



CLIMA
PROCESSOR

a CMC Rail division.

PRECISION HEAT EXCHANGING UNITS
FOR TECHNICAL APPLICATIONS

Coolant Distribution Unit (CDU)

January 2025

PROUDLY MADE IN ITALY, SINCE 1963.



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WHO WE ARE:

The CMC Group embarked on its journey in 1963 in Cologno Monzese, Italy, commencing operations with a focus on the production of steel structures. Evolving over the years, the Company delved into the railway market in the 1970s and became a specialist in manufacturing metal structures for locomotives, railway coaches, trams, and metro systems.

In the 80s, CMC expanded its services to include design, collaborating closely with customers to industrialize products using 3D-CAD support and FEM calculation.

Venturing into airport infrastructure in the 90s, CMC introduced air conditioning units and various products like telescopic air ducts and cable retrievers. Over the last decade, the company has excelled in developing structural components for diverse railway vehicles, demonstrating innovation in industrialization techniques derived from the aviation field.

- 2 Certified according to IRIS, EN ISO 9001, EN ISO 3834-2, and EN 15085-2, CMC has garnered numerous orders from leading international players in the railway market, establishing itself as a dynamic and quality-focused entity.





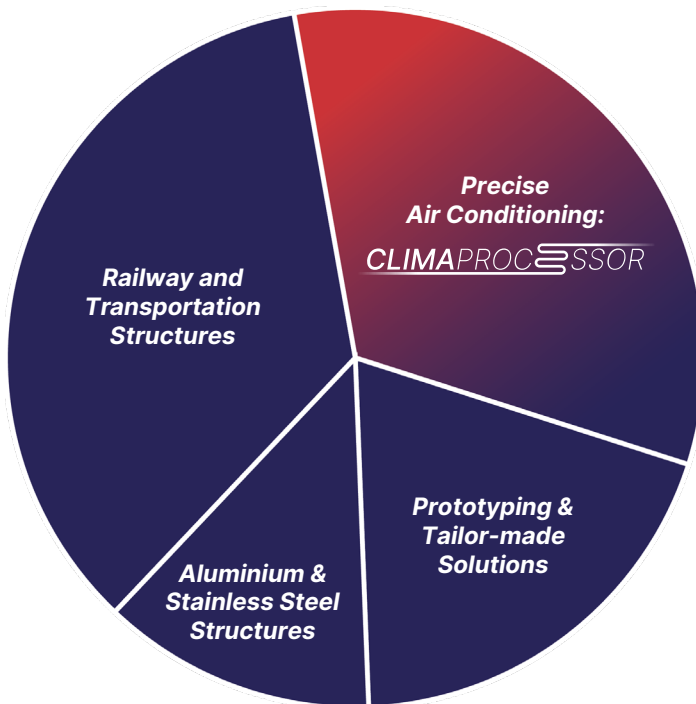
WHAT WE DO:

CMC is at the forefront of precision air conditioning systems, particularly in the realm of data centers and computer rooms. Branded as *"Clima Processor"*, the product range encompasses a variety of units, including those based on direct expansion or chilled water, available in both cabinet and rack configurations.

The Company's commitment to innovation is evident in its industrialization techniques, employing not only welding methodology but also assembly technology featuring rivets and structural adhesives. This approach has been instrumental in securing projects and orders from major international players in the railway market.

CMC stands out for its comprehensive services, offering design collaboration with customers, ensuring industrialization with modern technologies, and maintaining stringent quality standards. The company's diverse portfolio, spanning from steel structures for railways to cutting-edge air conditioning solutions, showcases its adaptability and commitment to excellence.

MAIN APPLICATION SECTORS:



50

employees.

10'000 m²

total indoor production area,
divided into 3 buildings.

400 km

welding done every year.

OUR NUMBERS:

1'300+

Clima Processor delivered.

2'000 t

of metals
(aluminium stainless steel and
carbon steel)
processed every year.

