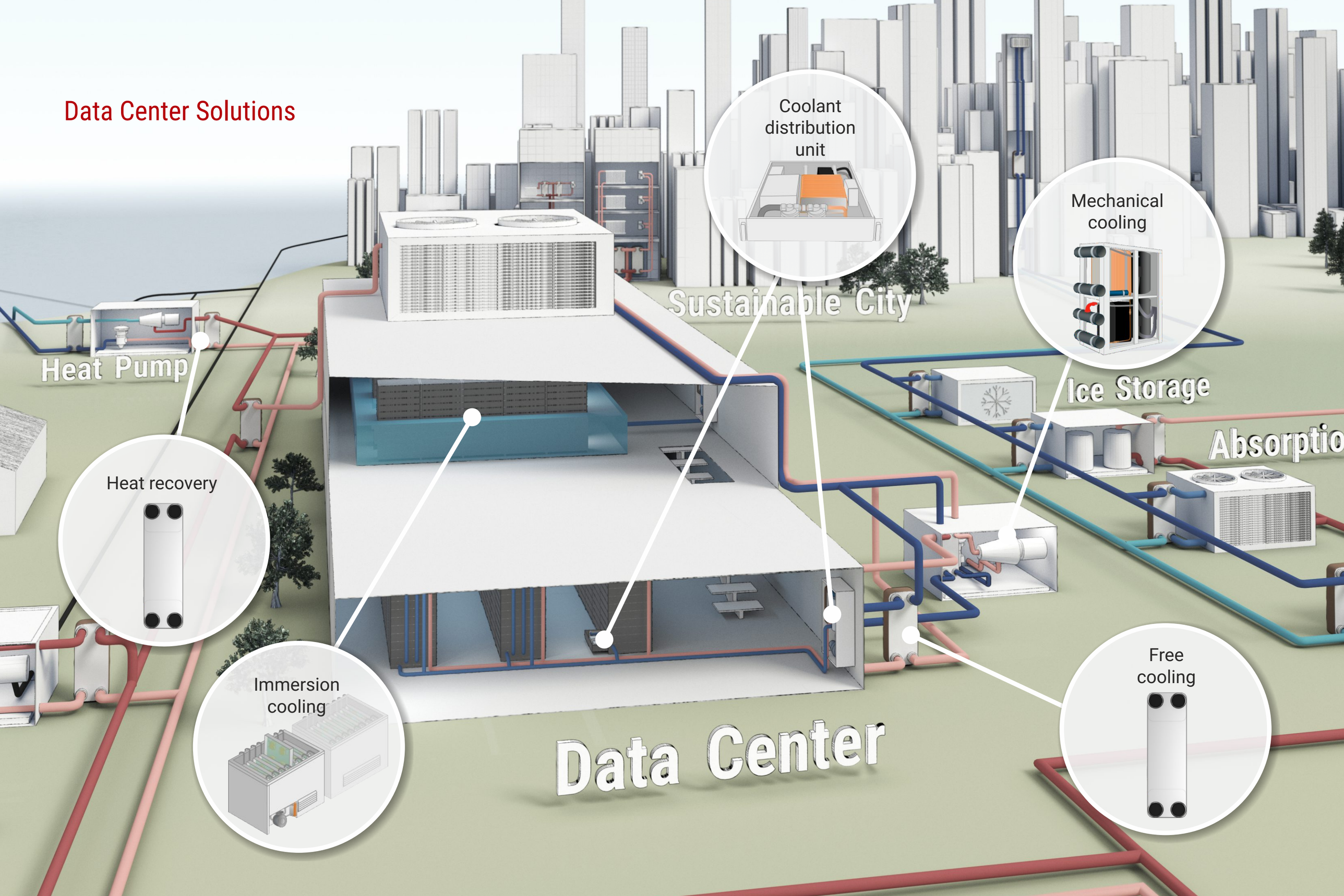


SWEP Solutions

Exceptional performance in Data Center Cooling

SWEP
A DOVER COMPANY

Data Center Solutions



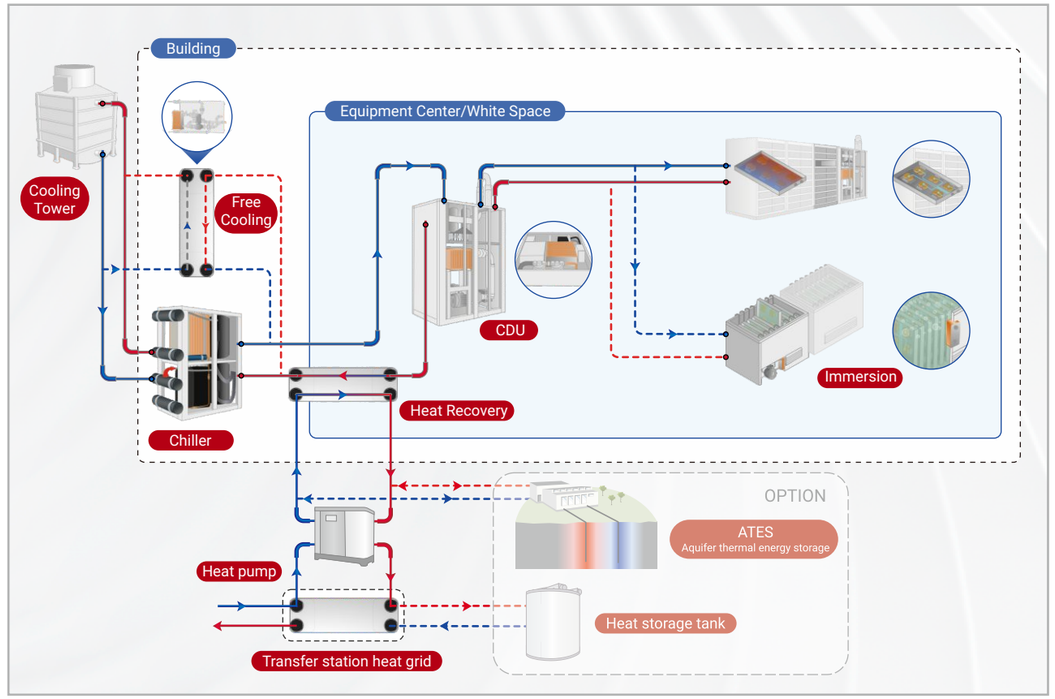
Data centers account for nearly 3% of global energy consumption – a number that's set to increase dramatically over the next decade. As artificial intelligence, the internet of things, machine learning, and high-performance computing continue to expand, so will the need for high-density data centers capable of handling extreme data processing loads. Traditional air-cooled systems are unable to meet the demands of these centers.

Advantages of liquid cooling

Large-scale liquid cooling systems offer a sustainable, high-capacity alternative to air cooling. Liquid cooling increases energy efficiency, improves