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CALDERYS INDIA REFRACTORY – ISSUES AND CHALLENGES

Gurbandini Kaur
Asstt. Prof. (Economics), AIMA CME, New Delhi

Nidhi Chaudhary
Asstt. Prof. (Marketing), Ansal's University, Gurgaon

RichaDabbas
Asstt. Prof. (Marketing & IB), JIMS Rohini, New Delhi

Rinki Sharma
Head Projects – Consumer Voice

Abstract: The case has been prepared in context of the refractory industry with a company named Calderys India Refractory Limited. Calderys India is a leader in monolithic refractories in Indian Market. Calderys India delivers the best of refractory products manufactured its two production facilities in India. It is about to commission its third manufacturing plant at Gujarat. Along with its material supply, the company provides design & engineering services, installation, maintenance and repair service support as well. Calderys India is committed to deliver safer and high performing refractory solutions in a cost effective manner and providing quality products and solutions.

Our meeting with Mr Ashok Chaudhary (General Manager – Marketing Calderys India ) helped us in developing this case stressing on the strength, weakness of such industry and Calderys India Refractories in particular. Challenges related to Calderys are highlighted with probable recommendations in this case study

We are thankful to Mr.Ashok Chaudhary (GM-Marketing Calderys India) who despite of his busy schedule gave his valuable time to discuss about Refractory Business. We are also thankful for providing us general information about Calderys India. We are also thankful to other senior executives of Calderys and their MD Mr. Hakimuddin Ali for providing us with an opportunity to conduct this case study at their company.

Keywords: Refractory, SWOT Analysis, Refractory Industry Value Chain

Introduction
Refractory plays a dynamic role not only for metallurgical but also for shaping up chemical and petrochemical, glass, ceramic, cement and limestone industries. "Refractory" items according to any Standard English dictionary are materials which are hard to work with, and are especially resistant to heat and pressure. In practical terms refractories are products used for high temperature insulation and are made mainly from non-metallic minerals. They are so processed that they become resistant to the corrosive and erosive action of hot gases, liquids and solids at high temperatures, in various types of kilns and furnaces. Refractory materials are used to provide refractory lining in furnaces, kilns, incinerators, and reactors. These materials have a high melting point (greater than 1,520 degree Celsius). They are subjected to various conditions such as high temperature, abrasions and chemical corrosions, slag
attacks, and chemical reactions when they are used in refractory linings. Hence, these materials must be able to endure these conditions with less wear and tear and high reliability. The Steel industry is one of the major end-users of these materials.

**Raw Materials used and Usage**
Traditionally, refractories are made of naturally-occurring minerals, such as bauxite, kyanite, magnesite, fireclay, chrome ore, etc. Lately, however, the industry has been using man-made raw materials, such as brown-fused alumina, tabular alumina, fused magnesia, silicon carbide, magnesia alumina spinels, etc.

Some typical grades of Indian refractories which are commonly used in the furnaces, kilns in steel, cement, non-ferrous metals and glass industry are

- High Alumina Refractories
- Silica Refractories
- Castables / monolithic Refractories
- Insulating bricks

Major research work has so far been concentrated for the development of new refractory and also for its reduction in consumption for steel industries. Indian refractory industry, meanwhile, is required to upgrade their operations with global technologies which need huge investment.

**Refractory Industry Value Chain**

![Refractory Industry Value Chain Diagram]

**Industry Overview**

The Indian Refractory industry has started its journey in first line of production in Kolkata in 1874. Today the industry comprises over 100 established units and enabled large plants, 24 medium scale units and the rest in small scale sector. However, while the refractory industry in India took off in the late 19th century, the real growth came in the late 1950s when the public sector steel plants were set up and Tata Steel embarked upon its expansion plans.

Currently, the Indian refractory industry has an aggregate production capacity of 20 lakh tonnes per annum. The capacity utilization, however, currently stands at around 60 percent or 11.5-12 lakh tonnes per annum.

