

# Standard Transistor Cooler

Made by 3D-printing using SLM (Selective Laser Melting)

A very effective way to dissipate the high heat flux densities of electronic power modules or power devices with high power density is the use of micro-coolers or micro-channel heat sinks made by SML. These active small cooling elements can transmit up to 1000 W/mm<sup>2</sup>.

Beside a design for the often used TO-247 housings, all other housing types are available. Even customized designs in other shapes and thicknesses are possible.

Please contact us for more information or a quotation via

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Phone: +49 (0) 221 952629-0



Eureca Messtechnik GmbH as specialized in technical consulting, development and supply for OEM projects with the focus on cameras, optical measurement and thermoelectric cooling systems.

Our partner company IQ Evolution is an expert on the development and production of microcoolers for power electronics. Their 3D printing manufacturing technique provides highest efficiency in the micrometer range for the smallest cooling structures.

# Standard Transistor cooler

with 3D-printed micro cooler

IQ evolution GmbH

Dr.-Ing. Thomas Ebert

The coolers are produced by **SLM** procedure, the **Selective Laser Melting**.

The procedure is also known as LPBF (Laser Powder Bed Fusion).

IQ evolution refined this 3D-metal-printing process over more than 10 years, specially to the requirements of building micro structures.

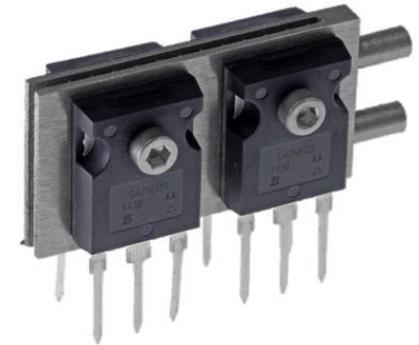
Rapid Prototyping and complex mass production are both efficiently producible with this technology.

For more informations about the 3D-printing process please use our download-center:

[http://iq-evolution.com/downloads\\_de/](http://iq-evolution.com/downloads_de/)

All our products are covered by registered patents.

Registered patents: US 9083138; US 12438336; EP 1672690; EP 2061078  
Patent pending : EP 18156325



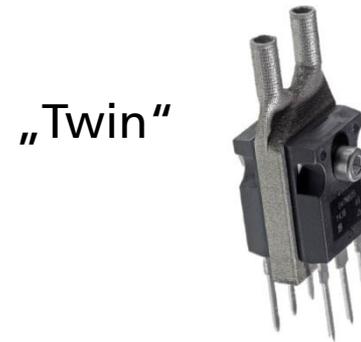
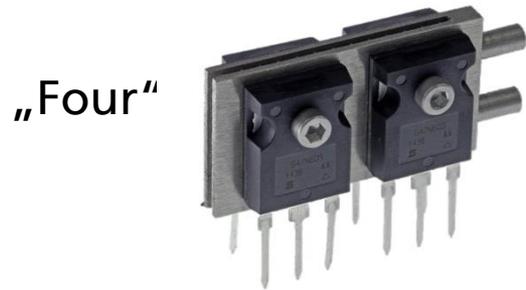
„IQ-Four“, for TO 247 housings



„PCC“, printed circuit cooler

# Standard cooler for TO-247 housing

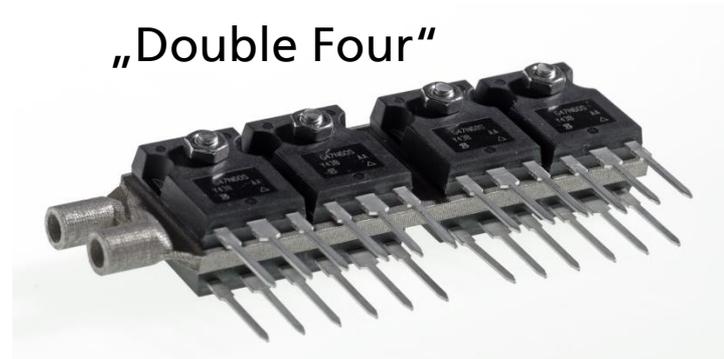
The first standard coolers were made for cooling high power components in TO-247 housings.



