New Challenges and Old Tools: the Refractory Dilemma

The promotion of young people for the refractories sector is an important issue. Not only the refractories industry has difficulties in finding young talents. Other sectors like glass, carbon and technical ceramics are facing the same problems. Therefore these thoughts are of interest on a much broader range for the industries and institutes, who need experts in material science and process engineering.

Either as an academic or a professional in the industry, one might wonder how to attract bright and young people to the refractory area. General and quick answers may arise such as: there are so many professional choices nowadays and bioceramics or electronic ceramics are much more appealing. But, what does the new generation expect as a professional life in the industry or at university?

Recent international surveys involving thousands of people around the world ranging from 18 to 24 years old, interviewed in pubs, parks and universities concluded that 90% of them want a job that could help the society. Besides this, only 4 out of 10 considered salary as an important factor when a new job is chosen. As a matter of fact, salary was only the seventh most important item listed. Growing fast up the hierarchy ladder and earning high wages are no longer the priority for the present generation. For them, the size and history of an organization is not a key issue when choosing a job. The main driving aspects are the values and the ability to make them dream, either carrying out a project or research. Without dreams, without a purpose, they will put their heart and soul into it. Based on these surveys, almost 50% of young people change their jobs due to the lack of challenges.

But, what can we do to seduce the young generation? Antoine de Saint-Exupéry, perhaps shed some light on this issue: “If you want to build a ship, do not gather people to collect timber and don’t assign...
them tasks and work, but rather teach them to long for the endless immensity of the sea”.

Previous generations need to be creative in order to convince present students. Creativity is related to original ideas that have value and involves using imagination to work and come up with something new, leading to new solutions for everyday problems. Creativity is applied imagination as a result of keeping our eyes wide open to see the surroundings and make the right connections. These statements are clear and valid, but don’t we do and study what the new generation is seduced by? In general, the answer is yes, but if refractory does not attract as many young people, we should ask ourselves whether we are using the right methods to market the area?

Refractory is a mature field regarding importance but also in terms of the average age of professionals working in the area. Perhaps the most difficult aspect is not for the young generation to see the refractory area with our eyes, but the opposite. As mature people we are more reluctant to changes, whereas the present generation with their energy and dreams want to be convinced and to do things their way.

Were we any different? Do I need to recall what happened in the sixties and seventies of the last century? The problem is not trying to understand young people, because it is clear what they want! The battle is for us to present them the refractory area in a way that they can be attracted!

For example, why not thinking and showing the challenges of refractory energy saving issues from an integrated point of view? High emissivity paints, slag foaming, advanced foaming spray insulating, novel ceramic burner designs made by 3D printing, etc. can be part of a holistic view of refractory subjects that will help the environment, the society and make us feel useful! How about the courses that are taught?

Are we concerned with the importance of the transversality of the knowledge? Philosophy, nanotechnology, sciences of nature, anthropology, etc. they must all be part of the package for the global professional. How could we understand and teach ethics in a broad sense, if our cosmos is limited to a nutshell? We have arguments and history to change the old and current “Dirty-Messy-Polluting” image of the refractory area for a “Clean-Green-Challenging” one.

The problem is that we are expecting the young generation to see the importance of refractory on their own, whereas the other professionals are marketing their area better.

By the way, if you are not convinced by the statements above and still think that the present generation is unique and complicated, a quotation by Roger Allen, a contemporary American writer, can explain this issue better: “In case you’re worried about what’s going to become of the younger generation, it’s going to grow up and start worrying about the younger generation.”

V. C. Pandolfelli
Federal University of São Carlos (UFSCar)
13565-905 São Carlos, SP
Brazil
E-mail: vicpando@power.ufscar.br

Spain/Switzerland
Euro PM2011 Barcelona Opens its Gates on 10th October – Basel is Already Confirmed as Venue for Euro PM2012

The Euro PM2011 International Conference and Exhibition will be held in Barcelona/ES from 10 to 12 Oct. 2011 at the ultra modern Centre de Convencions Internacional de Barcelona (CCIB). The event will have a programme of over 200 oral and poster papers that will cover all aspects of powder metallurgy including structural parts, hard materials, metal injection moulding and hot isostatic pressing.

The EPMA (European Powder Metallurgy Association) has already announced that the Euro PM2012 International Conference and Exhibition will be held in Basel/CH from 16 to 19. Sept. 2012 at the Congress Centre Basel. The event will have a programme of over oral and poster papers that will cover PM applications and new rocesses, hard materials, PIM- and HIP-technology. In addition to the main programme a number of workshops and meetings on key topics of relevance to the industry will be organized. Further information on the Euro PM Exhibition & Congresses is available by contacting Andrew Almond – aja@epma.com

China
International Symposium on Refractories 2012

The 6th International Symposium on Refractories will be held on 18 to 21 Oct. 2012 in Zhengzhou, Henan Province. It will be organized by the Chinese Ceramic Society and the Chinese Society for Metals under the topic “Refractories Serving Low Carbon Economy”.

