

Environmentally friendly, energy-efficient, less noisy:

MagMed project: improved cooling systems driven by VAC's revolutionary magnetocaloric materials

Press contact:

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Norman Lemm
VACUUMSCHMELZE GmbH &
Co. KG
Tel. +49 (0)6181 / 38-0
Fax +49 (0)6181 / 38-2645
norman.lemm@
vacuumschmelze.com

Konzept PR
Simon Federle
Tel. +49 (0)821 / 34300-19
s.federle@konzept-pr.de

Contact address for reader requests:
VACUUMSCHMELZE GmbH &
Co. KG
Postfach/P.O.B. 22 53
D-63412 Hanau
Tel. +49 (0)6181 / 38-0
Fax +49 (0)6181 / 38-2645
info@vacuumschmelze.com



The versatility of CALORIVAC is also reflected in the possible delivery forms (c) VACUUMSCHMELZE GmbH & Co. KG

Hanau – VACUUMSCHMELZE (VAC) is driving the future of magnetocaloric cooling with CALORIVAC. Together with the Fraunhofer Institute for Physical Metrology (IPM), as well as the companies Philipp Kirsch GmbH and GSI Technology UG, they are developing a refrigerant-free and more efficient cooling technology. This so-called "MagMed" project is funded with EUR 2.4 million by the Federal Ministry of Economics and Energy (BMWi). The goal is the development of a cooling device for medical applications based entirely on the magnetocaloric principle.

Magnetic cooling is a new disruptive technology where solid-state materials replace the environmentally harmful refrigerant gases used in actual compressor-based cooling devices. This new technology is based on the magnetocaloric effect in which the refrigerant exhibits a temperature change when exposed to a magnetic field. Besides the environmental benefit the technology has the potential to save up to 50 % of the required energy and significantly reduce audible noise compared to currently available compressors.

Vacuumschmelze has developed the solid-state refrigerant CALORIVAC[®] which is in small-scale production, and tested in many magnetic cooling prototypes around the world. Future fields of application are industrial cooling systems, air conditioning in vehicles or buildings, as well as refrigerators in supermarkets.

The future of magnetic cooling depends to a large extent on strong networks working towards a common goal. Very recently, VAC together with the Fraunhofer Institute for Physical Measurements Techniques (IPM) and the companies Philipp Kirsch GmbH and GSI Technology UG, started a 2.4 Mio. Euro project funded by the Federal Ministry for Economic Affairs and Energy (BMWi). The so-called MagMed project aims for the development of an efficient cooling device for

medicine applications based completely on the magnetocaloric principle. In order to achieve higher efficiencies, MagMed introduces a new concept for the transfer of the heat from the cooling load over the magnetocaloric material to the surrounding.

Therefore, In the next three years, VAC will contribute to the project with the optimization of CALORIVAC® to be compatible with the new heat-transfer concept. This includes the optimization of the material properties and its shaping and the development of measurement techniques for the characterization of materials. “VAC is committed to environmentally friendly and efficient technologies in all areas of life. With MagMed, VAC continues its commitment of innovation towards the commercialization of magnetocaloric cooling technologies”, says Roland Stepputat, General Manager of Permanent Magnets at VAC.

VACUUMSCHMELZE

VACUUMSCHMELZE (VAC), based in Hanau, has 4,300 employees worldwide, 1,450 of whom are in Hanau. The company designs, produces and markets advanced materials, particularly with magnetic, but also with other physical qualities as well as related products. In 1914, the first vacuum furnace laid the foundation for today's VACUUMSCHMELZE. Industrial vacuum melting techniques for alloys have been in operation since 1923.

VAC Group today achieves annual sales of approx. 380 million euros in over 50 countries and is holder of around 800 patents. The company is among the world's most highly innovative developers of advanced industrial materials.

VAC's range of products comprises a broad array of advanced semi-finished materials and parts, inductive components for electronics, magnets and magnet systems for use in a wide variety of fields and industries spanning watch-making and medical technology, renewable energies, shipbuilding, installation technology, automotive and aviation. VAC's custom solutions are developed in close collaboration with the customer, reflecting the company's expertise in materials, applications and state-of-the-art production technology.

For more information, visit www.vacuumschmelze.com

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