing environment or designing a new build, this solution delivers rack-level cooling without the complexity of full-room HVAC upgrades. The AHX units dynamically adjust based on real-time heat loads, extracting heat directly at the source and discharging room-neutral air—preserving aisle separation while eliminating thermal hotspots.

Designed for deployment with OptiCool's overhead manifold and Refrigeration Distribution Network (RDN), this system enables fast, efficient installation and scaling across a variety of environments



Specifications

RACK HEIGHT	42U, 45U, 48U OR CUSTOM SIZES
aisle width	3-6 ft FOR ACCESSIBILITY
RACK DEPTH	STANDARD 42-48 in
HEAT DISSIPATION CAPACITY	5-40kW PER RACK
AHX OPTIONS	10kW, 20kW, and 40kW
AHX DIMENSIONS	10kW - 22.7"x 13.7"x 6.13" 20kW - 22.7"x 19.5"x 8.25" 40kW - 22.7"x 19.5"x 9.00"
REFRIGERANT COOLING	R-513A
ENERGY EFFICIENCY	1.02 PUE
POWER INPUT	SINGLE or DUAL
MAX POWER CONSUMPTION PER AHX	131.5 WATT for 10kW AHX 263 WATT for 20kW AHX 1.278 WATT for 40kW AHX
INLET SENSORS	REDUNDANT A/B TEMP SENSORS

Features



Assembled in the USA



Industry standard hardware and software for easy BMS integration



Compatible with existing infrastructure
Greenfield / Brownfield



Eliminates mixing of hot and cold air, ensuring uniform, predictable temperature to all IT equipment



Variable-speed fans adjust to actual workload demand



Cooling Cost Reduction: Can lower cooling energy consumption



Hot-swappable AHX units adapt to increasing rack loads



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