When an ‘outsider’ talks about refractories, many of them refer to bricks for a pizza oven. But for people who have spent a life inside this fascinating world of fire and stones, the refractories industry is a continuously developing universe, governed by its own internal laws of physics and chemistry (which are ineluctable but evolving as natural sciences are) and by the external laws of the macro and micro-economics, in a growingly complex and globalised system.

The above considerations are of growing importance in a macro-economic environment where globalisation very often translates into impoverishment of supplier-customer chains; offering opportunities of low-value development to third and second-world countries and forcing western economies to reduce the wealth that was once intrinsic in the industrial network. This occurs through forcing utilisation of exotic goods through the import of low-cost raw materials and finished products, depressing western manufacture and therefore generating unemployment and social issues.

Since globalisation of the economy has been for years promoted by western-led organisations, who is the winner for such a mutation in the industrialised capitalistic systems – systems which do not look good for most players?

Possibly, the real winners are large corporate multinationals able to manage both sides of the equation; these organisations have managed to exploit the ultimate raw material (cheap labour) in ‘developing countries’ through delocalisation of factories – channelling low-cost products into western networks (which already managed before the globalisation process) and capitalising most of the gap between low-cost and western prices.

Another way to take advantage of the situation is a purely commercial approach, where globalised western distribution networks acquire low-cost goods produced directly by developing countries and market them into their dominated distribution network – at a final price low just enough to kill western manufacturing, maximising the relevant commercial profit.

Very large multinational organisations manage to accrue a huge financial power that enables them to condition political decisions and regulatory organisations, which in turn determine the macro-economical environment, and so the loop closes.

In spite of consolidation occurring in the last few decades, the largest refractories companies are far from the minimum size required to determine macro-economical decisions; they cannot manage the situation, but can actively react, trying (with variable levels of success) to take advantage of their global coverage.

So, what is going on in the refractory world? Within the above described landscape, we can make a few considerations relevant to different segmentation criteria (by geography, by size, by business and so forth), with specific attention to the size parameter.

**Size segmentation: globalisation**

On top of the size segmentation stay the few big globalised companies, generally acting in multiple businesses (steel, foundry, industrial,
glass, cement and so forth) and multiple geographies; during the last big crisis these companies have done a great job in reducing overhead costs and labour incidence in the unit of product.

Their global presence has been a strong point balancing investments in the most profitable area with a strategic presence in critical regions. Through domination of strategic markets, they are able to control emerging competition and to generate customers’ loyalty by means of a strong service component and logistics capability.

Each of these few big companies has developed a specific configuration with reduced profile of direct confrontation.

The process of consolidation among these players appears to be not yet concluded (see existing rumours of merge between the Austro-German RHI AG and Brazil’s Magnesita), but the very size and structure of these businesses is the major obstacle to an easy and convenient consolidation.

The obvious trend in this segment is backward integration with the raw materials market; this is particularly evident in the area of dead burned magnesia (DBM), where there is an ongoing race to control the main sources of natural magnesite for various applications such as basic refractories.

These large companies also own the most advanced technologies; in spite of reduced financial resources, the companies can still leverage on the technological superiority and business’ service component to produce enough money (through a premium price versus low-cost sources) needed to keep alive the minimum R & D activity that is necessary, in turn, to maintain their leading position.

Despite a very painful downsizing process, these companies have proven able to survive through the devastating effects of low-cost globalised competition.

Their low-cost competitors, generally fragmented into medium to small-sized companies, have on the whole failed in the mission to develop their own technological level, since their excessive leverage on price has prevented accumulation of the financial means necessary to improve technology, equipment, quality and services.

These low-cost manufacturers are therefore compressed between low-cost sale prices and relatively high-cost inflation.

Upstream and downstream in the refractory business stay evolving markets relevant to raw materials (mostly industrial minerals) and a wide range of refractory consumers. We have already mentioned about the strategy of backward integration toward industrial minerals (magnesite, but not only) and it worth considering that a great uncertainty is present in specific segments where, like in China, major availability of industrial minerals are still under direct or indirect control of local/central governments.

Globalisation offers low-value development to countries outside of the west, but at increasing detriment to supplier-customer relationships

These governments, in turn, are still able and willing to regulate the availability and price of these resources in the interface of the global refractory industry.

On the other side – downstream – we have large users of refractories in specific geopolitical regions where, for strategic reasons, there has been resurgence in the idea of backward integration of refractory production with the consumer. This has generally been proposed in the area of state-owned steel production.

In the last several months, for example, big state-controlled steel companies in the Middle East have assessed the opportunity of developing their own refractory industry (mostly as a service company), by utilising cheap energy provided at ‘political price’ and possibly local raw materials that are currently being evaluated or re-evaluat-ed. The main obstacle to such integrated development is the availability of technology and know-how – this could be provided by the global refractory industry that is the present supplier to the local (steel) industry.

This conflict could only be resolved positively if the availability of local minerals, and their inclusion in a cooperation contract, could compensate the loss of the purely commercial market.

Small niche businesses

At the other extreme of size segmentation we have small refractory companies, often acting in a niche, usually in a single business area.

Here, the laws of natural selection have already killed off most of the inadequate profiles; small companies producing generic commodities in the west are not in the position to compete against low-cost producers, nor to resist pressure from big western companies when, trying to grow, they will pop up on their radars.