Topics covered are:
- Refractories for the new energy industry
- Energy conservation, recycling and eco-friendly issues
- Refractories for the building materials industry
- Refractories for the metallurgical industry
- Refractories for other industries (lime, petrochemistry, incineration, ceramics, etc.)
- Refractory raw materials
- Equipment for, characterization and simulation of refractories
- Fundamentals and education

Information: Ms. Guo Tan, Fax: +86-10 6574-9474; tgu@bjruitai.com; www.bjruitai.com

Germany
Uhde Expands Hüttenerwerke

Krupp Mannesmann’s Coke Oven Plant

In late 2010 Hüttenerwerke Krupp Mannesmann (HKM) awarded Uhde a contract to build a second coke oven battery at its Duisburg Huckingen site as well as to expand the gas treatment unit and revamp the pushing machines, coal charging cars and transfer machines. This new coke oven battery will enable HKM to increase its current production from 1,16 to 2,32 Mt/yr of coke. The coke oven battery will comprise 70 large-capacity ovens; the chambers will have an effective chamber volume of 70 m³. The new coke oven plant will be equipped with the latest state of the art, including the low-NOx COMBIFLAME® heating system developed by Uhde and the PROven® single-chamber pressure control system for reducing emissions at oven closures due to leakage arising from deviations from normal operation. The expansion of the existing gas treatment unit will increase the current throughput from 75 000 to 160 000 m³/h of coke oven gas. Uhde’s services with regard to this coke oven plant project include the engineering, supply and erection of most of the overall complex. The plant is scheduled to produce its first coke in autumn 2013.

India/Japan
Krosaki Harima Buys 51 % Stake in Tata Refractories

Krosaki Harima Corp./JP has bought a 51% stake in Tata Refractories Ltd./IN from Tata Steel Ltd./IN. The deal, which values Tata Refractories at USD 257 million, will reduce Tata Steel’s stake in the refractory company to 26,46 % from 77,46 %. Tata Steel said the deal with the Japanese refractory manufacturer would help Tata Refractories access better technology and expand its product offerings.

Russia
Magneteiz Develops Environmental Programme for the Satka Production

Magneteiz Group has developed the strategic programme of environmental safety for the Satka production site for the period 2011–2020. The document states that environmental safety and preservation of nature is an absolute priority in the activity of Magneteiz Group. The total volume of capital investments in nature conservation activities in the framework of the Strategic Program amounts to RUB 5 billion. The programme contains a wide range of ecological measures for the nearest decade practically in all spheres

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news flash

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of the company’s activity. In particular, by the middle of 2011 implementation of the programme for reduction of excessive emissions will be finished ahead of schedule. It envisages measures for protection of all components of the natural environment: atmospheric air, surface and underground water, soil and vegetation in addition to the list of obligatory works approved by the regional government.

India

Kerneos to Make Industrial Investment in Calcium Aluminate Production

Following the opening of its commercial subsidiary in Kolkata in March 2008, Kerneos/FR, the world leader for calcium aluminates will build its first plant in India. This plant will accompany the increasing demand of high performing products for the refractory market to sustain the growth of the Indian steel industry. Magus Marketing Private Ltd, a well established player in the distribution of refractory materials in India, will be partner in this project. A green field sintering unit of 30 000 t/a capacity dedicated to the manufacture of calcium aluminate cements for the refractory application is being built to produce a range of high quality products specifically designed for the Indian market needs. This plant will be set-up in the area of Visakhapatnam city (Vizag) in Andhra Pradesh. The efficient access to the refractory manufacturers, the vicinity of Vizag harbour and the support of the local authorities were some of the reasons of the selection of this location. This two year project and USD 20 million investment was initiated in collaboration with an Indian engineering company, with the objective to start the production in the course of 2013. Approximately 60 employees will be recruited to manage and operate the plant.

Venezuela

Bauxilum Aiming to Export Bauxite

The Venezuelan state bauxite and alumina company Bauxilum is aiming to produce 1,4 Mt alumina from a bauxite mine in Bolívar state is aiming to export 300 000 t of bauxite. For the production process this year the company needs 4,2 Mt bauxite and the goal is to have 4,5 Mt which means that it will be able to export 300 000 t. Bauxilum is aiming to produce 1,4 Mt alumina this year and is currently looking for customers for the bauxite. There are three interested companies. The plant has an alumina capacity of 2 Mt/a but due to the lack of investments in maintenance and parts, it is not operating at full capacity. They expect to be producing 2 Mt/a by 2014. The outlook for the company has improved significantly.

Saudi Arabia

Outotec to Deliver Alumina Calcination Technology

Outotec has agreed with Ma’aden Bauxite Alumina Company, a joint venture between Saudi Arabian Mining Company (Ma’aden) and Alcoa in Saudi Arabia, on the delivery of two calciners to the joint venture’s integrated aluminium complex at Ras Al Khair (formerly Ras Az Zawr), Saudi Arabia.

