

AIR-COOLED HEAT SINKS

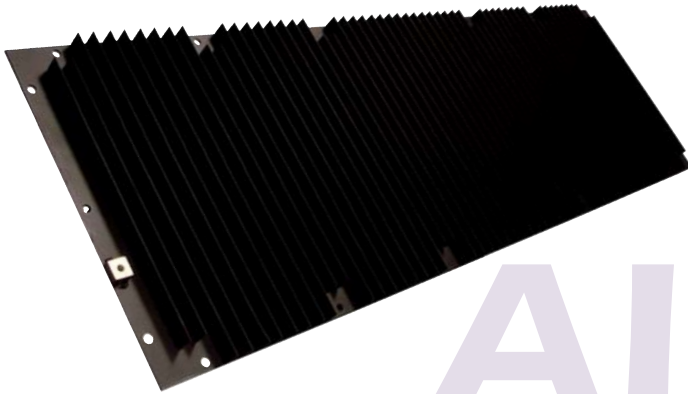
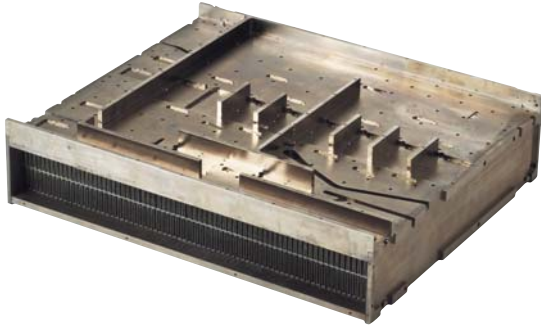
Thermal Management
Radiacal®



Radiacal® Corrugated: soldered fin

Technology

- Straight or corrugated fins soldered or bonded onto a base plate.
- Surpassing conventional solutions combined with its lightness.

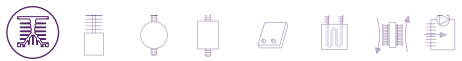


AIR

Applications

High power electronics in the aeronautics, telecommunications and traction fields.

Radiacal® FABFIN®: Swaged fin

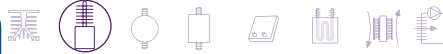


Ferraz-Shawmut is the European distributor of Fabfin® range (R-theta).
For further information, please request the specific datasheet: "FABFIN® High Performance Air-Cooled Heat Sinks".

Thermal Management

DIPHASIC-COOLED HEAT SINKS

Thermal Management
Transcal®



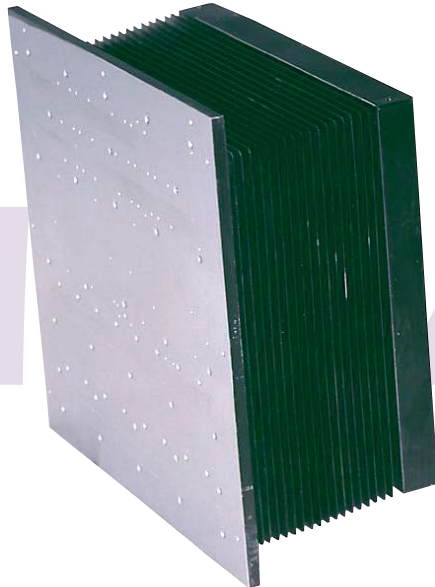
Heat pipe heat sinks

Advantages

- High thermal performance.
- Homogeneity of temperature under components.
- Instantaneous cooling action.
- Limiting temperature peaks.
- Dielectric insulation possible.
- Starting temperature -40°C .
- Easy maintenance.

Applications

- More than 20 years of experience in traction, industrial and military applications.
- For the cooling of press-pack or screwmounted modules.

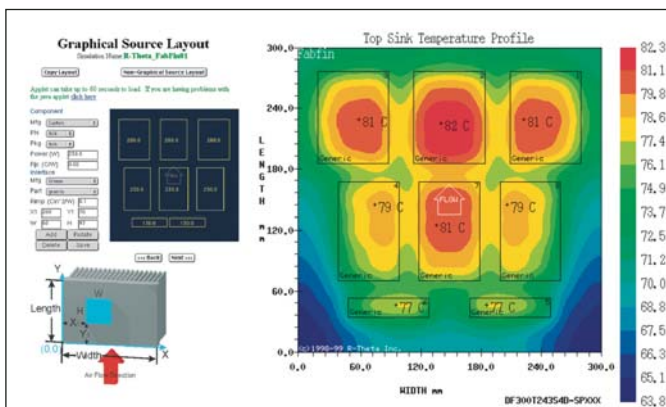


Air and Water simulation tools

Use the free on-line thermal simulation program on the website:

Easy to cool: www.fs-thermalmanagement.com

R-theta: www.r-theta.com

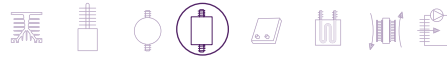


EASY-TO-COOL

Selecting the cooling system for dimensioning

<p>Moduca: water cooling box</p> <p>Vacuum brazed aluminum or copper cold plate for power IGBT modules measuring 190x140 mm or 140x130 mm.</p> <p>Patented grid-type cooling circuit to guarantee exceptional thermal performance.</p> <p>Dimensioning template</p>	<p>Callistor series G and M: water cooling box</p> <p>Vacuum brazed aluminum or copper cold plate for clamped electronic components measuring 48 to 125 mm in diameter.</p> <p>Patented grid-type cooling circuit to guarantee exceptional thermal performance.</p> <p>Dimensioning template</p>
<p>Multical: water cold plate</p> <p>Vacuum brazed aluminum cold plate for all types of screw-mounted electronic components.</p> <p>A single cold plate can cool up to 12 screwed-on components on each surface.</p> <p>Machined groove or pin-type cooling circuit.</p> <p>Dimensioning template</p>	<p>Callistor series U: water cooling box</p> <p>Vacuum brazed aluminum cold plate for clamped electronic components measuring 48 to 125 mm in diameter.</p> <p>Machined spiral cooling circuit to guarantee absolutely uniform temperature under the component.</p> <p>Dimensioning template</p>

Thermal Management
Moducal®



Screw-mounted component heat sinks

Technology

(patented)

Vacuum brazing of colaminated aluminium grids enclosed between two covers.

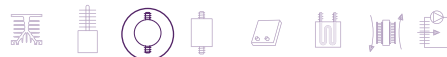
Single or double side cooling.



Advantages

- The optimized internal technology offers the highest thermal performance and a low pressure drop.
- The uniform flow distribution guarantees high reliability of your electronic device.

Thermal Management
Calistor®



Press-pack component heat sinks

Technology

(patented)

Vacuum brazing of colaminated aluminium grids enclosed between two covers.

The grids can be brazed on an aluminium profile.



Advantages

- Same as for the Moducal®.
- The profile is used for the hydraulic fittings, for a tab for electrical connection and as a mounting plate for other components.

Thermal Management
Calitube



Stainless-steel cooling circuit heat sinks

Technology

Over-moulding an aluminium block around a stainless-steel tube.

The tube is bent into several turns under the components.

Soldered calitubes are also available.



Advantages

- Over-moulding ensures excellent contact between the two materials.
- Stainless-steel enables the use of all types of cooling fluid.
- Single or double side cooling.

HEAT SINKS

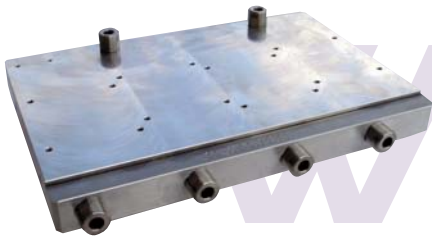
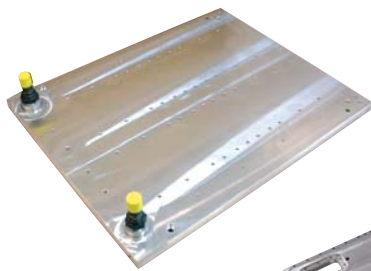
Thermal Management
Multical®



Customized plates

Technology

- Vacuum brazing of a cover on machine tooled cooling circuits.
- Different cooling circuit geometries available.
- Single or double side cooling.
- All dimensions available.



Advantages

- Design able to meet highest technical specification.
- Thermal homogeneity over the entire surface available.
- Hydraulic connectors customized to our customer's design.



Thermal Management
Syscal®



Cooling unit groups

Expertise in dimensioning and manufacture of complete cooling loops.



Thanks to our cooling expertise, engineering and integration knowledge, Ferraz Shawmut Thermal Management can offer global thermal systems for applications in traction and industry.