

refractories

Hot Topics

WORLD FORUM

Manufacturing & Performance of High-Temperature Materials

NEWSLETTER 3/2016

IMPORTANT DATES

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

03 – 07 October 2016
is-icbm2: 2nd International Symposium on
Innovative Carbon and Carbon-Based
Materials
Miskolc-Lillafured / HU
www.ic-cmtp4.eu

03 – 07 October 2016
CECE Congress – Committee for European
Construction Equipment
Prague / CZ
www.cece.eu

05 – 07 October 2016
FundExpo
Queretaro / MX
www.fundiexpo.com

17 – 20 October 2016
ALAFAR 2016
Bariloche / AR
www.alafar2016.com.ar

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Lower Consumptions by Lightening Refractories

Technologies and refractories leading to reduced energy and material consumptions are receiving more attention and importance. Two major concepts are focused, i.e. lightened aggregates and high-performance lightweight (LW) castables. LW castables are an important part of monolithic refractories, and their high performance is necessary to full play the role in energy saving and material consumption reduction. Concepts for achieving high performance are put forward, summarized as "4-Highs and 2-Lows", i.e. high purity, high strength, high service temperature, high resistance to furnace atmosphere attack, low thermal conductivity and low shrinkage at service temperature. Using suitable starting materials, LW aggregates in $Al_2O_3-SiO_2$, $MgO-SiO_2$ and $Al_2O_3-CaO-MgO$ systems can be developed, featured by hollow ball or micropored structure. They can be used as aggregates to make different LW castables. LW $Al_2O_3-SiO_2$ castables adopted as steel ladle back lining, water cooled skid and post lining of reheating furnace and back lining of tin bath hearth in the glass industry, show encouraging results. Laboratory work and in-plant trails indicate that the suggested concepts and approaches are effective.

see page 2

First Lightweight Technologies Forum in Dusseldorf at ALUMINIUM and COMPOSITES EUROPE 2016

Be it automotive engineering, aerospace or construction – advancements in lightweight material systems will increasingly transcend individual groups of materials. The new Lightweight Technologies Forum, which will be held in Dusseldorf as part of the ALUMINIUM and COMPOSITES EUROPE trade fairs from 29 November – 1 December 2016, will reflect this trend toward modern multi-material systems. Combining an exhibition and a presentation forum, the event will serve as the cross-material interface between metal and fibre-reinforced composite technologies in structural components.

In several application-focussed modules, experts will present their real-world experiences. Also on the agenda will be cross-industry thematic blocks emphasising manufacturing and production technologies such as the joining and combining of different materials.

Additional information at:
www.aluminium-messe.com
www.composites-europe.com



Increasingly serious energy and resource shortage problems worldwide have made it an extensive awareness to make every possible effort to realize energy conservation and consumption reduction. Thermal insulating performance of refractory linings is challenged by energy conservation and consumption reduction of refractories' user industries, for which the development and application of lightened refractories are drawing attentions and research interests.

Many conventional furnace linings are believed unnecessarily too dense and too heavy, unfavorable to, on the one hand, some key performances like thermal shock resistance, spalling resistance, etc. and, on the other hand, thermal insulating to reduce heat loss.

Is it necessary and possible to lighten some traditional refractories for certain applications? If the answer is yes, then how? Two major concepts are put forwarded, i.e. lightened aggregates and high-performance LW castables.

The development and application of lightened refractories can play an important role in energy saving and material consumption reduction for refractory linings. Experience sharing and application promotion are necessary to achieve lower consumptions. In the meantime, the following aspects are worth of attention and further efforts.

Firstly, the relationship between pore structure and comprehensive properties of products is worth of careful investigation so that overall compromising various properties can be realized.