both power and water usage effectiveness (PUE and WUE) ratios, and makes it possible to implement heat-recovery solutions.

Liquid cooling advantages		
Cooling capacity	Thermal performance	Energy transfer
Water has superior **cooling capacity** more than **4x** compared to **Air** (3500x in volume)	**Water** outperforms **Air** by **25x** by outstanding **heat transfer** conductivity	Removing **excess heat** with **water** requires **50x** less **energy** than with **air**

Data Center Cooling



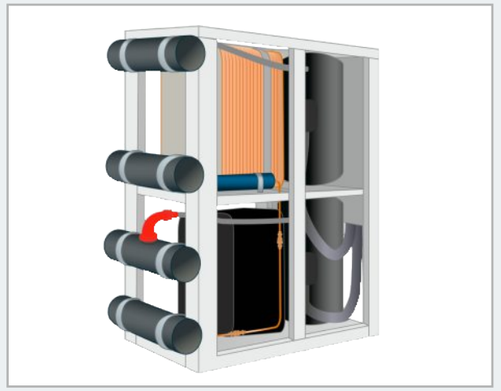
Compact SWEP brazed plate heat exchangers (BPHE) are key components in any liquid-cooled system. They can function in multiple positions within the circuit, including in the coolant distribution unit (CDU), in free cooling, or in heat recovery.

