CERAMITEC-Workshop at Indian Ceramics 2015:

Advances in Ceramic Raw Materials and Process Technologies

powered by: CERAMITEC 2015 Technologies | Innovations | Materials 20. – 23. Oktober 2015 | Messe München

During Indian Ceramics 2014 cfi – ceramic forum international had organized the first edition of a technical workshop. The second workshop will be headlined „Advances in Ceramic Raw Materials and Process Technologies". The seminar is powered by CERAMITEC/Messe München and will be held again at the „Innovation Exchange Area" of the fair (Fair Centre: 22 January 2015; 10.30 am to 14.00 pm). The close ties of cfi to the Indian ceramic sectors have been developed with support of ceramitec and VDMA Indian, which will be represented by Rajesh Nath in the opening speech. He will be supported by representatives of the local tile and sanitaryware manufacturing industries.

Programme

Thursday 22.01.2015

Opening Address

10.30 – 11.00 am

Karin Scharrer, Editor-in-Chief cfi – ceramic forum international, Göller Verlag/DE

Question and answer session with *Rajesh Nath,* Managing Director, VDMA India, and representatives from the ceramic manufacturing industry in India.

Technical Presentations

Tableware and Sanitaryware

11.00 – 11.20 am

Amberger Kaolinwerke – High Quality Materials for Ceramic

Hans-Jürgen Hofmann, Head of Sales Ceramics AKW/DE

AKW kaolins for ceramic applications – including feldspar, quartz and chamotte – are based on raw materials extracted from numerous deposits in Europe. The different geneses and the controlled processing enable finished products to be made according to the special requirements of the individual sector of the ceramic industry.

Proper use of quality raw materials ensures the required production properties. By dint of AKW's high plastic and white firing kaolins the company's tableware clients can definitely increase the quality. Kaolins for tiles production are specifically manufactured for the digital print and meet the required glazing surface and bring the appropriate whiteness and defined sanitary China Clays generate the necessary consistency in the casting slip and bring especially for pressure casting the decisive advantage. As a result of this varieties AKW present advantages for the different applications.

11.20 – 11.40 am

ISO Pressing Technology for Tableware and Sanitaryware

Harald Wicht, Sales Manager DORST Technologies/DE

DORST Technologies has always been one of the leading suppliers of machinery and production equipment for tableware and sanitaryware ceramics. Over decades, DORST created new ways for quality, automation and efficiency for both the pressure casting process as well as the ISO pressing technology from granulate. The company offers the entire manufacturing process from granulate production to ISO pressing technology, including a unique process control tool-system. No loss of production time, repeatable product quality and also the flashless tool technology together with programmable high speed fettling systems are the key for unmatched productivity rates.

Based on this know-how, DORST Technologies introduces impressive new applications for the ISO pressing technology for both tableware and sanitaryware.

Technical Ceramics

11.40 am – 12.00 pm

Introducing Silicon Carbide Ceramic Products and Materials

Dr Santanu Mandal, R&D, Carborundum Universal Limited – CUMI Ceramics/IN

Prathap Kumar, Business Development, Carborundum Universal Limited – CUMI Electrominerals/IN

CUMI – IC division manufactures and supplies various grades of sintered alumina, sintered-zirconia, and reaction sintered Al-titanate technical ceramics products for diversified advanced ceramic applications. CUMI presents its capabilities in reaction-bonded silicon carbide (RB-SiC) products. Regarding Si-infiltration process, precision control of input raw material and process has been designed to engineer different grades of RB-SIC products for challenging and demanding applications. Produced at CUMI's new silicon carbide line at the Industrial Ceramics Complex in Hosur Bangalore/IN, the products have found acceptance in the international market.

Further, CUMI's expertise also extends into the manufacture of ceramic raw materials and ready-to-press SiC formulations. CUMI's M-series range of SiC submicron powders are characterized by very fine and narrow particle size distributions, and offer excellent processability, optimal cycle time,

controlled shrinkage and high strength. These are manufactured at CUMI's Electro Minerals Division in Cochin/IN.
With end-to-end capabilities (ceramic materials to shaped products) and control over the entire value chain, CUMI is uniquely positioned to meet the diverse and growing needs of the advanced ceramics market, from oxide to non-oxide ceramic products and materials.

