



Liquid Cooled Plate for IGBT units Flex Design



THE COMPANY

Tykoflex have during several years developed a method to manufacture thin liquid cold plates. The result of this work is one patent that now means that the company posses a unique method to manufacture slim liquid cold plates with high performance. Tykoflex offer customized solutions with different sizes, connections and different mounting alternatives.

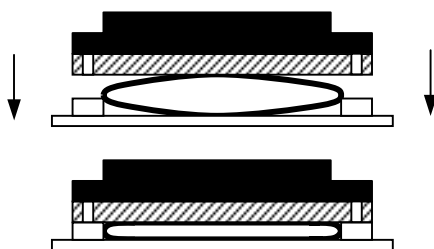


Figure 1. Adaptive heat transfer surface.

THE DESIGN

The design of the liquid cooled plate is cost effective and aimed for high volume manufacturing.

Two thin steel sheets of high alloy stainless steel makes up the plate. The unique design of the cold plate gives an adaptive heat transfer surface with spring forces. The adaptive heat transfer surface is schematic described in figure 1.

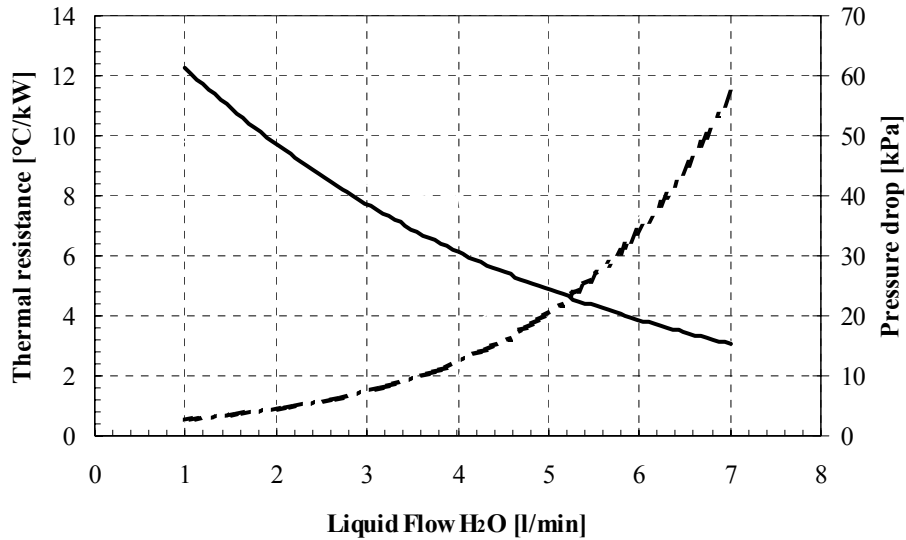
An essential part of the heat sink design is to have a low surface roughness. This will in turn give a low heat resistance between the components base plate and heat transfer surface of the cooler. The thin steel sheet is cold rolled and has therefore a very low surface roughness ($R_a = 0,1-0,5 \mu\text{m}$).

Connections are placed on the same side for easy access if the plate is mounted in a rack or similar.

The use of stainless steel gives a tough design that withstand rough environment and admits the use of optional cooling media. Other benefits with stainless steel are that much higher fluid velocities can be approved compared with cold plates in aluminium or copper.

TECHNICAL INFORMATION

Thermal resistance for one IGBT unit Surface area 0,03 m²



Thermal resistance R_{SL} -Heat sink to liquid.

Note: The thermal resistance is calculated by means of the logarithmic temperature difference.

COLD PLATE CPU4 FLEX

Width x Length x Height: 135x360x4 mm

Weight: 0,5 kg

Material: EN 1.4547 /ASTM S31254

Connections according to customer specification

BENEFITS

Flexible heat transfer surface

Low weight

Thin and compact design

Low thermal resistance

Withstands all cooling media

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