Mechanical cooling

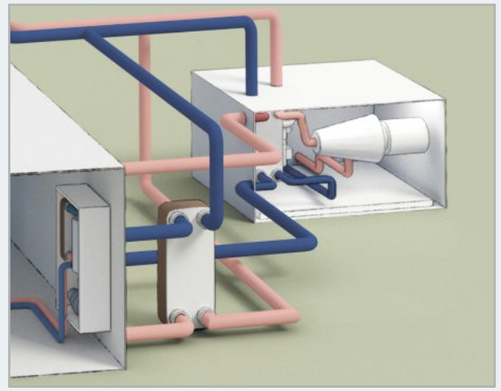
Optimizing chiller performance

SWEP brazed plate heat exchangers can enhance the efficiency of any data center chiller system. They can be used as evaporators, condensers, economizers, or desuperheaters. They can be placed in multiple positions simultaneously and can be optimized for use with natural and low global warming potential (GWP) refrigerants.

SWEP brazed plate heat exchangers feature innovative technologies such as our AsyMatrix™ plate pattern, which improves heat transfer while reducing pressure drop and refrigerant charge; and True Dual, which delivers optimal performance at both full and half load.



SWEP brazed plate heat exchangers work as evaporators, condensers, or economizers in a range of chiller systems.



SWEP brazed plate heat exchangers operate with a low pressure drop and require a minimal refrigerant charge.

A broad product portfolio

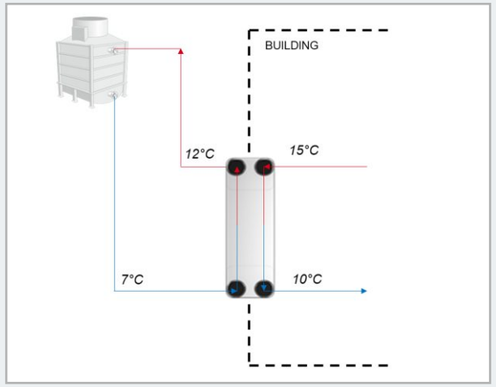
As a chiller component, a brazed plate heat exchanger from SWEP can work as an evaporator or condenser up to 500 kW, or as an economizer up to 2000 kW. We offer a wide range of capacities, with flexible plate configurations and a variety of ports and connectors.



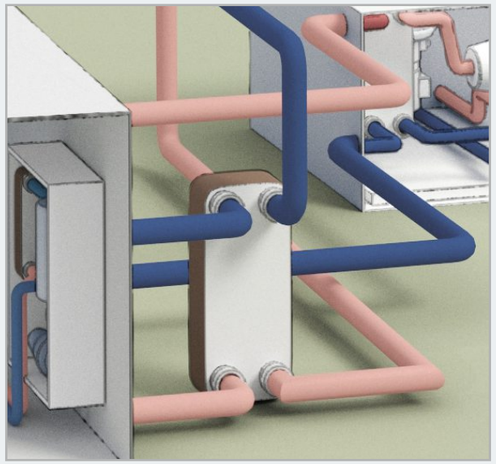
Free cooling
Less energy, lower cost

Free cooling uses cold ambient air or water from nearby sources, rather than refrigerants, to chill the air in the data center or to cool servers or other equipment directly.

High thermal efficiency and a tight temperature approach make SWEP brazed plate heat exchangers the ideal intermediate circuit to separate the external glycol loop from the internal server loop in a water-cooled system. Their highly turbulent flow helps prevent the fouling, scaling, and corrosion that can sometimes result from dirty cooling tower water.



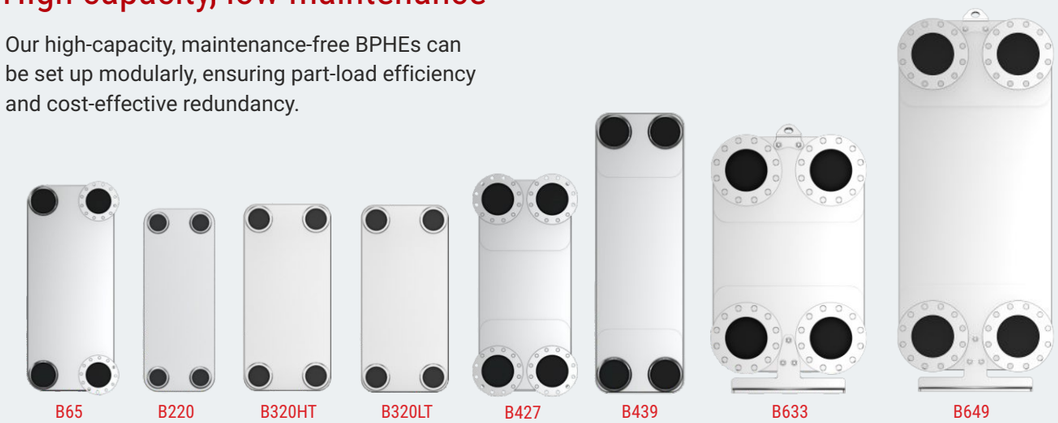
SWEP brazed plate heat exchangers provide efficient heat transfer, even with small temperature differences.