4

working lines:

LASER CUTTING,
CNC machining for extruded profile,
4 HYDRAULIC PRESS,
WELDING ROBOTS.

QUALITY CERTIFICATIONS:



CMC Rail has successfully obtained a multitude of certifications from renowned Certification Bodies. In the railway sector, as in all high-tech industries, the commitment to delivering quality products goes beyond mere production. Achieving and maintaining certifications from prestigious bodies exemplifies our dedication to excellence, adherence to industry standards, and assurance of product reliability. We understand that in the dynamic and exacting field of railway technology, where precision and safety are paramount, certifications serve as a testament to our unwavering commitment to delivering solutions of the highest caliber.



WELCOME TO

CLIMAPROCESSOR

start exploring our products!

COOLANT DISTRIBUTION UNIT:

To meet the increasing demand driven by the rise of liquid-cooled data centers, we have designed an advanced series of coolant distribution units. These systems are specifically engineered to ensure the complete separation of cooling fluids, preventing any risk of contamination or mixing between the chiller circuit and the coolant used within the servers. By maintaining this critical separation, our units safeguard the integrity of the cooling process and enhance the reliability of the entire system. Additionally, their robust design and innovative features make them an indispensable solution for modern, high-efficiency data center cooling infrastructures.

KEY FEATURES OF A CDU UNIT:

8

- ***Fluid Circuit Separation:***

Coolant Distribution Units (CDU) are crucial components that ensure complete isolation between the chiller liquid, generally water or a water-glycol mixture, and the server coolant circuits. This prevents mixing and maintains operational integrity.

- ***Consistent Coolant Flow:***

The advanced design ensures steady flow rates, supported by multiple backup systems for unparalleled reliability. The overall redundancy can be configured as N+1, 2N, or even higher grades, as required by the client.

- ***Sustainable Heating Integration:***

An optional dedicated heat recovery circuit allows excess heat from servers to be reused for eco-friendly heating in nearby offices or homes, enhancing the data center's sustainability.

- ***Customizable and Scalable:***

Designed to adapt to a wide range of liquid-cooled data center applications, the Clima Processor CDU offers flexibility and efficiency in every configuration.



CDU series:

COOLANT DISTRIBUTION UNIT FOR DATACENTER COOLING.

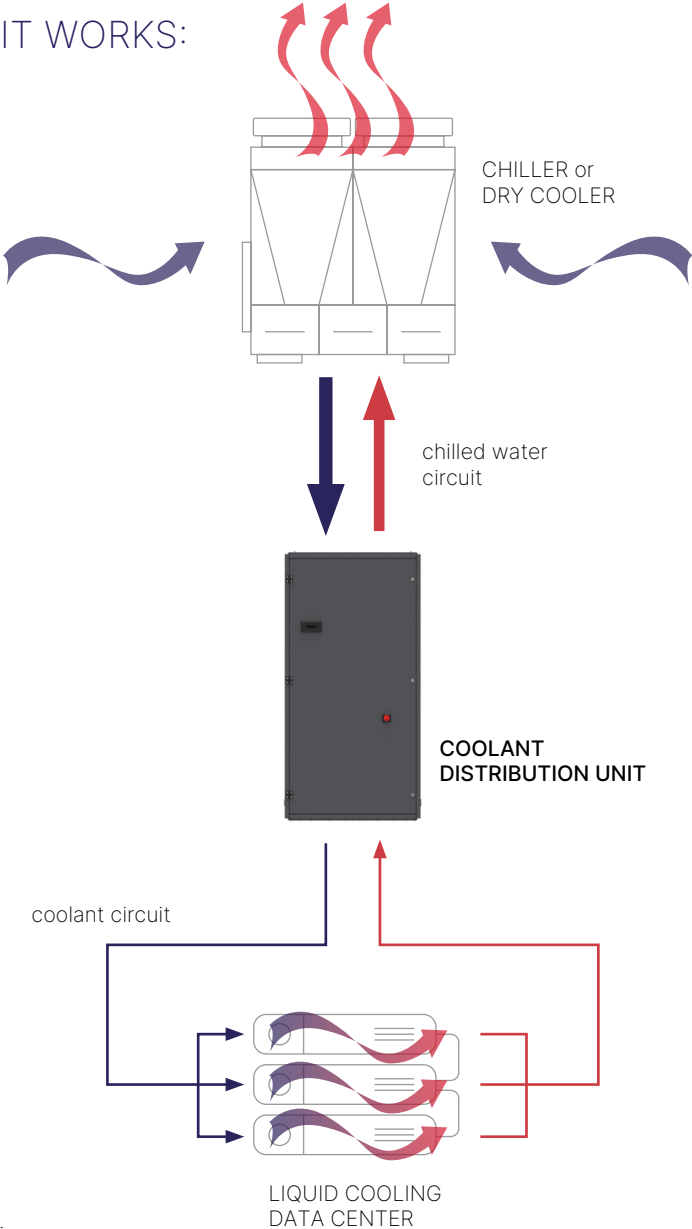
The Clima Processor **CDU series** offers a range of coolant distribution units, primarily designed for liquid cooling systems in modern data centers. These units are specifically engineered to handle water-based coolants, making them indispensable in maintaining the separation between the chiller circuit and the coolant in which servers are submerged. This ensures the two fluids never come into direct contact, preventing contamination and maintaining system integrity.