The coolers are available for the cooling of two, four and eight housings at the same time.

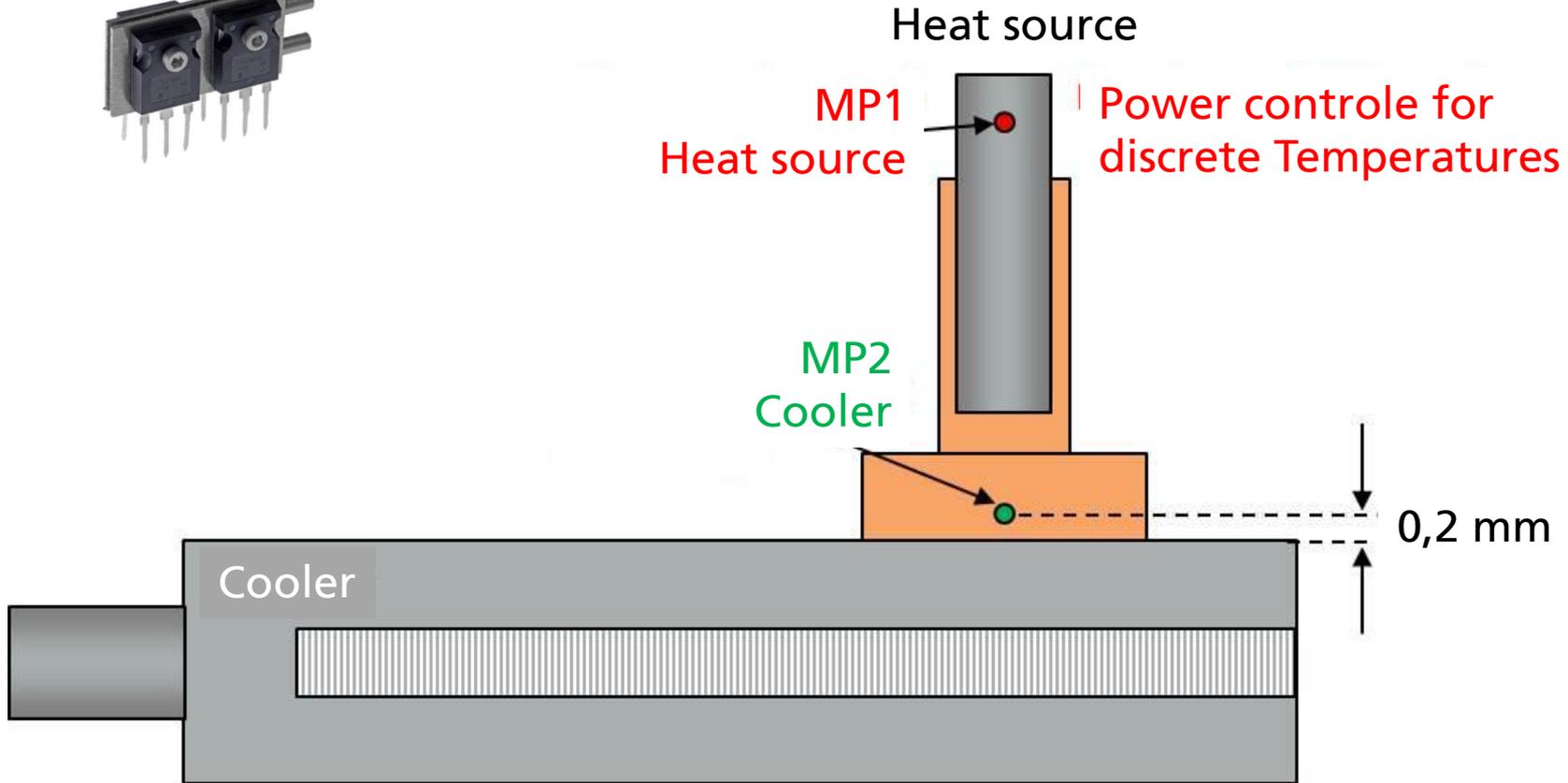
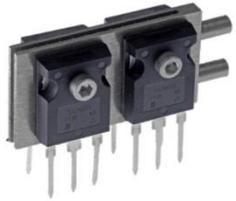
Beside the design for TO-247 housings, all other housing types are available. Customized designs in other shapes and thicknesses are also possible.

