

# refractories

## Hot Topics

# WORLD FORUM

Manufacturing & Performance of High-Temperature Materials

### IMPORTANT DATES

20 – 22 January 2016

IREFCON'2016

11<sup>th</sup> India Int. Refractories Congress

Hyderabad / IN

[www.irefcon.org](http://www.irefcon.org)

14 – 15 March 2016

IMFORMED – Mineral Recycling Forum

Rotterdam / NL

[www.imformed.com](http://www.imformed.com)

29 – 31 March 2016

ACerS – St. Louis Meeting

St. Louis / US

[www.ceramics.org](http://www.ceramics.org)

26 – 28 April 2016

2<sup>nd</sup> Ceramics Expo

Cleveland / US

[www.ceramicsexpousa.com](http://www.ceramicsexpousa.com)

20 – 22 September 2016

ISR 2016 International Symposium  
on Refractories

Xi'an / CN

[www.isr2016.com](http://www.isr2016.com)

28 – 29 September 2016

International Colloquium on  
Refractories

Aachen / DE

[www.feuerfest-kolloquium.de](http://www.feuerfest-kolloquium.de)



NEWSLETTER 4/2015

## Energy Efficiency Network Established for Electrosteel

At the STAHL 2015 annual event in Düsseldorf on 12 November, representatives of eleven companies signed an agreement to establish an energy efficiency network of electrosteel producers in Germany. Goal of the network is to discuss possibilities for increasing energy efficiency in the companies based on a broad exchange of experience. Sponsor and moderator of the network is the Steel Institute VDEh. Its Chairman, Hans Jürgen Kerkhoff, who is also President of the German Steel Federation, emphasizes the relevance of the network activities: "The energy efficiency is a topic that occupies all steel companies, especially against the background of ever-rising energy costs. With the Energy Efficiency Network for Electrosteel, the possibility is provided to specifically share efficiency measures over the production route." Within the Electrosteel Energy Efficiency Network, only companies utilizing the electric arc furnace route are represented. Accordingly, relevant experience can be shared specific to this route. This is unique in the set-up of a network. Other companies in the industry have already announced the founding of and participation in networks. The Energy Efficiency Network Electrosteel is based on an agreement of the Federal German Government, industry and trade associations. This provides for the establishment of 600 new energy efficiency networks by the end of 2020.

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## Seasons Greetings

Looking back on a very interesting year in 2015 with important fairs and international congresses, I should like to thank our business partners on behalf of the team of refractories WORLD FORUM for the trustful and constructive collaboration and fruitful discussions.

The year 2015 presented us various highlights with GIFA–METEC–THERMPROCESS–NEWCAST in Duesseldorf/DE (16.–20.06.2015), UNITECR in Vienna/AT (15.–18.09.2015) and ceramitec in Munich/DE (20.–23.10.2015). We had excellent occasions to circulate refractories WORLD FORUM and received very positive feedback.

Now we are preparing the events for Q1/2016 (e.g. IREFCON/IN, ACerS – St. Louis/US).

The team of refractories WORLD FORUM wishes our worldwide readership a peaceful time to reflect as the year draws to its close and a good start in a doubtlessly again eventful new year.

Yours

Karin Scharrer

For high-performance ALUMINAS...



 **alteo**  
A NEW WORLD OF ALUMINA

Companies participating in the network are: ArcelorMittal Hamburg GmbH, Benteler Steel/Tube GmbH, BGH-Edelstahl GmbH, Deutsche Edelstahlwerke GmbH, ESF Elbe-Stahlwerke Feralpi GmbH,

Georgsmarienhütte GmbH, Lech-Stahlwerke GmbH, RIVA Stahl GmbH, Schmiedewerke Gröditz GmbH, Stahlwerk Bous GmbH, Stahlwerk Thüringen.

Further information on the network activities and on the topic of Efficiency and Steel are available at [www.effizienz-mit-stahl.de](http://www.effizienz-mit-stahl.de)

Worldwide

### Mineral Sand Market – North America Expected High Growth Rate by 2014–2020

Persistence Market Research Pvt. Ltd/US released the report „Mineral Sand Market: Global Industry Analysis and Forecast 2014 – 2020“.

The report segments the market on the basis of types, application, products, technology, etc. (as applicable) and covers geographic segmentation in: North America, Europe, Asia and rest of the world. It provides the market size and forecast for the different segments and geographies for the period 2010–2020 providing company profiles of some of the leading companies operating in the market. The report also provides porters five forces analysis of the market.

