SCHUPP® Ceramics Increases the Vertical Range of Manufacturing for PCW Formed Parts up to 1800 °C

SCHUPP® Ceramics has been supplying metallic-ceramic solutions for laboratory and industrial furnaces up to 1800 °C application temperature since 1996. Its range comprises products, components and systems for sintering and firing, heat treatment and melting for a wide array of high-temperature applications. The portfolio contains thermal insulation components made of polycrystalline mullite/alumina wool (PCW), heating elements made of molybdenum disilicide ($MoSi_2$), electrical heating systems ($MoSi_2$ + PCW) as well as process temperature control rings PTCR and ceramic high-temperature adhesives.

Fig. 1
Three-dimensional UltraVac-formed part from SCHUPP® production in Aachen
(Photo: Thilo Vogel)

Fig. 2
Machining and quality assurance of UltraVac-formed parts
(Photo: SCHUPP® Ceramics)

The company started out in 1996 purely as a trading firm. In the first years following the company's founding, a long-standing partner could be gained with Ferro/FR. The company produces process-temperature control rings PTCR, which are used worldwide to assure and document sintering, firing and heat treatment processes.

Keywords
PCW parts, complex 3D-geometries

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Fig. 3
New grades are continuously developed in the pilot plant
(Photo: SCHUPP® Ceramics)

Later followed the installation of a production line for high-temperature adhesives and heating elements at the Aachen site/DE. Already at an early stage, concepts were developed with the top Japanese production partners ITM and JX, to be able to offer technical and economic solutions for furnace linings, insulating shapes or heating systems for special applications.
At the beginning of 2018 an important milestone was achieved for increasing the vertical range of manufacture with the commissioning of an in-house vacuum-forming system in Aachen for the production of PCW boards and shaped parts sold under the names UltraBoard and UltraVac (Fig. 1).
The project is running in partnership with the company ITM, which is contributing partly to the technology know-how. The investment is being made by SCHUPP® Ceramics.
The production plant has been designed in line with state-of-the-art environmental and safety standards. Insulation shapes can be machined in the dry state or consolidated by means of pre-firing at high temperature and then machined (Fig. 2). The goal is to produce three-dimensional shaped parts in Aachen. The plant design enables the processing of various bulk wools. Individually developed recipes can be included in the range in future. A pilot plant is available for this purpose (Fig. 3).
SCHUPP® Ceramics wants to further develop and consolidate its position as a supplier for products with higher value creation, without impacting its existing product range.
In this way, the company is preparing to meet future market requirements for more complex geometries and higher quality standards. The production of the PCW components at the Aachen site enables more flexibility and shorter lead times.
With this investment, the company has increased the production area to 4000 m². Goal for business year 2018 is to reach sales of EUR 12 million with 55 employees.
As improvement of the energy efficiency of high-temperature processes remains an important issue in the industry, SCHUPP® Ceramics sees for its business new applications that enable a diversification with UltraVac-formed parts made of polycrystalline mullite/alumina wool (PCW).

Optical Communication at Record-High Speed Thanks to Si_3N_4 Microresonators

Soliton frequency combs generated in optical microresonators allow to transmit data at rates of more than 50 terabits/s.

Researchers at Karlsruhe Institute of Technology (KIT) and École Polytechnique Fédérale de Lausanne (EPFL) have set a new record for optical data transmission. As reported in Nature, the team exploits optical solitons circulating in silicon nitride microresonators to generate broadband optical frequency combs. Two such superimposed frequency combs enable massive parallel data transmission on 179 wavelength channels at a data rate of more than 50 terabits/s (DOI: 10.1038/nature22387).
Optical solitons are special wave packages that propagate without changing their shape. In optical communications, solitons can be used for generating frequency combs with various spectral lines, which allow to realize particularly efficient and compact high-capacity optical communication systems. This was demonstrated recently by researchers from KIT's Institute of Photonics and Quantum Electronics (IPQ) and Institute of Microstructure Technology