„Double Four“



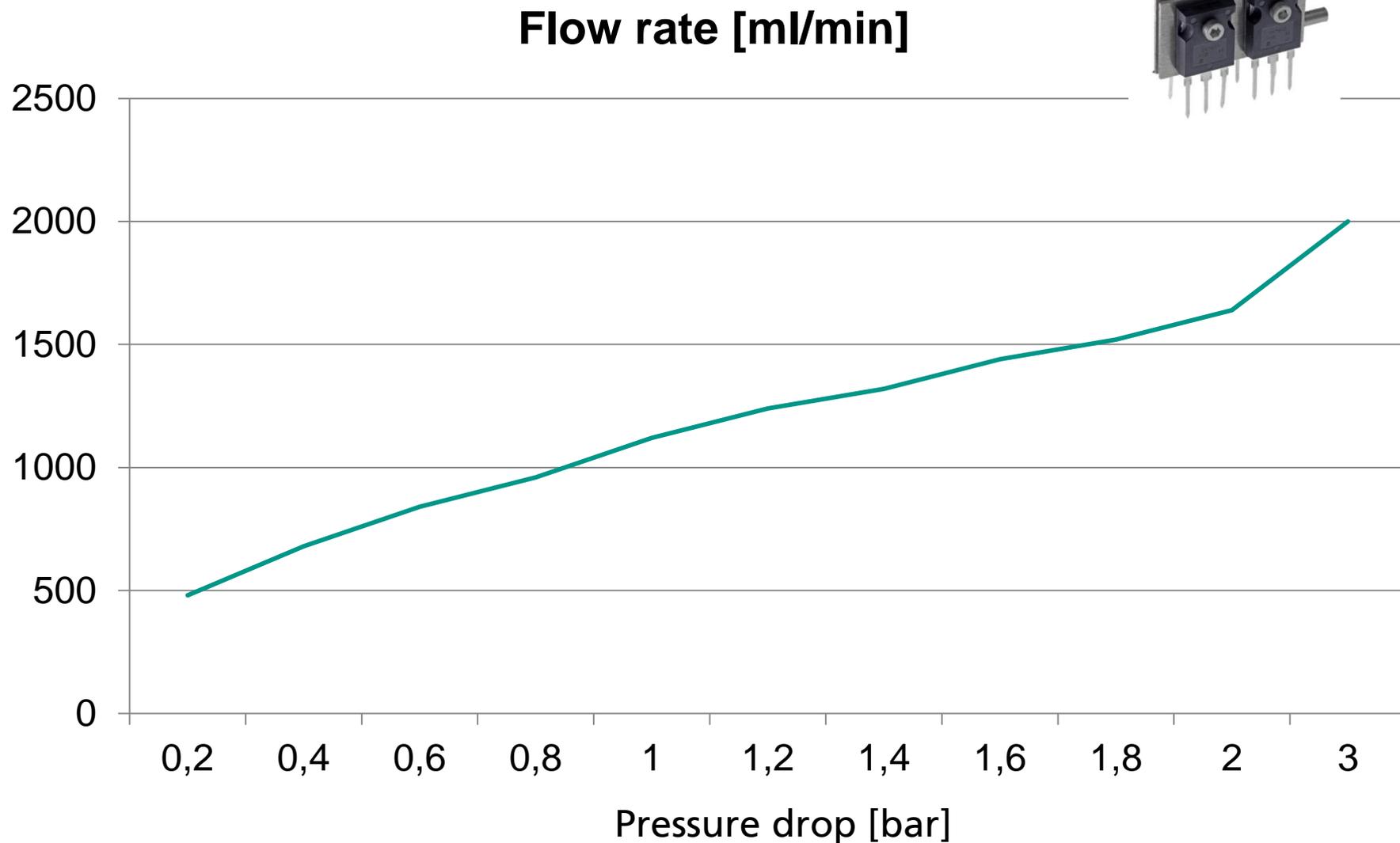
Registered patents: US 9083138; US 12438336; EP 1672690; EP 2061078  
Patent pending : EP 18156325