Mineral sand industry involves mining and processing of titanium dioxide and zircon products such as ilmenite, rutile and upgraded TiO<sub>2</sub> products of synthetic rutile and slag. TiO<sub>2</sub> is used as whitening pigment in paper processing, plastics and paints and coatings. TiO<sub>2</sub> is also used in welding flux wire cord and titanium metal. Zircon is used in production of ceramic tiles. Other applications for zircon are foundry and refractory castings, zirconia and zirconium chemicals which are used in nuclear rods and catalytic fuel converters.

The market for mineral sand is divided as zircon, rutile, synthetic rutile, chloride slag, sulphate slag and ilmenite among others. Rutile, synthetic rutile, chloride slag, sulphate slag and ilmenite are the products types of TiO<sub>2</sub>. Upgraded ilmenite (chloride slag, sulphate slag and synthetic rutile) had the largest market share in mineral sand industry.

The market for mineral sand was driven by substantial demand from buildings and construction industry. Titanium metal is used in aerospace and military applications. Zircon is used in manufacturing of ceramic tiles, tableware and sanitaryware among others. In addition, zirconia and zirconium-based chemicals are used in pigments, catalysts, refractory, fiber optics and electronics among others. Metal and other end-users such as aerospace and automotive are likely to provide major opportunity for the mineral sand market in upcoming years.

However, fluctuating raw material prices along with environmental regulations can have major impact on the market and is likely to hinder the growth of the market during the forecast period. In terms of demand, Asia Pacific was the leading region in mineral sandmarket.

China had the largest demand for both titanium dioxide as well as zircon owing to huge demand from

buildings and construction industry coupled with huge demand from automotive industry. However, other countries such as India, Japan and Korea are likely to exhibit more demand for mineral sand in upcoming years. Asia Pacific was followed by North America. US had the largest demand for mineral sands. The demand was huge owing to increasing demand from various applications such as ceramic tiles and flooring and sanitaryware among others.

Europe had the 3<sup>rd</sup> largest market share in mineral sand market. Growing demand from buildings and construction is driving the mineral sand market in Europe. European countries such as Germany and Great Britain were the major consumers of mineral sand in this region. However, stringent environmental regulations associated with paints and coatings industry in European Union can act as a major restraint for the market in upcoming years.

Rest of the world market is anticipated to have stable demand for minerals sand market in near future. Latin America is one of the largest markets for mineral sand in the rest of the world. Growing construction activities in the Middle East region is anticipated to offer more opportunity for mineral sand market in upcoming years. The market for mineral sand is concentrated and is dominated by global manufacturers.

Some of the key manufacturers in the mineral sand-market are Iluka Resources Ltd., Rio Tinto plc, Tronox Limited, Kenmare Resources and Vilnohirska and Irshansky. South Africa and Australia are the major producers of mineral sand across the globe.

[www.persistencemarketresearch.com/market-research/mineral-sand-market.asp](http://www.persistencemarketresearch.com/market-research/mineral-sand-market.asp)

Germany

### Hans-Joachim Konz Is New President of glasstec 2016

Hans-Joachim Konz, PhD, Executive Board Member of SCHOTT AG/DE, is President of glasstec 2016 (20–23 September 2016). In this function he is succeeding Martin Gregor Gutmann, Guild Master of the German Glazing Trade.

The glasstec presidency alternates at two-year intervals between the Federal Association of the German Glass Industry (BV Glas), which Konz also heads as its President, and the Federal Association of the German Glazing Trade (BIV). The two organisations are conceptual sponsors of glasstec, together with the German Machinery and Plant Manufacturers' Association (VDMA).

SCHOTT is a leading international technology group serving a range of markets, including, in particular,

household appliances, pharmaceuticals, electronics, optical, transport and architecture.

H.-J. Konz graduated in mechanical engineering at Aachen University (RWTH)/DE in 1985, after specialising in production engineering. Until his doctorate in 1989 he worked as a research assistant at RWTH. H.-J. Konz started his career at MAHO AG in Pfronten where he eventually headed Materials Management and Logistics.

After working for the mechanical engineering and construction company KHS Maschinenbau und Anlagenbau AG, he joined SCHOTT as Technical Manager of the Television Division until 1995. In 2003 he was appointed Chief Representative and a member of the SCHOTT Group Management. He has been on its Executive Board since 2008.