Tiles

12.00 – 12.20 pm

Grinding Media for Ceramic Nano-Ink Preparation
Raju Merani, Managing Director, Jyoti Ceramic Inds./IN
Having pioneered technical ceramics in India, Jyoti Ceramic is a renowned name in the field of technical ceramics. Over the years Jyoti Ceramic products have continued to be innovative, always excelling in quality. With a strong infrastructure including a Tool Room & R & D Laboratory equipped with latest generation equipment, testing machines etc. every product is thoroughly tested before being placed in the market.
In recent years, the quantum leap in use of digital technology for ceramic tile decoration has made it necessary for manufacturers of inkjet printing inks to ensure their inks fall within the stringent parameters required to give optimum results when used to print on ceramic.
Jyoti ceramic offers Zirconox® micro-milling beads to manufacturers of inks for digital printing on ceramic. Often referred to as "The Wonder Bead", milling with Zirconox® micro-milling beads not only reduces the milling time but also the wash time thereafter. Resulting inks fulfil all requirements such as correct narrow particle size range pigment, colour strength, suspension stability for long periods, surface tension and low viscosity.
Backed with extensive experience of over 4 decades, Jyoti Ceramic has the acumen and wherewithal to offer customized engineered solutions for individual requirements.

12.20 – 12.40 pm

Digital Ceramics – Where do We Go from Here?
Bob Bobertz, General Manager Asia Pacific, XAAR/GB
Bob Bobertz presents XAAR's latest printhead developments in digital glazing and decoration of ceramic tiles and explains how they overcome one of the final challenges to digitalizing the entire ceramic tile manufacturing process to enable tile manufacturers to achieve incredible design differentiation. He shows how the new XAAR1002 GS40 printhead – already chosen by the world's leading printer manufacturers – expands the range of fluids that can be deposited to produce strong, vibrant colours and a range of glaze effects.
Finally, B. Roberts presents the capabilities of the novel XAAR 001 printhead which is capable of jetting digital glaze and other fluids with very large particle sizes and laying down more than 200 g/m^2 on a tile. With the XAAR 001 tile manufacturers will be able to use digital techniques in new areas, such as applying textured patterns and varying patterns tile-by-tile if required.

12.40 – 13.00 pm

Esmalglass-Itaca Continues to Bring Digital Solutions for the Ceramic Industry
Juan Montero, R&D Inkjet Engineer, Esmalglass-Itaca/ES
Each day is more obvious the absolute revolution of digital technology in the world of ceramics, a revolution that started with the pigmented inks and that has proved to the producers of ceramic tiles the great productive and economical advantages. But, why only look at the advantages in digital decoration, when ceramic is much more than that? Ceramic is the addition of textures, contrasts, brightness and different feelings that are achieved by adding material. And if you get to add this material with digital systems that will allow you to decorate and glaze simultaneously and in a synchronized manner, you will be multiplying the numerous advantages of the digital technology.
That's why Esmalglass-Itaca had the objective to deposit material digitally. Giving solutions to the ceramic market, Esmalglass-Itaca can offer some new sets of inks inside digital inks. The company developed a set of inks that give higher intensity avoiding ceramic defects for the high inklaydown printheads that are coming to this market; an specific set of inks for technical porcelain, and other for double fast firing. Moreover the company presents some new colours such as cyan, green and a reddish yellow that increase the colour space.
After years of research and several tests, the company finally developed two new product families which serve to complement the digital inks that for many years have been decorating its customers' products.
Digital effects and the digital materials are designed for their application through digital systems bringing material to the ceramic and giving the possibility to the customer of creating a completely digital process. The digital effects is a submicron material, adapted to the actual printing heads. This material contains nanometric particles whose particle size distribution gives an excellent physical stability in addition to optimum performance in these heads.
Within this category one can find materials that complement the current decoration and create special effects. One can find: a white used to decorate or as a base for digital inks; a transparent shine effect designed to create areas of mate-gloss contrast; a transparent mate and a reactive sinking ink that creates small variation of level in the base glaze making micro relieves.
The digital materials are micron products, adapted to the new high inklaydown printheads. They allow weights of material superior to 100 g/m^2, even above 1 kg/m^2. These materials are water based. This large particle size compared to submicron materials is directly linked to the ceramic effect that is achieved. On the one hand, it presents a major price reduction with respect to the submicronics materials, something indispensable for the realization of his industrial use with high inklaydown. And, on the other hand, one gets to deposit digitally quantities of material that are equal to the weight deposited at the moment by bells, flat screen printing, and rolls or fumés. These two facts reinforce the idea of creating a totally digital process of ceramic production.
The digital materials family is composed by: mate white, transparent mate, transparent satin mate, a crystalline, metallic and luster. It can be applied in thick layers of material at full field, before or after the decoration, or as a design define and synchronized with the rest of the process in order to create thickening effects as in screen printing or with rollers; and even to create relieves that, at the moment, can only be done with a press mold. You can get any kind of coating comparable to the existing methods but with all the productivity advantages that brings the digital technology.
It should be noted that Esmalglass-Itaca has been studying for several years to develop this type of materials, which were made public for the first time with the Gold Alfa, won in Cevisama 2011, and therefore has patented the water-based micronic digital glaze for high inklaydown.
Both types of materials have also been optimized all the compositions to enhance the aesthetic and technical specifications required by the current ceramic, while ensuring the highest chromatic development of the inkjet Esmalglass-Itaca pigmented inks in their joint use.
The advantages of a fully digital process along with the products Esmalglass-Itaca is offering to the market are countless and cover both improvements in the product as improvements in the productive process and the management that lead to cost saving. From an aesthetic point of view we can get new finishes and structures, or make new developments in a much more agile way.
From a production point of view and management, the company will be able to reduce the length of the production line, reducing development times for new products, reduce or eliminate the consumables, typical of the traditional decorations, and will have more flexibility and speed in the change of modelling and reduce the tone variations during production with the consequent simplification of warehouses.
Finally, the digital solutions family of products by Esmalglass-Itaca goes beyond the simple digital decoration with digital colour and decorates with "material", giving to the tile manufacturer and the ceramic designer a huge range of new possibilities to create a product that is clearly differentiated and produced through a fully digital process.