The size of Indian refractory industry has been pegged at Rs 2300 crores and it is stated to be growing at 8-10% per annum, although the specific consumption of the refractory industry has gone down from 30 kg per ton of steel about 20 years ago to 12-13 kgs on an average for the steel industry as a whole. However the scope for growth is good in view of continuing growth in the Indian Economy and Government focus on Infrastructure Development. The strength of this Industry lies with the superior engineering skill, high quality technology and equipment from Germany and
Italy, access to superior quality raw material resulting superior quality refractory output.

Indian creditability in terms of better price realisation in the global market also plays positive role and also help India in increasing their business worldwide.¹

**Indian Refractory Industry in Volume and Value terms**

<table>
<thead>
<tr>
<th>Item</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Production (ton)</td>
<td>1255270</td>
<td>1267175</td>
<td>1346159</td>
<td>1415081</td>
<td>1284654</td>
</tr>
<tr>
<td>Sales Turnover (Rs Lakhs)</td>
<td>322706</td>
<td>385474</td>
<td>485966</td>
<td>545822</td>
<td>569559</td>
</tr>
</tbody>
</table>

Source: IRMA (Indian Refractories Manufactures Association)

Tech Navio’s analysts forecast the Refractory Material market in India to grow at a CAGR of 9.85 percent over the period 2013-2018².

About 70% of the refractories that are manufactured find application in the steel industry, 12% in the cement industry, 5-6% in non-ferrous industries, 3% in the glass industry and balance in other industries.

The fortunes of the Refractory industry are very much dependant on steel industry as almost 70% of the refractories produced is consumed in steel industry. Steel consumption in India is expected to grow significantly in coming years as per capita finished steel consumption is far less than its regional counterparts. The growth in construction, infrastructure, automobile and power sector will continue to create significant demand for steel sector, which in turn will create demand for refractories.

**SWOT Analysis of the Refractory Industry³**

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¹A study on Indian Refractory Industry-www.academia.edu  
²TechNavio’s report, the Refractory Material Market in India 2014–2018  
³Analysis of Refractory Industry-Supply Chain perspective, report by Ashish Badyal 11/20/2012
Growth in Global Markets

Asia Pacific region constitutes the largest and fastest growing regional market for refractories, accounting for an estimated unit share of more than 70 percent. China and India are driving overall growth of Asia-Pacific in the global market. Fuelled by strong industrial production, China accounted for a major share of the global market in 2010. Iron and steel industry continues to remain the major end-use market for refractories.

With the staggering recovery from last recession in steel industry, the global refractories market will reach 59 million tonnes and $31 billion by 2015. Global demand for refractories declined during late 2008 and into 2009 as a result of the economic crisis and declining steel production and consumption.

Key market drivers in case of Refractory includes growth in the use of metal and non-metallic mineral products production; emerging markets such as China and India; and increased preference for lighter and stronger refractory materials. New and advanced products, as well as installation/repair practices, are also expected to spur global demand for refractories in the next few years.

Refractory producers in India have to rise to the occasion by providing ready, regular, speedy and consistent supplies. It would also be important for Indian refractory manufacturers to focus on their raw materials security. Industry insiders do acknowledge that raw materials security is a concern especially with China imposing quantitative restrictions on export of raw materials and also jacking up prices over the last year or so. Cheaper refractory imports from China are also putting a pressure on the industry’s margins. Hiring and retaining skilled manpower is a major challenge that the Indian refractory industry has to cope with.

Company Overview

About the Company

Calderys was formed with the merger of two Global Giants in Monolithic Refractories – Plibrico and Lafarge Refractories. With 18 production sites in 16 countries and a workforce of 2,600, Calderys is the world leader in monolithic refractories and provides value-added refractory solutions by supplying the most comprehensive range of products for the iron, steel, foundry, aluminium, cement, thermal industries and petrochemical markets. Calderys is a division of the Imerys Group – the world leader in industrial minerals, listed on the Paris Stock Exchange. Imerys group globally has a turnover of approx. 4.0 billion Euros as on December 2014. The sales turnover of Calderys globally is 550 million Euros, with the presence in 16 countries. The total Production capacity of Calderys is 600,000 tons in 18 plants. Calderys India has a turnover of Rs 600 Crores as on March 2014.