A SWEP brazed plate heat exchanger can separate the external and internal water loops.

High capacity, low maintenance

Our high-capacity, maintenance-free BPHEs can be set up modularly, ensuring part-load efficiency and cost-effective redundancy.

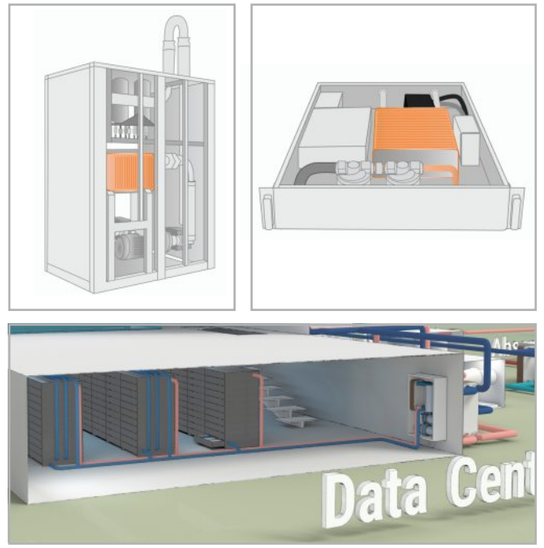


Coolant Distribution Unit (CDU)
Precise, efficient cooling

Coolant Distribution Units use a closed-loop system to circulate coolant on one side and water on the other. They enable efficient cooling to a precise temperature, allowing data center owners to optimize their equipment environment.

CDU cooling technology enhances thermal management, ensuring that the data center can handle power-dense hotspots without compromising performance.

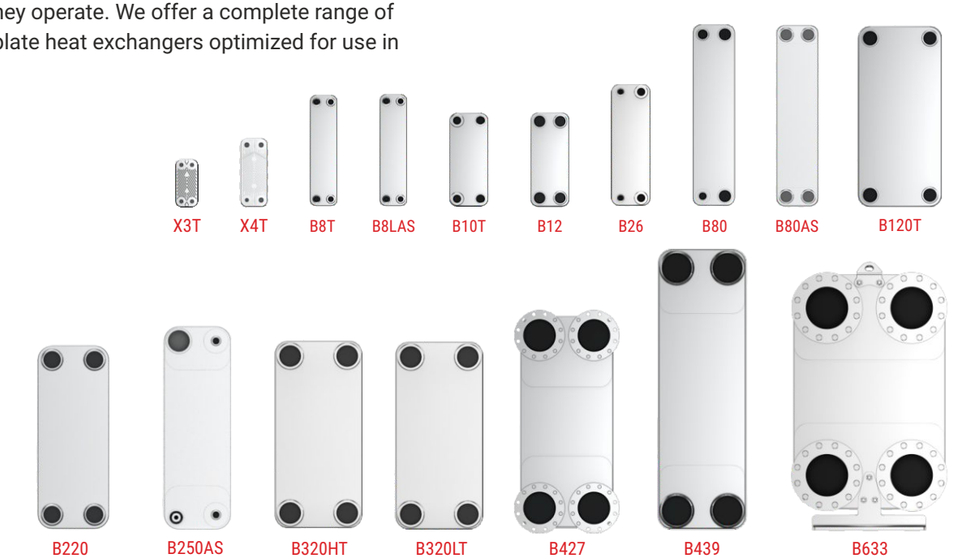
SWEP brazed plate heat exchangers are compatible with all fluids commonly used in CDUs, including water, various concentrations of monopropylene glycol (MPG), and dielectric fluids. The SWEP All-Stainless range is recommended for use with deionized water.



In-Rack CDUs can deliver up to 15-200 kW of cooling capacity, In-Row CDUs up to 1,000 kW of cooling capacity and can manage high heat loads across a series of server chassis. They can be integrated into the existing cooling system or be fully self-contained.