In addition to his functions in the SCHOTT Group and his presidency of BV Glas, he is a member of advisory councils at various universities and colleges, as well as a board member and member of the Committee for Research and Technology Policy of the Federation of German Industry (BDI) and also a member of BDI's Energy and Climate Policy Committee.

glasstec 2016 is a must for professionals in mechanical engineering, industry, architecture, the trade sector and solar power. Its wide-ranging additional programme includes special shows and conferences, providing added value for all visitors. [www.glasstec.de](http://www.glasstec.de)

Great Britain

### Vesuvius Trading Update

Vesuvius plc/GB, a global leader in molten metal flow engineering, released the trading update covering the period from 1 July to 18 November 2015. Sales for the year to the end of October are 5,2 % below the corresponding period last year at constant currency. Margins broadly similar to last year have been maintained. The restructuring initiatives are being enhanced and some early benefit in the 2015 results is expected. Global steel production for the year to date to September was 2,4 % lower compared to the same period last year, as reported by the World Steel Association.

Although there was growth in India, this was offset by a decline in China and EMEA and the continuing reduced levels in US production volumes. Steel producers have taken measures to preserve cash by destocking inventories, reducing purchases of consumables, curtailing production volumes and either mothballing or closing the least profitable plants. Steel producers in the US and Great Britain have



been hit particularly hard due to the strengthening of the USD and GBP, coupled with weakening demand from the oil and gas industry. This destocking effect has amplified the decline in demand for Vesuvius products over the year.

Market conditions in the global foundry industry have remained challenging, particularly in mining in the US, Brazil and Australasia. Although there has been some improvement over the quarter in light vehicle production, most notably in North America and Europe, steel foundries principally servicing capital equipment continue to be affected by the reduction in capital expenditure in all of our the company's major markets.

USA

### **Alcoa to Curtail Smelting and Refining Capacity to Further Drive Upstream Competitiveness**

Lightweight metals leader Alcoa/US has announced that it is taking decisive action to curtail uncompetitive smelting and refining capacity to ensure continued competitiveness amid prevailing market conditions. The company will reduce aluminum smelting capacity by 503 000 t/a and alumina refining capacity by 1,2 Mt/a. Alcoa will begin the curtailments in the fourth quarter of 2015 and will complete them by the end of the first quarter of 2016. Once these actions are complete, Alcoa will have closed, divested or curtailed 45 % of total smelting operating capacity since 2007.

In its aluminum business, Alcoa will idle the Intalco and Wenatchee primary aluminum smelters in Washington State, and the Massena West smelter in New York. The company will not modernize the New York Massena East smelter and will permanently close the facility; potlines at Massena East have been closed since March 2014. The cast-houses at Intalco and Massena West, which produce value-add shaped products, will continue to operate. The Alcoa Forgings and Extrusions facility in Massena is unaffected.

In its alumina business, Alcoa will partially curtail refining capacity at its Pt. Comfort, Texas facility by about 1,2 Mt/a. Once these actions are implemented, Alcoa will have curtailed or closed 673 000 t/a of uncompetitive smelting capacity and 2,5 Mt/a of uncompetitive refining capacity since its announced review of 500 000 t/a of smelting capacity and 2,8 Mt/a of refining capacity in March 2015.

As previously announced, Alcoa will separate into two, industry-leading publicly-traded companies in the second half of 2016 – an upstream-focused company including its mining, refining, smelting, energy and casting businesses, and a value-add company including its global rolled products, engineered products and solutions, and transportation and construction solutions businesses.

Worldwide

### **Mineral Recycling Renaissance: Secondary Raw Materials to Become more Mainstream Source for Buyers**

There is a sense that the recycling of industrial minerals in Europe is about to take a quantum leap during the next 5–10 years, boosted by European Commission and other initiatives, rising primary raw material costs, and the evolution of processing technology.

This trend has sparked increasing interest among certain mineral processors to invest in and develop production lines dedicated to recycling industrial mineral containing industrial wastes, or Secondary Raw Materials (SRM). This sector is expected to grow significantly over the next ten years. Leading SRM for industrial mineral markets include spent refractory bricks, steel slag, aluminium salt slag, fly ash, glass, construction products, and waste water. Recycling of some these SRMs, particularly glass, fly ash, and slag, has already been well researched and established for some years, while others like refractory bricks and aluminium salt slag have been initiated, but have been held back to a certain extent by technical and economic factors, until relatively recently.

