



# COLD PLATES

## Cold Plates for Thermal Management of Electronic Systems

Cofan's cold plates are designed for efficient liquid cooling in high-power electronics, including applications in power converters, battery management systems, and industrial automation. With design flexibility in copper, aluminum, and hybrid materials, these cold plates ensure optimal thermal contact and performance. Whether you need direct-contact cooling or modular configurations, Cofan provides custom solutions for scalable integration.

Cofan's cooling solutions offer highly effective thermal management by ensuring direct contact with heat-intensive components, including IGBTs, CPUs, and power inverters. Once thermal energy is absorbed, it moves efficiently into a broader thermal control system—be it fluid-cooled, air-cooled, or hybrid. As a result, performance remains safe and stable even in high-demand environments.

Thanks to a flexible design approach, these cooling modules suit both custom liquid loops and OEM-integrated systems. Moreover, they find applications across diverse sectors such as computing, power electronics, automotive, and aerospace. To ensure optimal outcomes, Cofan collaborates closely with OEMs and system designers. By doing so, we deliver solutions tailored to meet exacting requirements in terms of thermal capacity, form factor, and durability. Consequently, our clients benefit from enhanced reliability and system efficiency.

## Operating Principle

Cofan's advanced cooling blocks transfer heat through direct conduction from high-power electronics into a connected thermal architecture. Because of this, they support various configurations—including liquid, air, or hybrid systems. In turn, such versatility contributes to consistent performance under heavy thermal loads.

Furthermore, the modules are engineered for modular integration. Therefore, they fit seamlessly into standalone or OEM-specific systems. In other words, engineers can implement them without requiring extensive structural revisions.

### Available Types

- Machined cold plates
- Tube-in-plate configurations
- Manifold or multi-pass flow plates
- Custom hybrid assemblies
- Designed for scalable integration into advanced electronics and industrial systems

### Target Applications

- High-power inverters and power control units
- Industrial computing and telecom base stations
- Laser modules and RF systems
- Aerospace and automotive control systems

### Key Benefits

- Passive conduction-based design
- Compatible with cooling fluid systems
- Space-saving, lightweight form factor
- Customizable layouts, ports, and flow interfaces
- Reliable thermal performance under sustained high-power operation

## - COLD PLATES IN INDUSTRIES -

### Bitcoin Mining Machine

Cold plates dissipate the intense heat generated by mining rigs, improving thermal stability, preventing overheating, and extending hardware lifespan.

- Part No : 92.01.90011

### UVA Battery

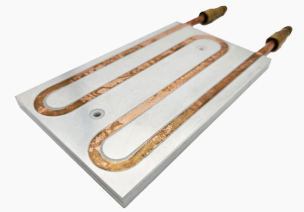
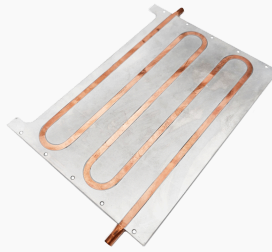
Cold plates regulate UAV battery temperature to reduce thermal runaway, improve safety, and extend battery life in flight-critical environments.

- Part No : 92.02.90021

### Medical

Cold plates maintain temperature stability in MRI, CT, and laser systems, enabling precise imaging and safe thermal control during procedures.

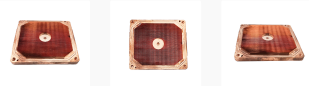
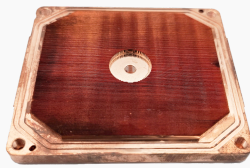
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### AI

Designed for high-density environments, cold plates prevent overheating in AI servers and GPUs, and support compact edge systems like AVs and smart cameras.

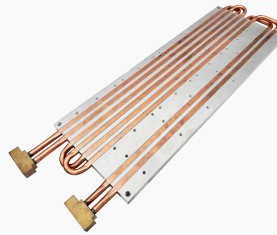
- Part No : 92.04.90021



### IGBT Solar Module

Cold plates manage IGBT heat in solar inverters, enhancing power output, system efficiency, and long-term operational reliability.

- Part No : 92.05.90026



### Electrical

Used in power electronics and control panels, cold plates ensure thermal protection for inverters, transformers, and sensitive electrical components.

- Part No : 92.06.90023



### Feature included

- Cost-effective design with consistently high thermal performance
- Compatible with water and a wide range of industrial coolants
- Reliable, leak-free operation for long-term use

### Product Options

- Exposed Tube Cold Plate
- Multipass Exposed Tube Design
- Full Buried Cold Plate

## How Liquid Cooling Systems Use Cold Plates

In liquid-cooled environments, heat spreaders such as contact modules play a key role in thermal management. Compared to conventional air-based systems, liquid circulation delivers significantly higher heat removal efficiency—especially in compact or low-airflow conditions.

In practice, a typical cold plate system consists of:

- A cold plate(for contact cooling)
- A pump
- A heat exchanger(e.g., radiator)
- Tubes or hoses for fluid circulation

Placed directly on heat-generating surfaces, the interface transfers energy into the coolant. Then, the fluid carries it to a remote exchanger, where it's released into the surrounding air. Additionally, Cofan's thermal components are compatible with both water and industrial coolants. Thus, they provide designers with greater flexibility to meet specific thermal and mechanical needs.

## Liquid Copper Tube System - Epoxy High Performance Thermal Specifications

Note: Shelf life may vary based on storage temperature and handling conditions.

Application Features	
Property	Value
Viscosity @ 25 °C	150,000 cPs
Specific Gravity @ 25 °C	2.2 g/cc
Shelf Life @ 25 °C	10 days
Shelf Life @ 0 °C	6 months

Curing Procedures	
Curing Temperature	Curing Time
Curing Procedures	
100 °C	4 hours
125 °C	2 hours
155 °C	30 minutes
170 °C	5 minutes

Curing Procedures		
Chemical Type	Epoxy	Test Method
Appearance Uncured	Gray Paste	Visual
Appearance Cured	Dull Gray Solid	Visual
Components	One component	****
Heat Capacity	0.7 l/g-K	ASTM C351
Key Substrates	Metal, Ceramics	****
Hardness	92 Shore A	ASTM 2240
Continuous Use Temp	-40 to 180 °C	****
Tensile Strength Al/Al @ 25 °C	> 2900 psi	****
Thermal Conductivity	4.5 W/m-k	ASTM D5470