Liquid cooled plate for heat generating components

THE COMPANY

Tykoflex have during several years developed a method to manufacture thin liquid cold plates. The results of this work are two patents that now mean that the company possesses a unique method to manufacture thin liquid cold plates with high performance.

Tykoflex offer customized solutions with different sizes, connections and different mounting alternatives.

THE TECHNOLOGY

The trend is towards more compact electronic units. This trend leads to higher heat density and a demand of a more efficient cooling. Liquid cooled plates are the solution when air cooled heat sinks became a not acceptable solution. Liquid cooling has been used in several applications since 1940.

THE DESIGN

The cold plate is designed with a casing of cast aluminium. The fluid path is made of stainless/acid proof steel (SMO 254).

The purpose of the casing is to have a solid and flat surface to mount the components on. Further, the aluminium casing has a good possibility to transfer the heat from the component to the fluid.

A unique design of the path allows a good turbulent flow and a low-pressure drop, which means an optimized heat transfer. The design of the fluid path also reduces the risk of dirt build-up.

The use of stainless steel for the flow path admits the use of optional cooling media.

The components can be mounted with fastening devices as screws, clips or similar.

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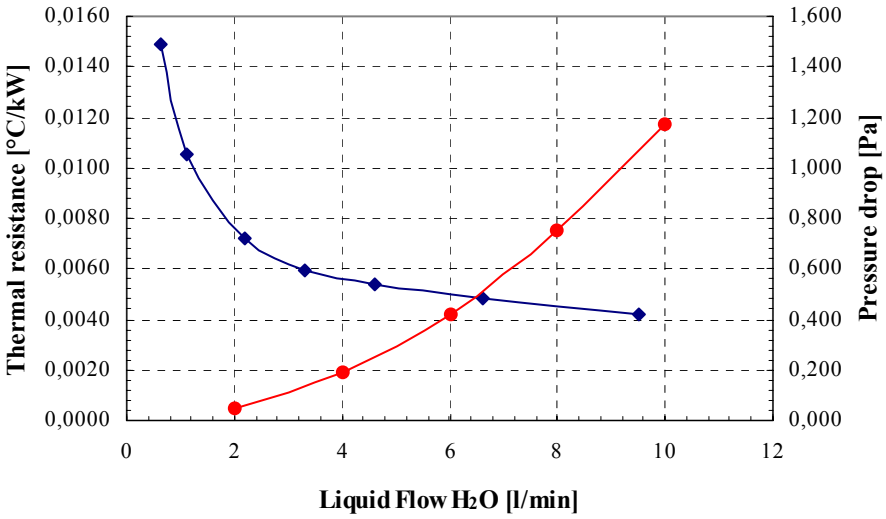
TECHNICAL INFORMATION

Thermal resistance & Pressure drop



Thermal resistance R_{th}-Heat sink to liquid

COLD PLATE, CP4U CAST
Width x Length x Height: 160x385x10 mm
Weight: 1,6 kg
Material: EN1.4547 / ASTM S31254

APPLICATIONS
RF-transmitter cooling
Laser cooling
High power electronic component cooling
Fuel cells
Thermoelectric coolers

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*The cold plate performance is presented as the thermal resistance R_{th} as a function of the liquid flow. The thermal resistance consists of the temperature difference between the inlet fluid temperature t_{inlet} and the mean surface temperature $t_{surface,\ mean}$ of the cold plate and in relation to a given heat load $\dot{Q}$ according to:

$$R_{th} = \frac{\vartheta}{\dot{Q}} = \frac{t_{surface,mean} - t_{inlet}}{\dot{Q}}$$

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