Secondly lightweight is a relative concept. It is not always reasonable and necessary to make lightened refractories "the lighter, the better". The concept of lightweight and approaches to high performance can also be applied to dense refractories to reduce their weight more or less in favor of lowering energy and material consumptions. Thirdly, cost effectiveness of both LW raw materials and products should have good assurance. More available sources, better qualities and more competitive prices must be achieved as far as possible during the preparation and optimization of new lightened aggregates and the manufacture and application of the related lightened products for more acceptances and adoptions.

Remark from the editor:

The full version of this paper will be published in the next issue of refractories WORLDFORUM 8 (2016) [4]

Germany

SGL Group:

Results of the First Half of 2016

SGL Group's future core business reflects solid development in the first half-year. Recurring EBIT from continuing operations increased to EUR 9,6 million (previous year: EUR -1,9 million).

The reporting segment Composites – Fibers & Materials (CFM) made a particularly strong contribution in this regard, with recurring EBIT substantially rising to EUR 12,2 million (previous year: EUR 3,9 million) – the best result since its inception. Adjusted for one-time effects from the previous year, EBIT of Graphite Materials & Systems (GMS) also saw an increase.

Due to the legal separation and the progress in the ongoing disposal process, the business unit Performance Products (PP) has been classified as discontinued operations as of 30 June 2016. SGL Group has adjusted its guidance accordingly: the company now expects Group sales from continuing operations slightly lower than last year, accompanied by a slight increase in recurring EBIT from continuing operations.

Group sales from continuing operations amounted to EUR 379,4 million (previous year: EUR 385,3 million) in the first half of the year 2016, nearly matching the previous half-year level. In contrast, EBIT after non-recurring charges turned positive from EUR -3,3 million to EUR 9,6 million. The Group's net financing result saw a slight decline from EUR -3,2 million to EUR -25,9 million. The result from continuing operations before taxes improved to EUR -16,3 million (previous year: EUR -26,5 million); after taxes to EUR -23,0 million (previous year: EUR -27,8 million).

The earnings of Composites – Fibers & Materials (CFM) continue to grow on the back of a very good first quarter. Sales in the reporting segment CFM decreased by 2,8 % in the first half of the year 2016 to EUR 156,5 million (previous year: EUR 161,0 million).

While sales in the carbon fiber business recorded favorable growth, the acrylic fiber business despite higher volumes posted substantial lower sales based on lower raw material (acrylonitrile) prices, resulting from the depressed oil price. Recurring EBIT improved in the first half of the year to EUR 12,2 million (previous year: EUR 3,9 million). The strong results in the first quarter turned this into an all-time high for CFM. The highest earnings increase was recorded by the joint ventures with BMW Group, SGL Automotive Carbon Fibers, which have completed the start-up phase.

In addition, the Group's own carbon fiber production facilities had a high level of capacity utilization. As a result, the EBIT margin increased from 2,4 % to 7,8 % compared with last year. EBIT after non-recurring charges amounted to EUR 12,2 million (previous year: EUR 3,8 million). In the business unit CFM, higher sales of fibers and materials for composites is anticipated to offset the declining price in the textile acrylic fibers business.

Sales will therefore remain close to stable. Due to higher volumes and an improved cost position, recurring EBIT of the business unit will rise significantly. As the good result of the first half-year was attributable to a high level of invoicing in HITCO's materials business in the first quarter of 2016, the trend cannot be extrapolated to the full year.

The Graphite Materials & Systems (GMS) improved earnings before one-time effects. GMS sales, at

EUR 218,9 million, remained on the previous year's level. In particular, customers from the solar, LED and semiconductor industries in Europe and Asia had higher demand for isostatic graphite and fiber materials. In contrast, the business in North America was negatively impacted by lower demand from energy-related industries. Demand for anode material for lithium-ion batteries developed at anticipated stable level. Recurring EBIT decreased by 18,7 % to EUR 13,5 million (previous year: EUR 16,6 million) mainly due to the non-recurrence of positive one-time effects in the prior year. Excluding these one-time effects, the operating result improved by EUR 2 million due to cost savings. The EBIT margin amounted to 6,2 % (previous year: 7,6 %). EBIT after non-recurring charges amounted to EUR 13,1 million (previous year: EUR 16,0 million).

www.sglgroup.com

Peru

In Memoriam:

William H. McCracken 1923–2016

William H. "Bill" McCracken, aged 92, passed away of heart failure in Lima/PE on 7 August 2016 after suffering two mini-strokes earlier in the year. Bill McCracken was a legend in the field of refractory raw materials, and was affectionately known as "Bauxite Bill".