A standout feature of the CDU units is their ability to maintain a consistent coolant flow, even under variable conditions. Equipped with robust backup systems, these units deliver exceptionally **high system reliability**, ensuring uninterrupted operation in mission-critical environments.

At Clima Processor, sustainability is a core value. To this end, the CDU series integrates an innovative feature that repurposes the heat generated by servers for residential or office heating in the vicinity of the data center. An additional circuit redirects the hot water from the data center—often reaching temperatures of over 65°C—into a heat exchanger. This system efficiently recovers a significant portion of the heat, transforming it into **zero-impact heating** for nearby facilities.



HOW IT WORKS:



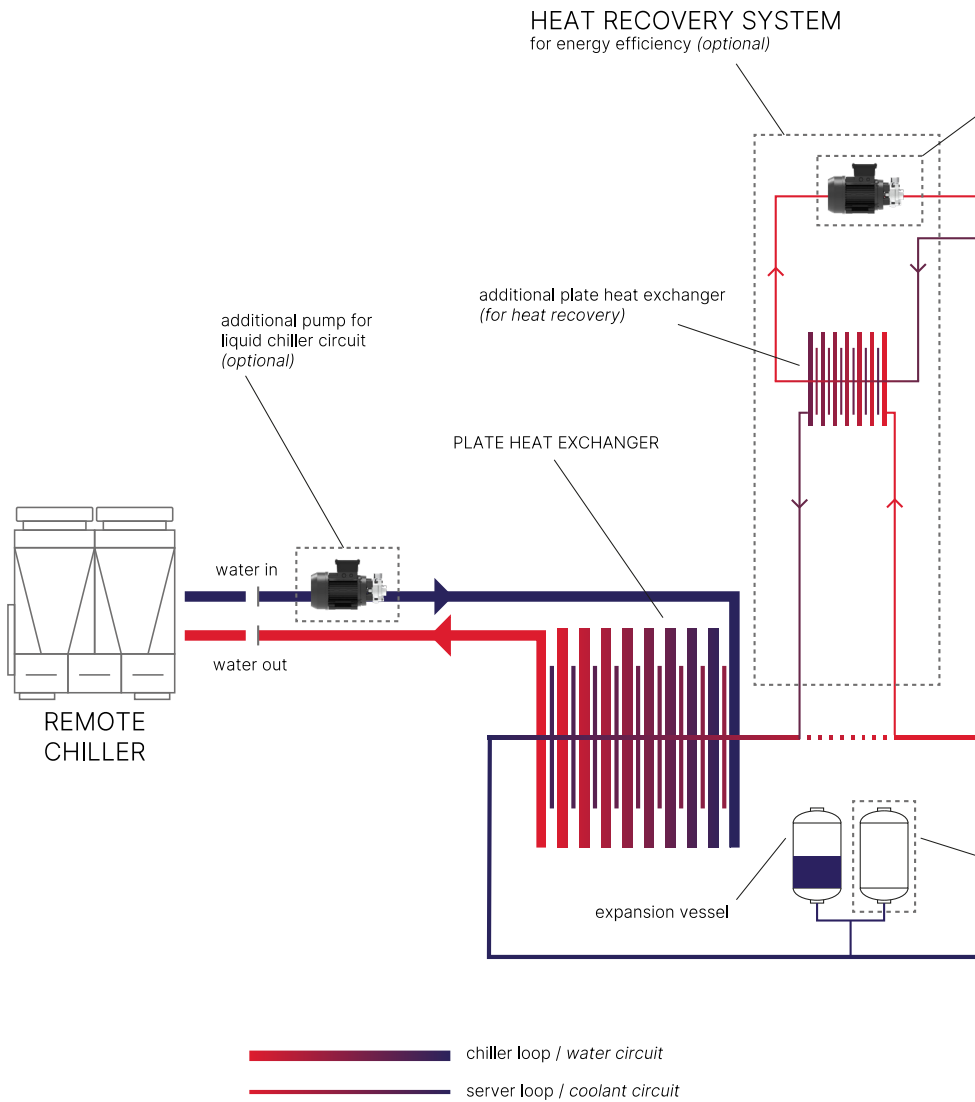
CUSTOMIZATION & ACCESSORIES:

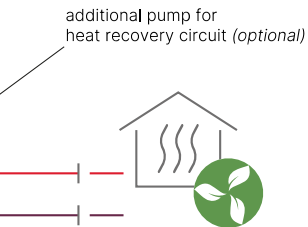
All our solutions are custom-made for every client. We can provide a wide variety of customizations and extras to meet each client's exact specifications.

We offer you all our experience and know-how to find the best solution for every application. All our products are CE certified, and we can also provide US or Japanese standards.

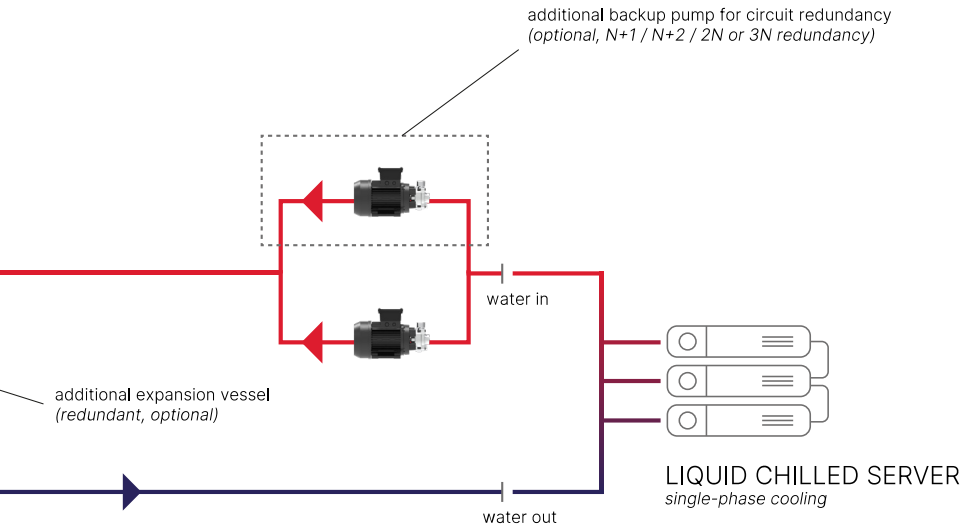
- Fully zinc-plated steel, powder-coated in Clima Processor Gray;
- Effective separation of coolants;
- Possibility to implement a redundant pump circuit for increased reliability (N+1, 2N, 3N...);
- Multiple filtration systems for enhanced performance;
- Capability to recover heat with an Energy Recovery Circuit, enabling significant CO₂ emission reductions (optional);
- Possibility to implement an additional pump inside the chiller-loop;
- Possibility to implement a pump in the Energy Recovery Circuit;
- Multiple temperature and pressure/flow sensors for comprehensive monitoring;
- Possibility to install BLDC inverter pump for energy efficiency;
- Modbus Communications (RS485 card): Ethernet, LON, BACnet;
- Sandwich panels, with possibility to use rockwool cladding (Certified EN13501-1 class A1/A0 s0 d0);
- Low noise insulation;
- Seismic-resistant adjustable basement;