These winners exist in various refractory businesses, and it is interesting to note that these niche-holders are generally more resistant to commoditisation and attack of low-cost competitors, which privilege large volume commodities as a battlefield.

Size segmentation: the medium size

‘In medium stat virtus’, a Latin locution meaning ‘virtue is in the middle’, does not seem to apply to the refractory industry.

Medium-size companies have more intrinsic weaknesses than strong points; normally they have a significant amount of commodity products (which are under pressure from low-cost manufacturers) in order to reach their break-even point and, because they generally have a localised manufacturing structure, they have difficulty developing a global reach through their own means. Thus normally these

Chances of survival for small niche holders here are directly proportional to their capacity for innovation, servicing and retaining loyal customers. They must fill one or more application niche(s) and get to the breakeven through their capability of having a global reach instead of a limited geography.

In other words, they must be able to do something special in a very special way, supporting customers’ needs with an outstanding service and flexible logistics, with a global reach.

Very large, structured companies have difficulty responding rapidly to personalised demands of customers – particularly when the involved volumes do not reach minimum values. This is keeping the niche holders under the critical level that triggers the marketing reaction of the big players.

These winners exist in various refractory businesses, and it is interesting to note that these niche-holders are generally more resistant to commoditisation and attack of low-cost competitors, which privilege large volume commodities as a battlefield.
companies act through a network of agents, promoters and other middlemen who absorb margin and reduce their competitiveness.

Due to their basic structure, medium-size companies tend not to have a very sophisticated approach to marketing and, as a consequence of their critical financial performance, do not invest a lot in innovation and often apply a me-too approach to products and services development.

These companies, by size, are well within the radar screen of the big guys, which have almost full capability of determining their destiny. Most mid-size companies, therefore, are compressed between low-cost pressure on the commodity side and pressure from large-size companies in the area of specialities.

In the last decade we have seen several of these mid-size companies being integrated in large organisations, or undergo a serious downsizing or split in multiple niches, abandoning the commodity component and focusing on specialities and services, trying to penetrate the underlying small-company niche segment.

In the long run, the destiny of mid-size companies will most probably be to disappear from the market if they do not evolve in one of the above-mentioned ways.

It is to be noted that, from both extremes of the distribution, a great attention is (or should be) paid to avoid getting into the 'mid-size trap': small niche-holders must focus more on seamlessly doing their job and innovate following customers’ needs (and stay profitable) rather than expanding their volume.

Large companies must be concerned with keeping their 'volume protection' and market domination in their strong businesses; commodities under pressure of low-cost producers must be abandoned only if other means of reacting (delocalising, buying low-cost competition, customers' protection through loyalty actions) have failed. Merging between large companies is also a way to grant volume protection (and reduce competition).

One special note concerns the often quoted ‘low-cost suppliers’; these special players, usually localised in emerging countries, generally belong to the mid-size segment. They are surviving, so far, just because of their peculiar cost structure, mostly dependant on extremely competitive labour costs.

But, eventually, will the above considerations apply to these companies too? My opinion is yes, they will apply: most of these enterprises suffer already from very poor financial performance, so bad that in several cases they had not survived under western financial criteria. In most cases they distribute cheap products through an outsourced network of agents, promoters, distributors with low technical content, which leverage badly on price and contribute to draining margin (through commissions) to the point that often the agents make more money than the manufacturers.

Differential labour cost inflation (versus western competitors), globalised raw materials markets and increasing energy costs (and shortage) typical of developing countries are putting incremental pressure on the financial side of these low-cost, mid-size manufacturers. When they can acquire more consciousness of the financial aspect of the business, they will inevitably get into a deep review of their business model.

Only the best will eventually merge into a few large companies, and will dedicate resources to improve the level of technology, product quality to the point of reducing leverage on prices and getting to more equal competition at a global level.

The low-cost competitors, as we know, will disappear, at least from the present geographic locations. Others may appear from other places, but this is a story for the next several years to come.

General trends
It is obvious that different specific trends develop in specific refractory businesses, and in different geographic areas, but general trends apply to the refractory world as a whole.

Backward integration with the relevant industrial minerals industry is indeed a general trend, consequent to the impoverishment of the supply chain. The refractory industry is, from one side, trying to recover and integrate the supplier's margin into their own; on the other side, they try to ensure reliable and stable condition of raw material supply in a sometime turbulent environment.

Large refractories companies are, therefore, trying to integrate independent sources of raw materials and it is predictable that in future, large and multi-business raw materials companies will eventually integrate more with the refractory industry. It is in fact possible that, besides the backward integration from the refractory industry, there is a forward integration stance from the industrial minerals industry when the size of the specific supplier company makes it possible.

Inside the global refractory industry, a certain degree of consolidation is still possible, but the inevitable trend will be consolidation and capacity cut within the low-cost industry segment, where large over-capacity and low financial efficiency will undermine these companies’ very existence against serious cost inflation and growing consciousness of the financial inefficiency.

It is my opinion that low-cost refractories, as we know today, will not exist in five or ten years’ time. Instead, a few formerly low-cost players will consolidate and become companies able to compete globally for the best cost/quality ratio and not only leveraging on price.

Consumers of refractories, in front of a more balanced panel of suppliers (without hard low-cost players) will hopefully get into a more balanced approach to procurement, making it possible again for the refractory industry to develop new and better products and services.

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