He spent a long career at Harbison-Walker Refractories in Pittsburgh/US and Peru (1947–1985), then at F&S International, Inc. (1985–1998) – at the time one of the leading mineral traders specialising in sourcing refractory raw materials. He evaluated refractory raw materials and their potential in more than 40 countries.

His technical knowledge of refractory minerals was extensive, deeply respected across the industry, always sought after, and always generously shared. Naturally, he was very active in participating in industry conferences, and contributed many excellent presentations, discussions, and articles to the refractories media.

Bill McCracken was one of the founders of the Asociación Latinoamericana de Fabricantes de Refractorios (ALAFAR), serving as its President on various occasions, and a prime force in the establishment of the Unified International Technical Conference on Refractories (UNITECR), with its inaugural conference in Anaheim, California, in 1989, and later served two stints as an Executive Board Member. While working in Latin America, he was responsible for establishing a subsidiary of Harbison-Walker – Refractorios Peruanos (REPSA), Peru (now independent) – of which he was its first Managing Director (1953–1972).

In 2005, REPSA celebrated its 50th Anniversary, marking the occasion with the dedication of its new R&D facility, the William J. McCracken Research Center. Bill McCracken was also recognised by the National Society of Industries and the Committee of Glass, Ceramics, Refractories and Related Products (La Sociedad Nacional de Industrias y el Comité de Vidrios, Cerámicas, Refractorios y Afines) for his long and dedicated contribution to the industry.

Bill McCracken was the recipient of many awards in recognition of his authority on refractory raw materials, which included: ACerS Fellowship, Distinguished Life Member of UNITECR, American Institute of Mining Engineers (AIME) Legion of Honor, Honorary Life Member of ALAFAR, American Ceramic Society's Albert Bleining Award (1997), and the 2007 Tredennick Award of The Refractories Institute.

Austria

RHI Group: Results of the First Half of 2016

Revenue of the RHI Group was down 8,0 % on the comparative period of 2015 and amounted to EUR 830,2 million in the first half of 2016. In the Steel Division, revenue decreased by 5,6 % especially due to a weaker business development in South America, Europe and China. In the Industrial Division, the decline in revenue by 14,4 % compared with the first half of 2015 is among other things attributable to lower deliveries in the cement/lime, glass and environment, energy, chemicals business units.

The operating EBIT amounted to EUR 70,2 million in the first half of the year. Compared with the first half of 2015, at EUR 68,6 million, this is an increase by 2,3 % despite the decrease in revenue. This development is primarily due to a highly satisfactory earnings situation in the Steel Division based on positive product mix effects, better utilization of the

production capacities resulting from the increase in sales volume as well as savings in overhead costs. Moreover, the operating EBIT of the Raw Materials Division improved significantly as a result of good capacity utilization at the two Austrian raw material plants, Breitenau and Hochfilzen, which predominantly produce basic mixes for the steel industry, especially for the use in electric arc furnaces, and lower production costs at the plant in Porsgrunn/NO. In contrast, the operating EBIT of the Industrial Division was lower than in the previous year due to a decline in revenue. The RHI Group's operating EBIT margin rose from 7,6 % in the first half of 2015 to 8,5 % in the first half of 2016.

EBIT amounted to EUR 68,8 million in the first half of this year and includes a negative earnings effect of EUR 4,6 million from the deconsolidation of the US-subsi-dary RHI Monofrax, LLC resulting from the sale to the German private equity fund Callista.