# Measurement of „IQ-Four“ Transistor cooler, setup



Footprint of the heat source is 4mm x 11mm

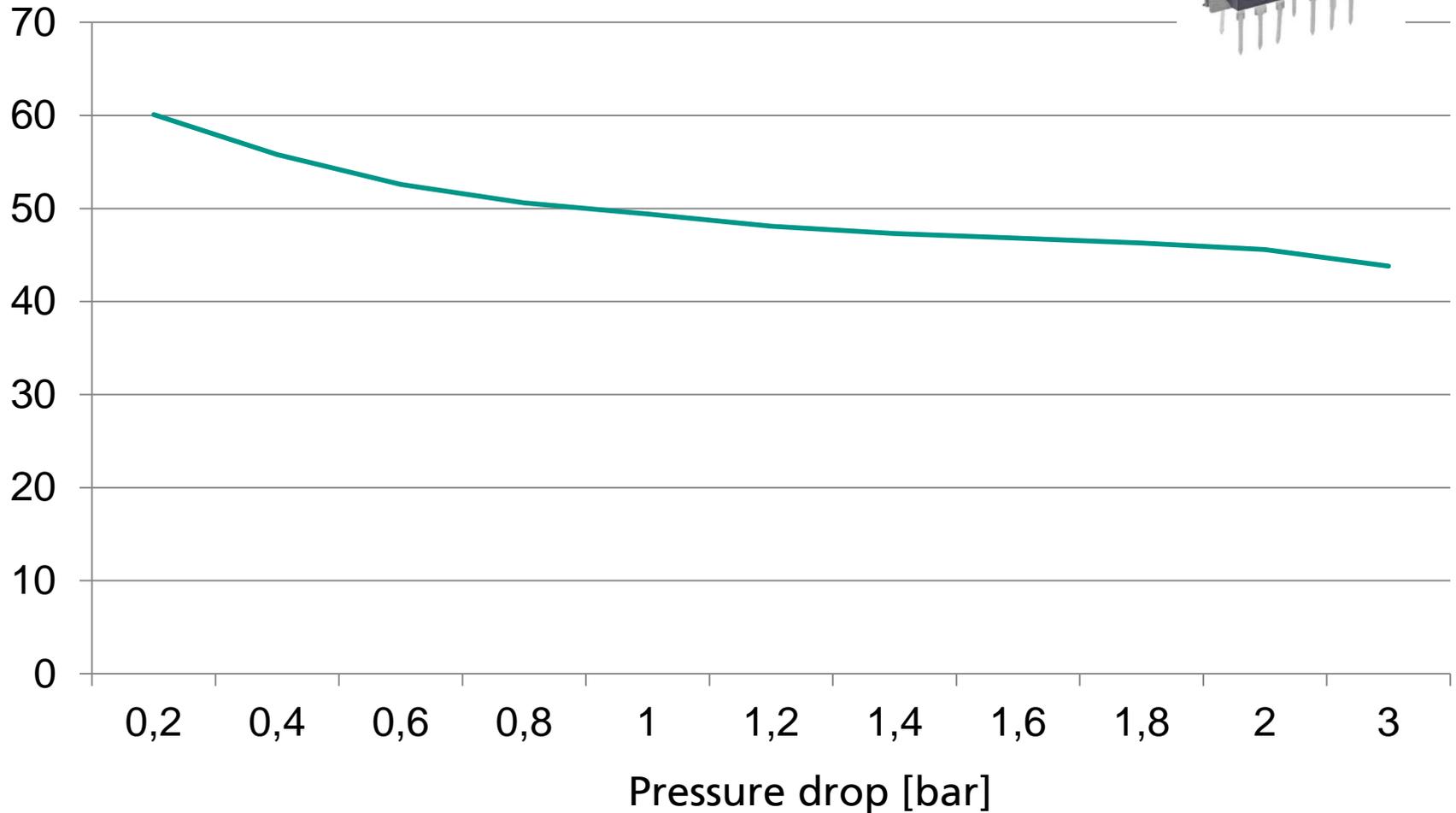
# „IQ-Four“, measured flow rate



# „IQ-Four“, measured temperature @ MP2



Temperature [C°]



