

refractories

Hot Topics

WORLD FORUM

Manufacturing & Performance of High-Temperature Materials

NEWSLETTER 2/2016

IMPORTANT DATES

12 – 14 July 2016

Aluminium China 2016

Shanghai / CN

www.aluminiumchina.com

13 – 16 September 2016

21st IAS Steel Conference and EXPO IAS 2016

Rosario / AG

www.siderurgia.org.ar/conf16/home.html

20 – 22 September 2016

ISR 2016: International Symposium
on Refractories

Xi'an / CN

www.isr2016.com

20 – 23 September 2016

glasstec

Dusseldorf / DE

www.glasstec.de

21 – 23 September 2016

ERUR – Meeting of Producers
and Users of Refractories

Pocos de Caldas / BR

www.metallum.com.br/9erur

26 – 27 September 2016

11th Global Insulation Conference
and Exhibition 2016

Hamburg / DE

www.globalinsulation.com/conferences

28 – 29 September 2016

International Colloquium on Refractories

Aachen / DE

www.feuerfest-kolloquium.de

29 September – 1 October 2016

ANKIROS – ANNOFER – TURKCAST

Istanbul / TR

www.ankiros.com

Refractories Usage in the Developing Cement and Mineral Processing Industries in 2016

In any review of the development and use of refractories in a major process industry it may be useful to consider how and perhaps why the current technology has developed as it has done. Cement is an ancient and very basic commodity, which is today manufactured by modern processes and equipment sometimes by very new companies albeit some of these current organisations having been originally founded under entirely other names by different owners. In the last few years the global cement industry has undergone very significant fundamental changes.

Two years ago the installed capacity for cement production increased around the world and the actual output also appears to have grown very slightly in total while within individual companies and even within countries fortunes have varied widely.

The United States Geological Survey suggests that cement capacity worldwide, increased in 2014 by 0,245 % to 4180 Mt. No reliable comprehensive statistics are available as yet for 2015. There has been however what is described as considerable consolidation with a series of mergers, acquisitions and disposals never seen before in the industry's long history. The effect has been to change the world rankings of cement production by country and by company and this evolutionary process is still continuing at present.

China is by far the world's largest cement producer with a capacity of 2500 Mt, with India in second place at 250 t and the USA third with just over 83 Mt. The 3 largest cement producers in the world are Lafarge Holcim, CNBM and Anhui Conch, but it is not possible in this report to list them in actual order because of all the changes still taking place. It would appear certain that Hei-

delberg, Cemex and CRH Groups have also risen up higher through the rankings in the last 12 months and it will be interesting to see the latest statistics when these are available in the near future.

In any study such as this the origins of cement are in fact partly determined by what exactly is defined as cement. For this report the term cement is used generically to cover a range of materials especially those where in the past it was a basic component in construction. Lafarge defined cement some years ago as "a hydraulic binder and the basic ingredient of concretes and mortars which over time has become a very technological group of products"

Refractories usage in cement and mineral processing industries

Refractories in general should always be designed and installed to provide wherever possible a balanced predictable economic life in the cement industry. There are many reasons for a kiln to come off stream but in the case of refractories, repara-

see page 2

tion normally includes cooling down the entire system which can be extremely problematical as well as expensive. It is therefore critically important to try and achieve campaigns of at least 12 or 24 months rather than 15 or 27 months or any other period that does not easily coincide with scheduled maintenance repairs. Because of the wide range of cement plant sizes and types it is not possible to have a standard refractories recommendation which all plants can adhere to. It is desirable however to follow general guide lines which will improve refractory life in each zone of each kiln and its ancillaries and give optimum performance and minimum cost with fewer lining outages and increased reliability. This needs a careful detailed study of each individual kiln or ancillary unit.

In line with a global trend in refractories usage across most industries the total proportion of brick in most cement plants has reduced except in the kiln itself while the total proportion of monolithics has increased. There are several reasons for this

such as the availability and cost of bricks as well as the declining availability of really skilled bricklayers. Monolithics in general are more readily available on short delivery and allow more flexibility in design and installation. They also require skilled installers but the skills are quite different to those of bricklayers. Monolithics installers require an understanding of the way chemical additives alter the rheology and properties of refractory monolithic materials, along with the ability to operate quite complex machinery as these are prerequisites for the installation of successful linings. Because monolithic refractory linings in the field have the potential for inherent variations in quality and require careful curing, drying and heating, after installation there has been a significant move to the use of precast blocks in some applications where refractories are subjected to particularly severe physical operating conditions or corrosive attack.

