Press Information

VAC materials - enhancing the efficiency of solar inverters:

VACUUMSCHMELZE presents its expertise in advanced materials at the Photovoltaic Solar Energy Symposium in Bad Staffelstein

Press contact:

No.: 03/12

Hanau, 16th February 2012

Adalbert Ströhle
VACUUMSCHMELZE GmbH & Co. KG
Tel. +49 (0)6181 / 38-0
Fax +49 (0)6181 / 38-2645
Adalbert.Stroehle@
Vacuumschmelze.com

Cornelia Krannich/
Stefan Ehgartner
Bite Communications
Flößergasse 4/Haus 2
D-81369 München
Tel. +49 (0)89 / 444 46 74 55
Fax +49 (0)89 / 444 46 74 79
cornelia.krannich@
bitecommunications.com
stefan.ehgartner@
bitecommunications.com

Contact for readers' enquiries:
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
www.vacuumschmelze.com

Hanau / Frankfurt – The 27th Photovoltaic Solar Energy Symposium will be held at Banz Monastery, Bad Staffelstein, from 29 February to 2 March 2012. VACUUMSCHMELZE GmbH & Co. KG (Hanau) will again take part, this year in the capacities of both sponsor and exhibitor. The company will present its innovative nanocrystalline materials, used in numerous passive components that deliver outstanding reliability, precision, price/performance ratio and energy efficiency for today's solar inverters.

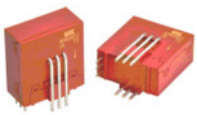
Common mode chokes with nanocrystalline toroidal tape-wound cores are equally suitable for low operating currents of only a few amperes and high currents exceeding 800 A. VAC supplies chokes for direct operation in low-voltage grids and for high DC voltages of up to 1000 V. They are therefore the product of choice for EMC filters on the grid side of solar inverters and on the line to the solar panels. The new chokes enable extremely compact and high-performance EMC filters with excellent long-term stability and low temperature dependence to be designed, improving reliability and significantly enhancing system efficiency. In addition to an extensive range of 2-, 3- and 4-phase chokes, VAC now offers high-current chokes and core stack assemblies (as single-turn chokes) for central inverters.

kW power transformers for PV inverters are based on nanocrystalline ring cores which offer significantly higher saturation induction (1.2 Tesla) than ferrite cores in addition to low hysteresis loss; these properties deliver the advantages of lower weight and volume, enhanced efficiency and extended operating temperature range (up to 120 °C). Power transformers are generally produced as custom designs.

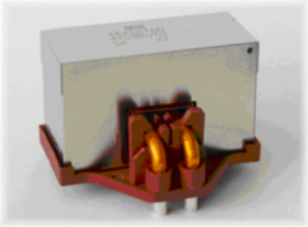
VAC's **drive transformers** for IGBT control in PV inverters feature *excellent stability of the magnetic properties* over a broad operational temperature range from 40°C to +105°C and low leakage inductance for high-precision pulse transmission. In addition, VAC drive transformers are very compact thanks to their use of cores with approximately three times the magnetic flux density of ferrite combined with advanced isolation techniques. They are 100% high-voltage and partial discharge tested as well as featuring electrical insulation compliant with international standards such as EN 50178, IEC62109 or IEC61800-5-1.

Toroidal tape-wound cores by VAC are made from the nanocrystalline alloy VITROPERM®. They are used in kW power transformers for PV inverters to provide galvanic isolation. Compact push-pull converters can be built for switching frequencies from approx. 5 to 50 kHz. VITROPERM® tape-wound cores have high saturation induction (1.2 T) compared to ferrite cores (0.3 or 0.4 T) and lower losses; furthermore, VAC tape-wound cores also have low temperature dependence of permeability and exhibit very low noise levels due to the low magnetostriction of the core material

VAC supplies **cut cores** of VITROPERM® for alternative converter types. A small air gap minimises shear and reduces effective permeability of the cores to prevent even DC voltage levels from saturating the core. The near-rectangular cores are suitable for use with coil bobbins and copper foil windings.



Current sensors by VACUUMSCHMELZE perform a range of functions in solar inverters, such as monitoring the AC output current that is fed into the grid and its DC component. Unlike conventional Hall-effect sensors, VAC current sensors use a patented magnetic field probe of co-amorphous alloys as a zero-field detector, which offers an array of benefits such as minimal offset current and negligible long-term drift. Since offset current is practically temperature-independent, the current sensors deliver ultra-precise readings throughout a wide range of operating temperatures.



The new range of **AC/DC-sensitive differential current sensors** (DI sensors) forms the core of residual current monitoring units compliant with standards IEC 62109 or UL 1741. The operating current, supply and return current conductor together with, where necessary, an external test current loop are routed through the sensor, which measures only the current difference - i.e. the residual current - and generates an output voltage proportional to the differential current. The new sensors offer a range of additional functions, including sensor core demagnetization, which can be triggered by the supply voltage or employed as required. In addition, the self-monitoring function with error signalling indicates faults in the magnetic probe or compensation coil and any drop in voltage. VAC DI sensors can also run a self-test using internal test current.

VACUUMSCHMELZE GmbH & Co. KG

VACUUMSCHMELZE (VAC) with 1,500 employees in Hanau, 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 more than 350 million Euros in over 40 countries and is the holder of more than 750 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, 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.

Find out more at www.vacuumschmelze.com