13.00 – 13.20 pm

Innovation of Durst Digital Decoration Technology
Norbert von Aufschnaiter, Director Durst Ceramics Printing Division, Durst Phototechnik AG/IT
Back in 2004 Durst has started the digital revolution in the ceramic tile decoration with the introduction of the first Gamma digital printer using pigmented ceramic ink. In close cooperation with the customers Durst over the years has continued with important innovations contributing to the success of many leading ceramic tile manufacturers around the world. Durst Gamma inkjet printers have quickly become the industry standard and reference for print quality with high uniformity and strong colours, flexibility, productivity and reliability.
Now at Indian Ceramics, Durst will again demonstrate the ability to innovate with the launch of the next generation Gamma XD printer series and the presentation of the new Durst digital glaze line.

Heavy Clay Ceramics

13.20 – 13.40 pm

Modern Brick Making in India: a Profitable Investment
Miquel Moix, Sales Area Manager, Beralmar Tecnologic/ES
When it comes to the use of heavy clay construction materials, India is the world's second largest producer of bricks, but despite its huge production capacity it is worryingly losing ground against alternative construction materials, namely concrete blocks. And that is a shame, for the economical, technical and environmental advantages of modern clay materials in the face of most alternatives are evident.
The Indian brick industry is very undeveloped, labour intensive, energy inefficient and its product range – basically the 3 kg solid brick, does not offer the quality standards and features modern construction requires. In other words, while the country is moving resolutely towards the future, much of the Indian ceramic industry has gone unchanged for centuries.
While demand of solid bricks, though decreasing, should remain significant in the foreseeable future, the key to the long-term survival of the heavy clay industry lies on the efficient manufacturing of lighter hollow blocks, both in terms of energy and labour.
There are different ways towards mechanization and efficient brickmaking of value-added products, from green-field investment in European style of large production sites, to more modest approaches, which are perhaps wiser and more rapidly profitable. In this sense Beralmar has come up with a concept of plant for the Indian market for daily production of up to 200 t of hollow blocks characterized by:
- Manual to semi-automatic handling
- Moderate investment, comprising a channel dryer allowing the plant to produce during all seasons and a tunnel kiln with a flat roof
- Low operational costs thanks to the consumption of locally available solid fuels for both drying and firing.

Summary and Closing of the Workshop

13.40 – 14.00 pm

Karin Scharrer, cfi/DE