# „IQ-Four“ with insulated surface

All IQ evolution cooler are available with electrical insulation of the cooler surface.

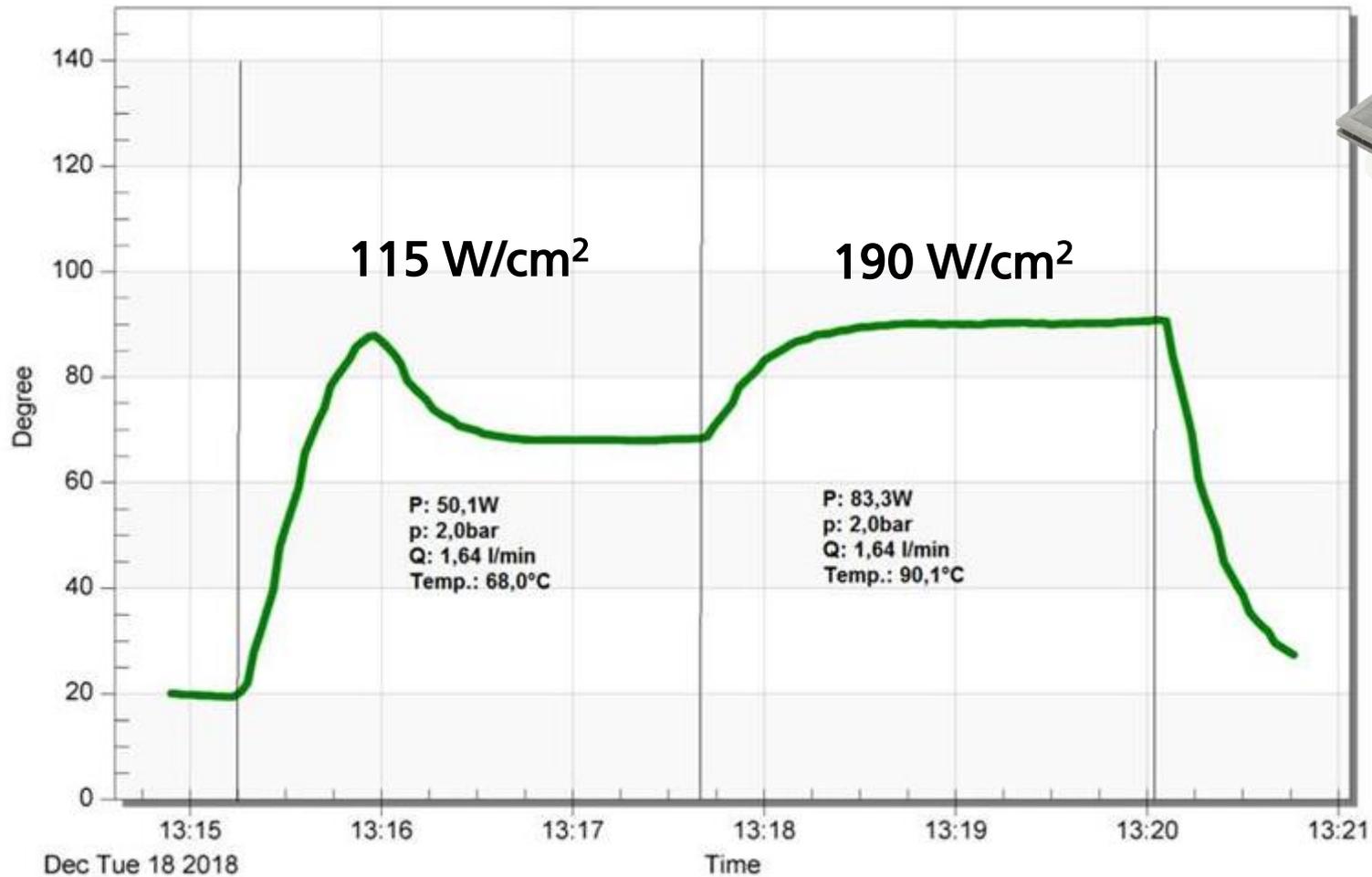
The kind of insulation depends of the customers demand,  
e.g. needed disruptive strenght, and has an influence of the cooling performance.