The overall investment cost for the calciners is approximately EUR 62 million, out of which roughly EUR 50 million will be booked in Outotec’s order intake in the third quarter. Outotec’s scope of delivery includes process technology and design, civil work, detail engineering and construction as well as spare parts for the two alumina calciners, each with a capacity of 3500 t/d of alumina. The project is scheduled to be completed at the end of 2013.

Vietnam

Start of Alumina Production in September

Vietnam will produce the first alumina from a bauxite complex in the Central Highlands in September 2011. The country’s first alumina plant in Lam Dong province is now due to get its first product, quoting Tran Duong
Le, deputy director of the complex’s management board. Vinacomin, or the Vietnam National Coal and Mineral Industries Group, has also been developing the Nhan Co project in Lam Dong’s neighbouring province of Dak Nong, with projected initial output of 600 000 t of alumina. Vinacomin has awarded the engineering, procurement and construction contract for both the complexes in Lam Dong and Dak Nong to China Aluminium International Engineering Co (Chalieco). Chalieco is a subsidiary of state-owned Aluminium Corp of China, or Chinalco, the country’s top aluminium producer.

Vietnam’s mostly untouched bauxite ore reserves are estimated at between 5.6 billion t and 8.3 billion t, making it the world’s 3rd-largest after Guinea and Australia. Lam Dong alone is said to have more than 1 billion t.

India
National Aluminium Increases Alumina Capacity to Boost Exports
National Aluminium Co., India’s third-largest producer, increased its alumina capacity 33 % to boost exports and tap global demand. Capacity at the Damajodi refinery in the eastern state of Orissa was expanded to 2.1 Mt from 1.58 Mt. National Aluminium, based in the eastern city of Bhubaneswar, exported 702 554 t of alumina in the year ended 31 March. Shipments fell in the last two years as the company used more alumina to feed a 40 % increase in smelter capacity.

USA
Department of Health and Human Services Identifies Tungsten Carbide Cobalt as Carcinogen
Tungsten carbide-cobalt powders are key ingredients in the manufacture of hardmetal (cemented carbide) cutting and grinding tools, dies, and wear resistant products used in a broad spectrum of industries. Some 56 kt of WC-Co based products were produced globally in 2008. The US Department of Health & Human Services published its latest 12th Report on Carcinogens which now includes WC-Co in powder or sintered form as one of 240 substances that may put people at increased risk for cancer. The complete list and report is available at ntp.niehs.nih.gov/go/roc12 including the 180 page background document and the 6 page substance profile on the reasoning behind classification of WC-Co.

China
Refractories Production in 2010
The Chinese refractories production in 1949 was only 70 000 t, but that in 2010 recorded 28 Mt, accounting for over 60 % of the world’s total. The exports of China refractory materials and products were 5.93 Mt in 2010, being exported to over 100 countries and regions. The total output of China refractories in 2010 was 28,08 Mt, of which shaped products was 16,98 Mt. During 2006-2010, the output of fireclay bricks and high alumina bricks was slowing down year by year, but that of magnesia-based bricks, special refractories and unshaped refractories was gradually increasing. In China, Henan Province is the biggest production base of refractories. There are over 1000 refractories companies, with about 250 000 employees. The local refractories output in 2010 was 13,51 Mt, accounting for approximately 50 % of China’s total. Liaoning Province, famous as one of the major magnesite bases in the world, ranks the second largest production base, with 5.53 Mt of refractories output in 2010. Shandong Province is the third, with 4.4 Mt of refractories output in 2010. The main local refractory materials and products are flintclay, graphite, fireclay brick, silica brick, magnesia-carbon bricks and monolithic refractories.

Germany
Nabaltoc AG – Annual Report 2010
Nabaltoc AG, a supplier of eco-friendly fillers and additives, as well as raw materials for technical ceramics for a large number of applications in a variety of industries, published its 2010 consolidated financial statements. The provisional figures for 2010 were confirmed: revenues grew by 54,2 %, from EUR 73,1 million to EUR 112,7 million, a new record. Nabaltoc’s earnings before interest, taxes, depreciation and amortization (EBITDA) increased from EUR 3,7 million to EUR 14,3 million, and its EBIT reached EUR 6,5 million, coming after a loss of EUR 2,7 million the year before. Earnings before taxes improved from EUR 7 million to EUR 1,4 million and the consolidated result (after taxes and non-controlling interests) turned positive, improving from EUR 5 million to EUR 1,8 million. Nabaltoc Group’s liquidity and cash flow trend in 2010 was very strong, for which three factors were primarily responsible: Nabaltoc’s cash flow from operating activities increased from EUR 4,6 million to EUR 15,4 million, while cash flow from investing activities changed from EUR 20,3 million to EUR 7,5 million, as planned. Meanwhile, Nabaltoc was able to successfully place a EUR 30 million corporate bond issue in October 2010. Cash and cash equivalents increased from EUR 0,5 million to EUR 19 million and free cash flow for 2010 was EUR 7,9 million.

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