However, the level and sophistication of their recycling is now seeing a distinct uptick and these sectors are set for expansion. Recycling of spent refractories is being pursued with particular vigour, with refractory majors such as RHI AG/AT declaring raw material substitution and recycling as an integral part of its Strategy 2020. Meanwhile, refractory recycling processors are upgrading and expanding their facilities, such as Horn & Co. Group/DE employing an automated sorting system supplied by Secopta GmbH, based on laser-induced breakdown spectroscopy (LIBS); and new plants, such as LKAB Minerals' Moerdijk refractory recycling facility in the Netherlands, which opened in May 2015 after just seven month's construction.

[www.imformed.com](http://www.imformed.com)

USA

### **CARBO Announces Idling of Proppant Facility in Millen, Georgia**

CARBO Ceramics Inc. will idle its proppant manufacturing facility in Millen, Georgia, due to reduced industry activity levels.

CEO Gary Kolstad commented: "The continued downward pressure on the commodity price for oil negatively impacts industry activity levels and the resulting demand for ceramic proppant. Similar to actions taken in the second quarter, we have decided to idle one of our facilities until such time as market conditions warrant bringing it back online. In addition, we will continue to manage the remaining output of our other proppant facilities, with a focus on managing cash and inventory levels. This

decision does not come easily, especially given the direct impact on our employees and their families, to whom we owe much of our success over the last 36 years." CARBO focuses on integrating technologies to produce engineered solutions in its fracking technology businesses.

Worldwide

### **Global Ceramic Crucible Industry 2015 Market Research Report**

The global ceramic crucible industry 2015 market research report is a professional and in-depth study on the current state of the ceramic crucible industry. It provides a basic overview of the industry including definitions, classifications, applications and industry chain structure and is provided for the international markets including development trends, competitive landscape analysis, and key regions development status.

Development policies and plans are discussed as well as manufacturing processes and cost structures are analyzed. This report also states import/export consumption, supply and demand figures, cost, price, revenue and gross margins. The report focuses on global major leading industry players providing information such as company profiles, product picture and specification, capacity, production, price, cost, revenue and contact information. Upstream raw materials and equipment as well as downstream demand analysis are also carried out. The ceramic crucible industry development trends and marketing channels are analyzed. Finally the feasibility of new investment projects are assessed and overall research conclusions offered.

With 150 tables and figures the report provides key statistics on the state of the industry and is a valuable source of guidance and direction for companies and individuals interested in the market. The

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report covers industry overview, manufacturing cost structure analysis of ceramic crucible, manufacturing plants analysis, production analysis of ceramic crucible by regions, technology and applications, sales and revenue analysis of ceramic crucible by regions, analysis of ceramic crucible production, supply, sales and market status 2010 to 2015, analysis of ceramic crucible industry key manufacturers, price and gross margin analysis, marketing trader or distributor analysis of ceramic crucible, development trends of ceramic crucible industry 2015 to 2020, industry chain suppliers of ceramic crucible with contact information, new project investment feasibility analysis of ceramic crucible.

[www.marketresearchreports.com/qyresearch/global-ceramic-crucible-industry-2015-market-research-report](http://www.marketresearchreports.com/qyresearch/global-ceramic-crucible-industry-2015-market-research-report)

China

#### Call for Papers ISR 2016

The 7<sup>th</sup> International Symposium on Refractories (ISR 2016), organized by the Chinese Society for Metals, the Chinese Ceramic Society and Sinosteel Luoyang Institute of Refractories Research Co., Ltd., will be held in Xi'an/CN on Sept. 20-22, 2016.

ISR is a regular international conference held in China every 4–5 years. ISR 2016 will provide a good opportunity for researchers, manufacturers, suppliers and users in refractory industry around the world to review the progress and achievements made in recent years, to assess new developments in refractories research, production and application to meet new challenges, and to promote further international exchange and cooperation.

ISR welcomes authors worldwide to submit an abstract before Dec. 31, 2015 to the symposium secretariat by [www.isr2016.com](http://www.isr2016.com) or by E-mail to [isr2016@csmorg.cn](mailto:isr2016@csmorg.cn)

Germany

#### Turning Coke Oven Gas into Baking Powder

ThyssenKrupp/DE and TU Berlin/DE develop new process for eco-friendly conversion of process gases – world's first pilot plant in Duisburg.