Other customized solutions are possible upon request.

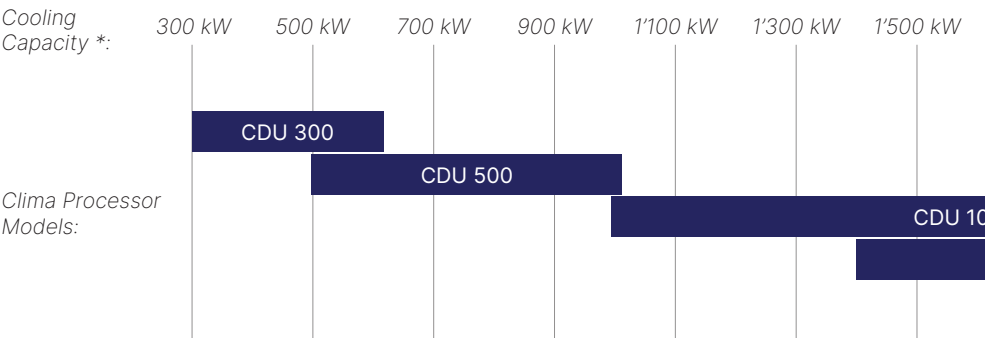




CDU CIRCUIT & MAIN COMPONENTS:



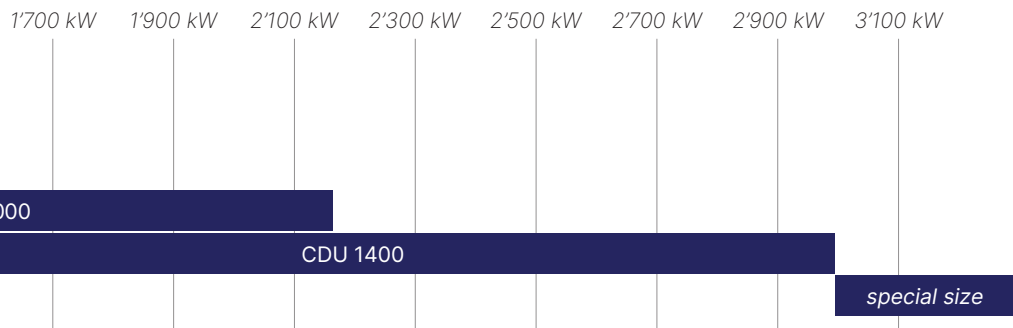
TECHNICAL INFORMATIONS:



**The Total Cooling Capacity depends on the fluids conditions. The depicted ranges indicate the minimum and maximum values achievable with the configuration of that unit, with an ATD (Approach Temperature Difference) between 4°C and 8°C. For different working conditions, please send us a request.*

	CDU 300	CDU 500
Cooling Capacity	300 ÷ 640 kW	500 ÷ 1'065 kW
Total Pump(s)	2	2
Pump Redundancy	N+1 none	N+1 none
Coolant Flow	200 L/min 300 L/min	400 L/min 500 L/min
N° Expansion Vessel(s)	1 (or 2)	1 (or 2)
Vessel Redundancy	optional, N+1	optional, N+1
Vessel Capacity	6 L (each)	6 L (each)
Heat Recovery Circuit	Yes (optional)	Yes (optional)
Heat Recovery Capacity	~ 90% of Cooling Capacity	~ 90% of Cooling Capacity
Dimensions*** (LxWxH)	750mmx680mmx1980mm	850mmx870mmx1980mm
Weight***	350 kg	400 kg