Sometimes with brick or even precast blocks but much more so with monolithic refractories in-

stalled in the field the initial heating when the plant is started or restarted and which is largely uncontrolled can be sufficient to cause further refractory damage. For this reason refractories which are designed to be commissioned under conditions where heat may be applied fast and unevenly may be worth paying extra for. The new generation of sol gel bonded castables may be a solution in some of these cases. These products have similar aggregates but differences in the bonding systems. The aim has been to replace calcium aluminate cement binders. This is to attempt to overcome problems associated with shelf life, curing, green strength and explosive spalling from relatively rapid and often uneven heating. It is also claimed that no-cement castables have improved hot strength, abrasion resistance and resistance to alkalis and other contaminants such as sulphur. There are still issues however with the installation regarding mixing and use of these multi component materials especially in temperature extremes.

Remark from the editor:

The full version of this report will be published in the next issue of refractories WORLDFORUM 8 (2016) [3]

Germany

EUROPEAN ALUMINIUM AWARD 2016

Presented for the 10th time, the most important prize of the aluminium industry honours the sector's innovations. The Award Ceremony will take place at ALUMINIUM 2016 in Dusseldorf on 29 November. The application deadline is 15 July 2016.

Awards will be presented in the categories Automotive, Transportation (air, rail, road, water), Architecture and Construction, Production Techniques, Tools and Machinery and Design and Lifestyle (lighting and interior, sports and leisure, computers and electronics, art and fashion). In addition, the Young Talents Award for young designers and engineers aged 30 or under will be presented again, as well.

An international jury of experts will select the nominees and winners. In the Design and Lifestyle segment, which is aimed primarily at attracting consumer lifestyle products, the winner will be selected by the visitors of the ALUMINIUM trade fair. Several changes will be introduced this year, including the further internationalisation of the award. www.aluminium-award.eu/2016

Austria

RHI AG: Results 2015

The RHI Group's revenue amounted to EUR 1752,5 million in the past financial year, after EUR 1721,2 million in the year 2014. The decline in

revenue in the Steel Division in Europe, the Middle East and North Africa was nearly compensated by a good business development in India and South America as well as positive currency translation effects resulting from the devaluation of the EUR against the USD. In the Industrial Division, the year-on-year increase in revenue by 8,5 % is, among other things, attributable to higher project deliveries in the glass and environment, energy, chemicals business units. At the same time, the cement/lime business unit benefited from a positive development of the construction sector in North America.

The operating EBIT decreased from EUR 141,9 million in the previous year to EUR 124,1 million in the financial year 2015. While the operating EBIT of the Steel Division declined due to a weaker margin development in Europe and the Middle East as well as negative product mix effects resulting from decreasing volumes in the electric arc furnace segment, the Industrial Division benefited from better utilization of fixed costs following an increase in revenue, improved margins in the glass business unit and several major repairs carried out in the nonferrous metals business unit. The Raw Materials Division's lower contribution to earnings is attributable to weaker capacity utilization at the raw material plants resulting from declining volumes in the electric arc furnace segment. In addition, the operating EBIT was affected by negative currency translation effects of EUR 8,9 million from the measurement of

balance sheet items, which are recognized under other expenses.

The EBIT amounted to EUR 37,5 million in the past financial year and includes a full write-down of the plant in Porsgrunn/NO, amounting to roughly EUR 23 million and the plant in Falconer/US, amounting to roughly EUR 8 million as well as negative effects on earnings of roughly EUR 58 million related to the change in valuation of a long-term energy supply contract concluded in the year 2011. In addition, a provision totaling roughly EUR 3 million was formed for the closure of the plant in Clydebank/GB. This is contrasted by positive effects of roughly EUR 6 million from the reversal of provisions after the sale of the premises at the site in Duisburg/DE, as well as lower closure costs at the Kretz site in Germany.

Profit after income tax thus amounted to EUR 17,6 million in the financial year 2015 after EUR 52,5 million in the previous year. Earnings per share declined from EUR 1,28 to EUR 0,40.

www.rhi-ag.com

Great Britain

Lucideon Offers Refractories Training for Industry

Lucideon is offering refractories training courses for industry. The courses are designed for refractories manufacturers, installers, suppliers, distributors, contactors and users in high temperature processes,

and will be delivered at Lucideon's Stoke-on-Trent headquarters.

The refractories training courses are offered in a series of stand-alone but complementary modules. For those requiring customized training solutions, Lucideon's experts can provide on-site courses to meet specific business requirements.

As a UKAS ISO 17025:2005 accredited testing laboratory (No. 0013), Lucideon provides a comprehensive refractories testing service to both national (BS, ASTM), international standards (ISO) and in-house, UKAS-accredited standards.