On the other hand, it also includes a positive net effect from the power supply contract in Norway. Based on own use, the sale at market prices and an increase in electricity future prices, financial liabilities of roughly EUR 3,0 million were reversed and recognized through profit or loss.

Despite the challenging market environment, the Management Board is increasing the outlook due to the positive earnings development in the first half of the year. Consequently, an operating EBIT margin of roughly 8 % is expected for the full year 2016, which corresponds to an increase by roughly one percentage point compared with the previous year. Due to the development in the customer industries, RHI is currently working on further optimizing the plant structure, which could lead to an adjustment of production capacities in Europe in the current financial year. In addition, different cost measures have been defined in the sales and general administrative departments.

www.rhi-ag.com

Germany

Nabaltec AG Receives Stifterverband's Innovative through Research Seal

As an innovative chemicals company, Nabaltec AG's company strategy is focused on research activities for the development of trailblazing products for the industry. The company's flame retardant fillers are used e.g. for cables in tunnels, airports and high-rise buildings. Nabaltec also produces technical ceramics as base materials for the refractory industry. Now, the Schwandorf-based company has been awarded the Innovative through Research Seal from the Stifterverband Association for its efforts in the field of research and development. This is the second award Nabaltec AG has received this year for innovation and research.

The quality seal is the result of a survey conducted by Stifterverband in which Nabaltec AG took part.

This survey, conducted at the behest of the Federal Ministry of Education and Research, routinely collects data about corporate research and development activities. The results of this survey are important as a basis for policymaking in particular, such as developing stimulus programs and shaping conditions for the conduct of research in Germany.

www.nabaltec.de

Slovenia/India

Seven Refractories and Dalmia Bharat Group are Preparing a Joint Venture

Seven Refractories has entered into an agreement with the refractory business of Dalmia Bharat Group to develop and supply a wide range of monolithic refractories for the Indian market.

With over sixty years of experience in refractories, Dalmia Bharat Group is a preferred partner for refractory bricks and solutions for the Indian industry, while Seven Refractories is a leading and fast growing European player in monolithic refractories. The cooperation agreement is intended to lead to a joint venture between Dalmia and Seven.



Fig. Sameer Nagpal, CEO Refractories Dalmia Bharat Group; Vladimir Bedov, Board VP Seven Refractories; and Erik Zobec, CEO Seven Refractories (f.l.t.r.)

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Publishing House
Göller Verlag GmbH
Aschmattstraße 8
D-76532 Baden-Baden

Editorial Department
Karin Scharrer (Editor-in-Chief)
Phone: +49 (0) 7221-502-241
E-mail: k.scharrer@goeller-verlag.de

Advertising Department
Corinna Zepter (Advertising Manager)
Phone: +49 (0) 7221-502-237
E-mail: c.zepter@goeller-verlag.de

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14th International Aluminium Recycling Congress

On 7–8 February 2017, the 14th International Aluminium Recycling Congress will be held at The Midland Hotel in Manchester/GB. Since 1990, the International Aluminium Recycling Congress is held every two years and represents one of the leading events in the field of aluminium recycling today.

The Congress will engage participants on topic relating to market trends, the innovative technology, applications and the latest political developments in the field of aluminium recycling and circular economy. It will also include a visit to the Hydro Aluminium Deeside Ltd plant located in Wrexham/GB. Experts from across the globe will convene at the International Aluminium Recycling Congress to discuss all aspects related to the recycling of aluminium. As always, the Congress offers an excellent platform to meet, exchange views and cultivate new relationships with representatives of across the entire aluminium chain.

european-aluminium.eu

Iran

11th Biennial Congress and 2nd International Conference of the Iranian Ceramic Society

The Iranian Ceramic Society jointly with Nirou Research Center (NRI) are organizing the 11th Biennial Congress and the 2nd International Conference on 16 – 18 May 2017.