CDU series



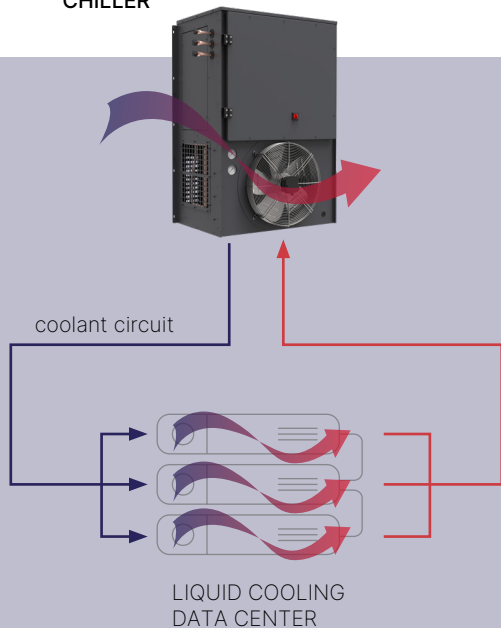
*** Alternative configurations are always possible. For any specific requirements, please feel free to contact us, we will be happy to provide you with the necessary details.*

CDU 1000		CDU 1400		CDU special size**
1'000 ÷ 2'130 kW		1'400 ÷ 2'980 kW		up to 3'000 kW
3		3		-
N+1	none	N+1	none	none / N / N+1 / 2N / 3N
850 L/min	1'270 L/min	1'200 L/min	1'800 L/min	-
2 (or 3)		3 (or 4)		-
optional, N+1		optional, N+1		-
8 L (each)		8 L (each)		-
Yes (optional)		Yes (optional)		-
~ 90% of Cooling Capacity		~ 90% of Cooling Capacity		-
1000mmx870mmx1980mm		1200mmx1000mmx2200mm		-
550 kg		700 kg		-

**** Effective dimensions and weight may change. For more accurate dimensions, please contact our technical office at climaprocessor@cmcrail.it.*

...AND FOR THE APPLICATIONS WITH LESS
COOLING CAPACITY REQUIRED:

**MONOBLOCK COOLANT
CHILLER**



*For any other request, please get in touch. Find more about CK-W in the Clima Processor
"COMPACT UNIT CATALOGUE" or visit the website www.climaprocessor.it*

CK-W series:

MONOBLOCK LIQUID CHILLER & THERMOREGULATION UNIT.

For scenarios requiring lower cooling capacity, such as a single high-density rack string, a liquid-cooled computer, or other technical applications with a constant flow of chilled liquid required, we offer a **unit that integrates a monoblock liquid chiller and a plate heat exchanger**. This design functions as an all-in-one chiller system with a liquid distribution feature.

The **Clima Processor CK-W** can serve as a source of constant-temperature liquid, making it an ideal solution for modern IT applications. This unit, designed for outdoor applications, can also be equipped with a **dry cooler**. This integration enables significant energy savings, making your data center more sustainable and efficient.

- No pre-existing circuit required;
- Plug-and-play solution, ready to start in 2 hours;
- Cooling capacity up to 26 kW;
- ΔT_{in-out} from 2 to 6°C;
- direct cooling of the working fluid;
- Outlet pressure between 3÷6 bar;
- Internal expansion vessel;
- Internal water tank 7,5÷25 L;
- R513a refrigerant, with low GWP;
- Pump and/or vessel redundancy by request;
- BLDC compressor or inverter pump by request;
- Possibility to implement *dry cooler* for energy efficiency and cost reduction;



CONTACTS:

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