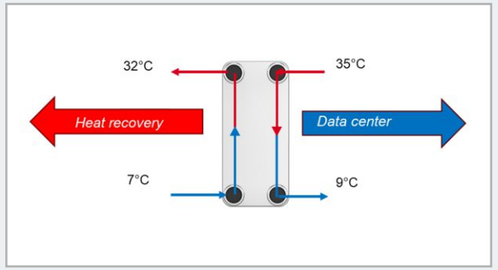
Optimized for CDUs

SWEP components are designed to boost the efficiency and operation of the entire system where they operate. We offer a complete range of brazed plate heat exchangers optimized for use in CDUs.

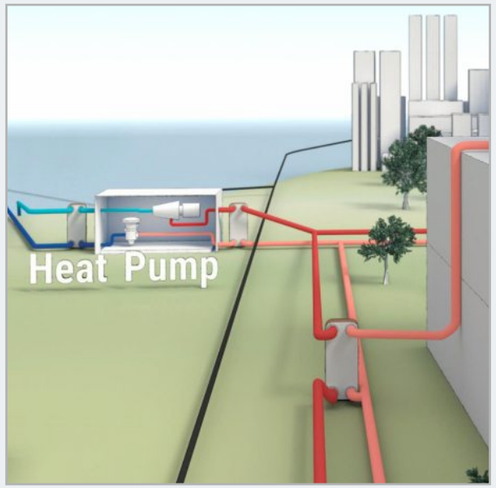


Heat Recovery
Reusing waste heat

Data centers consume vast amounts of energy, both for storing and processing data and for cooling servers and equipment. As much as 40% of the energy used by a data center is dedicated to cooling the servers. Rather than allowing excess heat to dissipate, it can be captured for reuse. SWEP brazed plate heat exchangers are one the most efficient means of recovering waste heat from hot water, which can then be used for district heating, process heating, or other purposes.



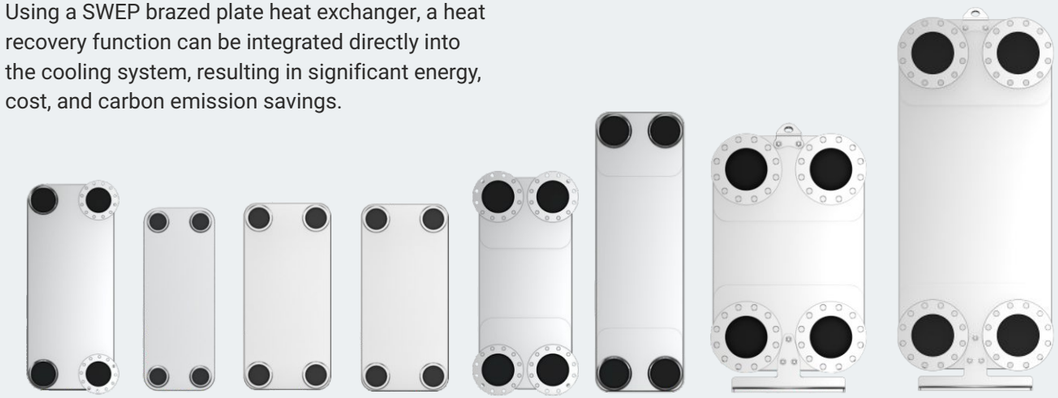
Water, warmed by cooling the servers, is already contained in the piping system. A heat exchanger can easily extract it.



Used cooling water from the data center can reach temperatures of 30°C or more. A heat pump can further raise the temperature.

Saving heat saves costs

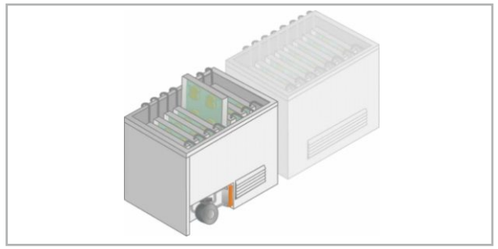
Using a SWEP brazed plate heat exchanger, a heat recovery function can be integrated directly into the cooling system, resulting in significant energy, cost, and carbon emission savings.