The conference is the biggest event in ceramics in Iran, with a background of 20 years, where more than 500 participants from industry research and university are presenting their research, interests and future trends. Along with the conference, there will be an exhibition where the companies involved in ceramics production, trade and testing can demonstrate their potentials.

Congress Topics are: Ceramics in Energy, Electricity and Power Technology; Ceramics in Water and Environment Applications; Ceramics in Health and Medical Applications; Surfaces, Interfaces and Ceramic Coatings; Advanced Ceramics; Synthesis and Manufacturing Processes and Technology in the Ceramics Industry; Recent Developments in the Iranian Ceramics Industry. Deadline for abstracts submission is 5 November 2016.

www.icers.ir

Europe

European Aluminium Announced Kjetil Ebbesberg as its New Chair

In July 2016, Kjetil Ebbesberg (Hydro) took on the position of Chairman of the European Aluminium until the next General Assembly, replacing Pierre Vareille. "Under Pierre's chairmanship, European Aluminium demonstrated leadership on climate change, trade and innovation to ensure our

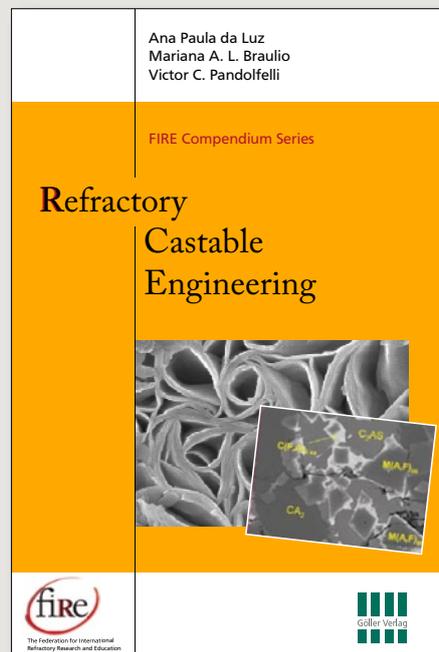
industry's long-term future in Europe," said Gerd Götz, European Aluminium General Director. "In particular, the Sustainability Roadmap launched in 2015 guides our industry's endeavour to produce and deliver aluminium in a more sustainable manner. In this respect, integrating the recycling division into European Aluminium was the decisive step that completed the full representation of the whole value chain and strengthened our work on the circular economy."

Pierre Vareille, CEO of Constellium since 2012, spent two years at the helm of the European Aluminium Executive Committee and over four years as a member. He retired from his position at Constellium, consequently resigning from his role as Chairman of European Aluminium. As Vice-Chairman of European Aluminium since 2015, Kjetil Ebbesberg will statutorily replace Pierre Vareille as Chairman until the next General Assembly.

Kjetil Ebbesberg is Executive Vice President of the Rolled Products business area at Hydro. He has worked for Hydro since 1996, including as Chief Financial Officer for Metal Products, Head of BU Foundry Alloys and EVP Metal Markets, and is a full Executive Board member of Hydro.

www.european-aluminium.eu

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Göller Verlag GmbH, Petra Blank
Phone: +49 (0) 7221-502-210
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Manufacturing & Performance of High-Temperature Materials

preview of issue 4/2016 (extract)

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- Magnesium: The Light Metal with Solid Industrial Markets and Great Future Potential

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- Lower Consumption by Lightening Refractories (Henan University/CN)
- Aluminium-Carbon Refractory Castables (University of Calcutta/IN)
- Growing Demand on Insulating Steel Ladles (Promat/CZ)
- EREMA Silicon Carbide Heating Elements for the Aluminium Industry (Tokai/IT)
- Overview of Additives for the Production of Porous Ceramic Components (Zschimmer & Schwarz/DE)

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Please contact:

Corinna Zepter, Advertising Manager
Phone: +49 (0) 7221-502-237
E-mail: c.zepter@goeller-verlag.de

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