The testing services at Lucideon are wide ranging and include physical, chemical, mineralogical and thermomechanical. Lucideon also inspect and sample refractory materials on-site or before shipment to ensure materials are suitable for use and to avoid costly delays. To find out more about Lucideon's refractory training modules, visit:

www.lucideon.com/refractories-training

Germany

German Foreign Trade Award 2016

The COFERMIN Group has been awarded with the German Foreign Trade Award 2016.

This recognition which is awarded by the Federal Ministry of Economy and Energy, the Federal Association of Foreign Trade, the Association of German Chambers of Commerce and Industry, the city of Bremen and the Trade Association of Bremen every 2 years honors outstanding international engagement of small- and medium-sized German companies.

www.cofermind.de



Fig. COFERMIN managers receiving the Award

Italy

Tenova: New Corporate Campus in Castellanza

The company has invested approximately EUR 15 million in the new site, which shall host over 400 employees, an expression of the company's working approach, based on collaboration, sharing and integration of company functions. This investment is a strategic long-term choice that aims to bolster Tenova's growth and development.

„The Campus is an expression of the Tenova working approach, grounded in a heightened attention to and awareness of sharing, collaboration and the integration of different company functions“, explains Andrea Lovato, Chief Executive Office of Tenova. „This choice reflects Tenova's long-term strategic vision, focused on continuous innovation and on attracting, training and developing talents and skills capable of sustaining the company's future development“.

www.tenova.com

Germany

New Prospects for the International Colloquium on Refractories in Aachen

At the joint meeting of the Board and the Technical Advisory Board of the Association of the German Refractory Industry e.V. (VDFFI) on 7 April 2016, the Technical Advisory Council's proposal to modernise the performance of the International Colloquium on Refractories was accepted and adopted. Target for the ECREF as a host is to implement this new form starting with the 60th Colloquium, taking place on 18–19 October 2017, to increase the conference's attractiveness for the participants and visitors significantly, by focusing more strongly on the interests of the refractory industry as well as of the supplier's and user's industries.

Moreover, there is the intention to systematically integrate the associated member companies of the VDFFI e.V. in the organisation and performance of the International Colloquium on Refractories. Consequently, it makes sense to deviate from the previously alternating biennial meeting mottoes when the following topics shaped the respective events:

- Refractories for metal production, and
 - Refractories for non-metallurgical applications.
- The future biennial shall rather be determined by the following alignments:
- Refractories as a global enabling industry for high-temperature technology, and
 - Refractories as a target industry for raw materials, plant engineering and services.

The performance of the conference shall continue with the proven components, i.e. the scientific lecture, the industrial exhibition, and the award ceremony of the Gustav Eirich Award to promote the excellence of young scientists. However, these characteristic components shall additionally be enhanced by the exhibitors' social activities (e. g. receptions etc.), a poster show of scientific contributions and corporate presentations in a separate focus.

To better reflect the participants' wishes and suggestions in the future implementation of the conference, a survey will be carried out during the course of this year's event. This survey will be scientifically

monitored and evaluated accordingly. The result shall then largely determine the further form of the conference in the coming years, with the aim to present and develop further an active and effective communication platform for the global economy and science for refractory system solutions.

www.ecref.eu

China

Aluminium China 2016

In the face of increasingly volatile global commodity markets, Aluminium China 2016 will be focusing on opening up new business opportunities in the rapidly growing South East Asia markets. As one of the largest international aluminium industry events of the year, Aluminium China, from 12 -14 July at the Shanghai New International Expo Centre, will bring together the complete aluminium value chain, from raw materials to primary aluminium and semi-finished and finished products. Visitors from over 60 countries will also be able to meet end-user application providers, equipment, technology and accessories suppliers, auxiliary materials manufacturers and consultancy, support services and import-export businesses. India is named as 'Country of Honour' in new initiative to support industry growth.

www.aluminiumchina.com/en/

Germany

European Refractories and Steel Research Experts Meeting at ECREF

Within the scope of the ECSC (European Coal and Steel Community from 1952 to 2002) specific projects were funded, which focused on research activities within the steel and coal sectors, beginning on the basis of a European Economic Community (EEC). For the 1st time, technological developments

IMPRINT

Publishing House
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Aschmattstraße 8
D-76532 Baden-Baden

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were promoted in a targeted manner and developed further, thanks to comprehensive support and sponsoring of trans-European co-operation between industrial companies and universities, and other research institutions.

As a successor to the ECSC (European Coal and Steel Community) the Research Fund for Coal and Steel (RFCS) was founded in 2002 to build on the successes of the European Coal and Steel Community. It gives funding of over EUR 50 million every year to innovative projects to enhance the safety, efficiency and competitive edge of the EU coal and steel industries. This visionary common market helped unite nations, reinvigorate the European economy and lay the foundations for the European Union as we know it today.