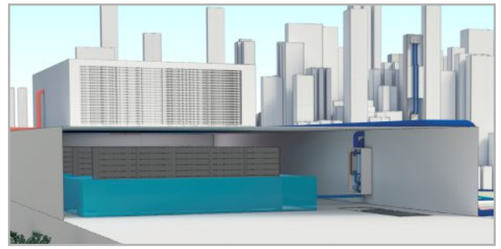
Immersion Cooling
Exceptional PUE and WUE

Immersion systems offer the best possible Power Usage Efficiency, with the highest energy density and unequaled WUE. In these systems, components are placed in leak-proof cases and immersed in heat-absorbing dielectric liquid.

SWEP's range of double-walled brazed plate heat exchangers deliver improved leak-protection for immersion cooling. In addition to being highly efficient and compact, double-walled products enable full control of the fluid, making it possible to detect internal leakage, and to avoid any mixing or contamination of the fluids. SWEP brazed plate heat exchangers are ideal for 1- and 2-phase applications.



Compatible with most dielectric fluids.



SWEP BPHEs offer a compact and efficient solution for 1- and 2- phase immersion systems.

Find the right fit

SWEP offers a range of tools that provide guidelines and calculations to help you find the right product for your job and your specifications, including single-phase, condenser, evaporator, and cascade calculations, as well as two-stage applications.

DThermX is the online version of our powerful SSP software tool, which helps you select a product that meets your specific dimensional, thermal performance, and pressure-drop requirements. Based on a few value entries, such as inlet and outlet temperature, capacity, and fluids, SSP will generate a list of matching brazed plate heat exchangers, specifying plate types and plate counts, for a custom-fit heat exchanger.



SWEP delivers

Compact
Efficient
Cost-Effective
Flexible
Reliable
Self-cleaning

A complete range of dedicated brazed plate heat exchangers for data center applications

BX3T



Dimension	54,4×119,5 mm 2.14×4.7 inch
Weight	0.11+0.016×(NoP-2) kg 0.24+0.035×NoP lb
Max. NoP	60

BX4T



Dimension	75×192,6 mm 2.95×7.58 inch
Weight	0.26+0.040×NoP kg 0.58.4+0.089×NoP lb
Max. NoP	100

B8T



Dimension	76×317 mm 2.99×12.48 inch
Weight	0.85+0.075×(NoP-2) kg 1.88+0.165×(NoP-2) lb
Max NoP	60

B8LAS



Dimension	76.2×317.7 mm 3×12.51 inch
Weight	0.84+0.059×NoP kg 1.85+0.130×NoP lb
Max NoP	70

B10T



Dimension	119×289 mm 4.68×11.37 inch
Weight	1.14+0.096×NoP kg 2.51+0.21×NoP lb
Max NoP	140

B12



Dimension	117×287 mm 4.60×11.29 inch
Weight	1.17+0.120 ×NoP kg 2.58+0.26×NoP lb
Max NoP	140

B26



Dimension	119×376 mm 4.69×14.8 inch
Weight	1.49+0.108×NoP kg 3.29+0.237×NoP lb
Max NoP	160

B80



Dimension	119×526 mm 4.69×20.71 inch
Weight	2.09+0.164×NoP kg 4.61+0.362×NoP lb
Max NoP	140

B80AS



Dimension	119×526 mm 4.69×20.71 inch
Weight	2.09+0.164×NoP kg 4.61+0.362×NoP lb
Max NoP	140

B85



Dimension	119×526 mm 4.69×20.71 inch
Weight	2.09+0.137×NoP kg 4.61+0.301×NoP lb
Max NoP	160

B85AS



Dimension	119×526 mm 4.69×20.71 inch
Weight	2.50+0.137×NoP kg 5.50+0.301×NoP lb
Max NoP	160

B65



Dimension	363×864 mm 14.29×34.02 inch
Weight	27.4+1.030×NoP kg 60.5+2.271×NoP lb
Max NoP	360

B120T



Dimension	243×525 mm 9.57×20.67 inch
Weight	8.33+0.404×NoP kg 18.36+0.891×NoP lb
Max NoP	250

B220



Dimension	202×524 mm 7.95×20.63 inch
Weight	12.1+0.321×NoP kg 26.7+0.708×NoP lb
Max NoP	300

B250AS



Dimension	202×620 mm 7.95×24.41 inch
Weight	8.40+0.337×NoP kg 18.52+0.743×NoP lb
Max. NoP	300