The next sample shows an insulated „IQ-Four“ cooler with a disruptive strenght of 1.000 Volt:



Registered patents: US 9083138; US 12438336; EP 1672690; EP 2061078  
Patent pending : EP 18156325

# „IQ-Four“ with insulated surface, performance measuring

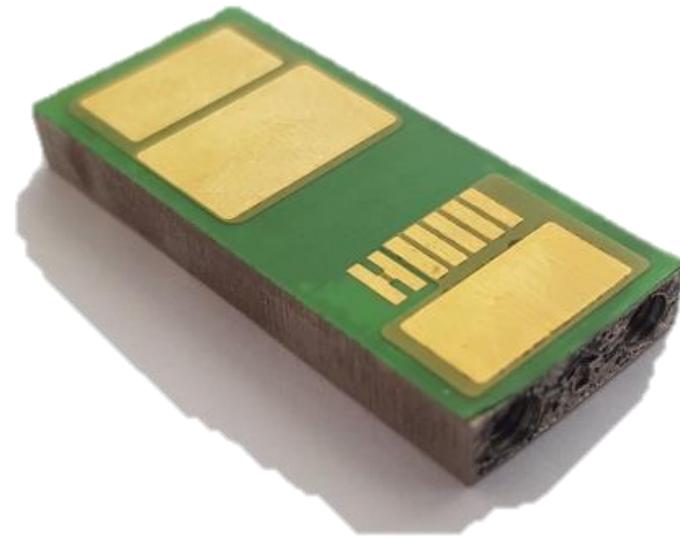


# „IQ-PCC“, printed circuit cooler

Insulating the coolers surface is just the first step.  
Step two:

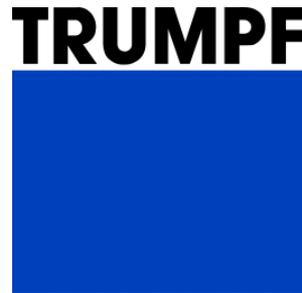
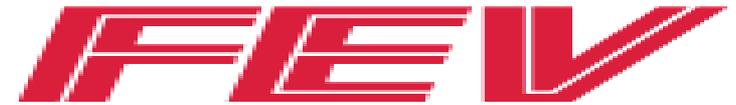
➡ Creating a complete circuit on the coolers surface!

- Manufactured by Selective Laser Melting (SLM) and standard PCB process
- Material: Nickel
- Thickness: 4 mm
- Max. cooling performance 1.000 W
- Suitable for direct mounting



Registered patents: US 9083138; US 12438336; EP 1672690; EP 2061078  
Patent pending : EP 18156325

# Referenzen



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