Making cookies from coal? In theory it is now possible with a completely new technology developed in a collaborative project by the Schwelgern coke plant (KBS), plant engineering company ThyssenKrupp Industrial Solutions and TU Berlin. A pilot plant installed on the works site of ThyssenKrupp Steel Europe in Duisburg produces a substance – ammonium bicarbonate – that can actually be used as baking powder. But the idea behind the project is not to enter the food industry. Main aim of the pilot plant is to convert process gases generated during the production of coke into marketable materials such as fertilizers and chemical propellants. As an added bonus, it reduces CO<sub>2</sub> emissions. The plant is the first of its kind worldwide.

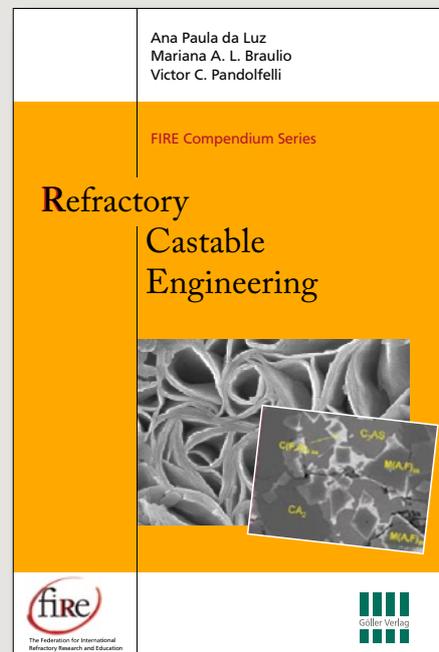
The new process starts with the coke production, alongside iron ore the most important charge material for producing pig iron in the blast furnace. The pilot plant uses a complex process to scrub the coke oven gas. Adding carbon dioxide produces ammonium bicarbonate. The end products can be put to a range of uses: as nitrogen fertilizers, as propellants and foaming agents for plastics or porous ceramics, and also in the food industry.

Following successful tests in the laboratory, two researchers from TU Berlin were tasked with building the pilot plant in Duisburg. As part of ThyssenKrupp Steel Europe's integrated iron and steel mill in Duisburg, the Schwelgern coke plant offers ideal conditions for the test phase. Initial results have been promising: 95 % of the ammonia contained in the coke oven gas was utilized. Every hour the process produces 15 kg of solid materials from 15 m<sup>3</sup> of coke oven gas and 2 m<sup>3</sup> of CO<sub>2</sub>. With this level of efficiency, the chemical products can be manufactured at competitive costs.

Schwelgern coke plant produces 2,6 Mt/a of fuel for the blast furnaces in Duisburg. It is the most modern of its kind in Europe and boasts the world's biggest ovens. It currently employs around 300 people and is operated by Betriebsführungsgesellschaft Koke-reibetriebsgesellschaft Schwelgern GmbH (KBS), a subsidiary of ThyssenKrupp Steel Europe.

#### AVAILABLE NOW!!!

752 pages; price: USD 135,00 plus postage



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# refractories WORLDFORUM

Manufacturing & Performance of High-Temperature Materials

## preview of issue 1/2016 (extract)

#### Company Profiles / Interviews

RHI/AT, CO.VE.R.I./IT, promeos/DE,  
Dong Feng/CN

#### Reports

- 6<sup>th</sup> Refractories Forum Freiberg/DE
- Review UNITECR 2015
- Review ceramitec 2015
- 1<sup>st</sup> International Conference on Alumina and Other Functional Ceramics (AOFC-2015)

#### Economy & Markets

- The Steel Industry in Germany – Global Challenges and Regional Responsibilities
- Refractories for the Incineration Industry: Industrial and Hazardous Wastes (Part 2)

#### Technology Trends

- Ladle Refractory Cost Reduction (GODO Steel/JP)
- Trends in Clean Steel Technology and Refractories Engineering (Almatis/DE)

#### Papers

- Refractory – Initiative to Reduce Emissions – FIRE (Priority Programme 1418 of the German Research Foundation)

#### Special Circulation at:

- ACerS Meeting; St. Louis/US; 29.-30.03.2016
- XIV. Int. Conf. of Refractories Makers and Metallurgists; Moscow/RU; March 2016
- Industrial Minerals Int. Congress & Exhibition; Istanbul/TR; 01.-04.04.2016
- MagForum 2016; Vienna/AT; 09.-11.05.2016
- AISTech 2016; Pittsburgh/US; 16.-19.05.2016
- Metal & Metallurgy China; Beijing/CN; 17.-20.05.2016

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