Presence in India

–Calderys has two Manufacturing facilities in India at Katni (M.P.) and Nagpur (Maharashtra). Calderys is also creating a new world class manufacturing facility at Wankaner, nearRajkot in Gujarat which is planned to be commissioned in July 2015. Almost 80% of the products which are in market are developed in house.
Apart from this, it has six Marketing Offices manned by Technical Professionals and the Product Ranges from complete Range of Monolithic, High Alumina and Insulating Bricks.

**Product Portfolio** - Calderys Product Portfolio includes Monolithics (dense and insulating castables), gunning material, plastics refractories, spray cast. They also offers alumina bricks and pre-fabricated shapes for various applications. These products are known for their performance and are result of innovative concepts and technological expertise and decades of experience in the refractory field. Calderys serves various industries like Iron & Steel, Aluminum, Foundry, Cement, Fertilizer, Refinery, Thermal Power, Petrochemical, Chemical etc.

Research and Development Centres – Calderys globally has three fully equipped R&D Centers Worldwide at:

1. Neuwied (Germany),
2. Oosterhout (The Netherlands) and
3. Nagpur (India)

**Speciality:** Calderys supports it customers in designing refractory solutions and applications to meet client’s need with the help of experienced designers using the latest 2D and 3D CAD, Pro-E drawing programs. The company has an **Exclusive Design section manned with competent personnel who are dedicated to design solutions aiming at meeting customer’s requirements and needs.**

**Why Calderys India is a leading Brand?**
Calderys globally as well as Calderys India Refractories Ltd are a leader in monolithic refractory solutions in global as well as Indian Market respectively.

Calderys India Refractories Ltd is delivering the best of Refractory products manufactured at its two production facilities in India. Along with its material supply the company provides design, installation/application and maintenance and repair service support to its clients.

Calderys globally is a leading player in refractory applications for both developing and developed markets.

**What distinguishes Calderys from others?**
Calderys offer worldwide coverage, local presence, technical expertise and significant project and installation capacities. Calderys refractory solutions help in growing business in terms of productivity, sustainability, safety and profitability.

Also following are the core competencies of the Company:

**Research- Development - Design**
Calderys has three international R&D centres and eleven international engineering offices, and dedicated project management and installation teams including ceramic, chemical, and metallurgical engineers available to meet needs in every country.

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4Source: information provided by company official
As a responsible company adopting sustainable business practices, committed to the use of new and alternative raw materials, Calderys is pioneers in both product development and installation techniques. Providing customised solutions include thermal profiling, selection of the most adapted products to match process, from the 1,500 active formulas. Calderys has developed, selection of anchoring and insulation materials, development of innovative installation techniques, and complete lining design.

Production
Calderys products are manufactured and applied worldwide under strict quality standards including quality controls at all stage including incoming raw materials, to every stage of the production cycle, to the logistics of delivering products to client site, and to tracing and monitoring them after delivery. R&D experts are constantly seeking innovative ways to improve application methods, in order to enhance the quality, reduce the labour involved, and improve safety.

Installation
Calderys deliver and install products worldwide and are well-equipped to manage complete project. Company selects, adapts and implements the right installation techniques, including detailed dry-out schedules, because skilful application contributes significantly to the monolithic refractory’s ultimate performance. Installation teams offer solutions to almost every region of the world: by using their own hi-tech equipment’s, the teams are master at the latest application techniques, and have the necessary experience to intervene on any type of project: greenfield, brownfield, maintenance, repair.

Maintenance services
Calderys gives importance to equipment’s performance and its refractory constraints and has technical knowhow and equipment’s to monitor the status. While choosing and installing refractory lining, goal is to increase overall equipment availability, reduce downtime and reduce the amount of repairs by increasing campaign lengths. Calderys in its aim to service smaller customers has launched unique Calde Serve (Service centers aimed at providing health and refractory audits, solutions from competent experts, in its ultimate goal to reduce downtime of customers and to minimise production chain stoppage in plants where refractory products are installed. Calderys maintenance includes permanent on-site refractory service, regular and predictive maintenance and repair, as well as trouble shooting and rapid round-the-clock response to emergencies. With their combined knowledge of the specificities of production process and the science of refractories, trouble-shooting experts at Calderys can “read” the cracks inside furnace or equipment assess the condition of the lining and propose the most suitable response.