The current and future research of the RFCS is coordinated and evaluated in a total of 9 Working Groups. The Working Group (TG) Steel 2 – Steelmaking Processes of steel experts from across Europe met on 31 May–01 June 2016 in the European Centre for Refractories (ECREF) in Höhr-Grenzhausen, on the occasion of their annual meeting. These meetings of 25 independent experts serve to coordinate and discuss ongoing research projects on topics of secondary metallurgy, where refractories play an essential role for the respective technological processes.

For this reason, the Forschungsgemeinschaft Feuerfest e.V. (FGF), with its headquarters at the ECREF (European Centre for Refractories) in Höhr-Grenzhausen, has been successfully supporting RFCS projects for many years now, together with German SMEs of the refractory industry and, thus, members of the Association of the German Refractory Industry (VDFFI e. V.).

www.ecref.eu

Germany

Nabaltec Again Posts Record-high Revenues in the 1st Quarter of 2016

Nabaltec AG published its interim report for the 1st quarter of 2016 and confirmed its preliminary estimates. The company set a new record for revenues with EUR 41,2 million in the 1st quarter of 2016, up 6,2 % from the year before. Revenues were up 14,8 % from the 4th quarter of 2015.

Growth in the 1st quarter was especially strong in the European market outside of Germany. But all across our company's divisions and product segments, the results once again made it clear that we continue to have considerable potential and that we are on the right track to exploit this potential for our earnings-oriented growth strategy."

Revenues in the business division Functional Fillers climbed from EUR 26,9 million in the first quarter of last year to EUR 28,1 million, for an increase of 4,5 %. This growth continues to be based on the very strong performance of the fine precipitated

hydroxides product segment (eco-friendly flame retardant fillers, e.g. for the cable and wire industry). The business division Technical Ceramics reported revenues of EUR 13,1 million, up 10,1 % from the same quarter of last year, when the division posted EUR 11,9 million in revenues.

Consolidated EBIT in the reporting quarter amounted to EUR 3,5 million, down from EUR 4,8 million in the same period of last year. Compared to the same period of last year, EBIT in the 1st quarter of 2016 were weighed down by the effects of changes in the EUR/USD exchange rate. EBIT improved by 25,0 % over the 4th quarter of 2015.

The EBIT margin (EBIT as a percentage of total performance) was 8,5 % after the first 3 months of 2016. EBIT came to EUR 6,2 million in the 1st quarter of 2016, down 15,1 % from the figure posted in the year before, which was inflated due to positive currency translation effects.

Earnings per share were EUR 0,22 after the first 3 months of 2016, down from EUR 0,26 in the first 3 months of 2015.

The company expects to post moderate growth for 2016 as a whole.

www.nabaltec.de

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Manufacturing & Performance of High-Temperature Materials

preview of issue 3/2016 (extract)

Reports

- Mineral Recycling Forum 2016
- ACerS Meeting St. Louis 2016
- Refractories Meeting High Tatra: Refractories, Insulation Materials and Kilns
- The XIVth International Conference of Refractories Producers and Metallurgists in Moscow

Markets & Economy

- Refractories Usage in the Developing Cement and Mineral Processing Industries in 2016

Technology News and Trends

- Green Refractories – Concepts, Approaches and Practices (Henan University/CN)
- Optimisation of the Environmental Footprint of Calcium-Aluminate-Cement-Containing Castables (Kerneos/FR)
- Effect of Dispersants and Installation Temperatures on Workability and Mechanical Properties of Self-Flowing Microsilica-Gel Bonded No-Cement Castables (ELKEM/NO)
- Experience with BSA 96 in Various Applications Five Years after Launching (Almatis/DE)

Papers

- Improvement of Gaseous Corrosion Resistance of Refractories by Pore Structure Design According to the Seepage Flow Model (Wuhan University/CN)

Special Circulation at:

- ESG 2016 Glass Conference, Sheffield/GB, 5 – 9 September 2016
- 7th Int. Symposium on Refractories 2016, Xi'an/CN, 20 – 22 September 2016
- glasstec, Dusseldorf/DE, 20 – 23 September 2016
- Int. Colloquium on Refractories, Aachen/DE, 28 – 29 September 2016
- ANKIROS – ANNOFER – TURCAST, Istanbul/TR, 29 September – 1 October 2016
- FUNDI EXPO, Queretaro/MX, 5 – 7 October 2016

Advertising Deadline: 09.08.2016

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Further media information on volume 8 (2016):

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