B320HT



Dimension	243×525 mm 9.57×20.67 inch
Weight	9.61+0.389×NoP kg 21.19+0.858×NoP lb
Max NoP	300

B320LT



Dimension	243×525 mm 9.57×20.67 inch
Weight	13.1+0.432×NoP kg 28.9+0.952×NoP lb
Max NoP	260

D300



Dimension	243×525 mm 9.57×20.67 inch
Weight	7.75+0.331×NoP kg 17.08+0.730×NoP lb
Max NoP	346

D310



Dimension	243×525 mm 9.57×20.67 inch
Weight	7.75+0.342×NoP kg 17.08+0.754×NoP lb
Max NoP	350

D400



Dimension	304×694 mm 11.96×27.32 inch
Weight	11.6+0.630×NoP kg 25.6+1.389×NoP lb
Max NoP	282

D650



Dimension	365,6×744,6 mm 14.39×29.31 inch
Weight	14,6+0.939×NoP kg 32.2+2.070×NoP lb
Max. NoP	346

B427



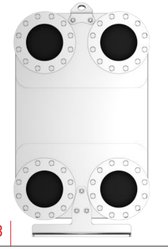
Dimension	304×694 mm 11.97×27.32 inch
Weight	21.9+0.590×NoP kg 48.3+1.301×NoP lb
Max NoP	420

B439



Dimension	304×979 mm 11.96×38.54 inch
Weight	15.7+0.890×NoP kg 34.7+1.962×NoP lb
Max NoP	420

B633



Dimension	537×830 mm 21.14×32.68 inch
Weight	80.3+1.224×NoP kg 177.1+2.698×NoP lb
Max NoP	320

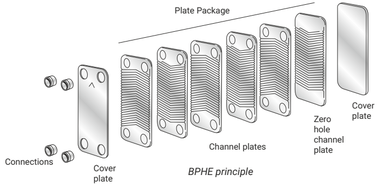
B649



Dimension	537×1232 mm 21.14×48.50 inch
Weight	101.27+1.941xNP 223.2+4.27×NoP lb
Max NoP	420

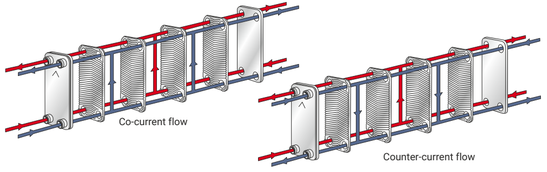
The concept

A brazed plate heat exchanger is constructed by placing a package of corrugated channel plates between a front and a rear cover-plate package. The cover plate packages consist of sealing plates, blind rings and cover plates. During the vacuum-brazing process, a brazed joint is formed at every contact point between the base plates and the filler material.

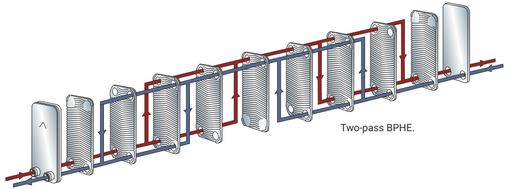


BPHE principle

Fluids can pass through the heat exchanger in various ways. For parallel-flow brazed plate heat exchangers, there are two different flow configurations: co-current or counter current.



Channel plate packages are available in different configurations. The illustration at the right depicts a 2-pass execution, where the flow travels the length of the plate twice, delivering double the thermal performance, while maintaining the same footprint. This configuration is ideal for applications such as CDUs, which require a compact solution.



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Challenge efficiency

At SWEP, we believe our future rests on giving more energy than we take – from our planet and our people. That's why we pour our energy into leading the conversion to sustainable energy usage in heat transfer. Over three decades, the SWEP brand has become synonymous with challenging efficiency.

SWEP is a world-leading supplier of brazed plate heat exchangers for HVAC and industrial applications. With over 1,100 dedicated employees, carefully selected business partners, global presence with production, sales and heartfelt service, we bring a level of expertise and customer intimacy that's redefining competitive edge for a more sustainable future. SWEP is part of Dover Corporation, a multi-billion-dollar, diversified manufacturer of a wide range of proprietary products and components for industrial and commercial use.

Visit our dedicated webpage on data center cooling solutions

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