Issues Faced by the Company

Over dependence on single industry namely steel:

As the fortune of refractory industry is linked to the performance of steel industry, this dependence has emerged as a challenge for the companies in the refractory business. At present steel industry is by far the biggest user of Calderys refractory
material. This sector, forms 40% of total business for Calderys and 20% business is from Cement and 40% accounted from others (Petrochemical, Fertilizers, glass, Power, ceramic, Foundris and non-ferrous metal industries). Any ups and downs, changes in government policies, global trends worldwide affects any industry thus major dependence over steel sector is also a major challenge.

**Dependence on China for procurement of raw material (bauxite):**
Procurement of quality material is always a challenge for any manufacturing company. This company is also depended on bauxite as same is a major raw material for Aluminous Refractory. Not only procurement but also critical factors are maintaining cost, consistent quality and improving the bottom. Globally China is a major player in supply of the bauxite. It has been observed globally that China is dumping sub-standard quality material. Since it comes at a low price it is another challenge for companies like Calderys India. Not only this is another trend which has been observed over the period of time is cutting supplies from China due to closure of shaft kilns (for environment and safety reasons).

**Training Need Analysis**
Training is an integral part of any organisation and essential for the growth of the company. Calderys has been giving lot of importance to Talent Management activities including Talent Development (Training & Development). The training needs for all employees are identified based on Annual Reviews of PAD (Company’s Performance management system). The training calendar is designed and planned by HR team to meet the major needs which are derived from the outputs of PAD and OPR (Succession Planning system) and discussions with Head of all functions. In recent times, the organization has given huge importance to Training & development and the focus is now shifting from Organizational Interventions clubbed with PAD and OPR inputs to Individual Development plans, keeping in mind potential career plans of employees. Average Training mandays per employee annually has increased approx. by 200% in last 2 years with the increased focus. The thrust areas in Training & Development has been developing and deploying global and local training programs based on People Development needs:

Refractory Knowledge and Application through Basic Refractory Academy and Advanced Refractory Academy (Global programs of Calderys group)

Project Management skills through Project Management Academy (Global programs of Caldery group)

Selling and marketing skills through Sales Academy (Global programs of Caldery group)

Building financial orientation for non-Finance team through Fundamentals of Finance (Global program of Imerys Learning Center)

Building management skills for 1<sup>st</sup> time managers and non MBAs through Foundation of Management (Global program of Imerys Learning Center)

Leadership Development Workshop for senior managers (Calderys India designed modules)
Negotiation skills for Non-Marketing personnel (Calderys India designed module) and host of local and global interventions aiming at Safety, Supply Chain, managerial & technical skills development.

Recommendations and Solutions:
1. To resolve the issue of high cost of raw material imported from China it is recommended to Caldeyrs India ltd to follow the path of 3 R’s where in if they try to reduce consumption of raw material by reusing and recycling of refractory, they can substantially reduce the dependence of procuring the material from outside.

2. Since Caldeyrs India Refractories ltd is solution based company which provides customised solutions to their customers so joint efforts from Caldeyrs India and their clients towards finding more innovative ways towards recycling is recommended.

3. Focus on Individual Development plans of employees coupled with Technical and Functional Trainings will support the development of employees in line with Caldeyrs Philosophy of Talent Development and Retention to meet business goals. The focus of Talent Development

Limitations
This Case study is made on the basis of collection of data collected from direct interaction with Mr.Ashok Chaudhary (General Manager –Marketing Caldeyrs India ) and Secondary data from various sources. Since Mr.Chaudhary provided us basic information about company and company’s product we could not collect any quantitative data.

We interacted with marketing division of the Company so we could not get information of Plant, Operational activities, strategy management, Finance and other major areas of the company.

We collected basic information about the company and refractory business through our interaction as company does not share any other information.

According to company official they are market leaders and serves to premium segment in the market. Due to time constraint we couldn’t compare them with other market players. Also data unavailability was another reason.

Since Refractory business is Business to Business (b2b) industrial product based which has completely different business environment and challenges. It requires more understanding and interaction with senior officials at corporate office.