

CASE STUDY

Sonata Tiles and Ceramics Pvt Ltd: Production Nitty Gritties and Challenges

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Abstract

“we are currently not facing any major challenge in the business but since we are in a kind of business where intense competition is bound to remain because Morbi (Gujarat) is heart of tiles and ceramics business in India it’s a big cluster of units here, thus incumbents are in huge number”- Mr. Patel (Promoter of Sonata Tiles and Ceramics Pvt Ltd). Sonata Tiles is a leading tiles manufacturer in Himmat Nagar city of Gujarat state. It produces various types of tiles i.e. digital printing tiles, vitrified tiles, non-vitrified tiles etc. this organization has a staff strength of around 2000 employees including production workers, it is an ISO 9001-2008 certified company with export business in the countries like south Africa, Australia and Dubai. Sonata is the parent brand and other brands of tiles from the same organization are sungress and Kingston. This case has been prepared after a visit to the production plant of sonata with the help of detailed interaction with the promoters of the brand. In this case the production process of various tiles has been elaborated based on live experience and a brief overview of Indian and Gujarat (Morbi) tiles business has been presented to assist the decision making. The intention of preparing this case was to have a practical understanding of certain management concepts like Production management, Human resource management, Waste management, Brand promotion etc.

Keywords: *Ceramics and tiles Business in India, Competition, Production management, Morbi tiles cluster.*

Highlights

Ceramic tiles today have become an integral part of home improvement. It can make a huge difference to the way your interiors and outdoors look and express. The Indian tile industry, despite an overall slowdown of the economy continues to grow at a healthy 15% per annum. Investments in the last 5 years have aggregated over Rs. 5000 crores. The overall size of the Indian ceramic tile industry is approximately Rs 18,000 crore (FY12). The production during 2011-12 stood at approx. 600 million square meters.

The Indian tile industry is divided into organized and unorganized sector. The organized sector comprises of approximately 14 players. The current size of the organized sector is about Rs 7,200 Crores. The unorganized sector accounts for nearly 60% of the total industry bearing testimony of the growth potential of this sector.

India ranks in the top 3 list of countries in terms of tile production in the world. With

proper planning and better quality control our exports (presently insignificant) contribution can significantly increase.

Background

Apart from their decorative looks, Ceramic Tiles are primarily hygiene products and that is how our broad spectrum of consumers views the product. This is fairly evident from its varied usage from bathrooms and kitchens in average Indian households to medical centers, labs, milk booths, schools, public conveniences, shopping malls and numerous other centers; which dot our day to day life. A ceramic tile is basically a "utility product" and that remains our promotional slogan. Popular housing projects are increasingly switching over to Ceramic Tiles moving away from the traditional use mosaic and even granite or marble, owing to several factors viz. ease in laying ability, versatility, low price and hygiene.

Nevertheless, this decorative aspect of a Ceramic Tiles has forever been in the forefront. Heavy churning out of bolder and colorful designs by the industry are testament to the fact that most households regard a ceramic tile as an "adornment" for an otherwise "drab look" of their age-old floorings or an unfurnished wall.

Overall Picture of Industry

Ceramic tiles as a product segment have grown to a sizeable chunk today at approximately 680 Millions Square meters production per annum. However, the potential seems to be great, particularly as the housing sector, retail, IT & BPO sectors have been witnessing an unprecedented boom in recent times.

The key drivers for the ceramic tiles in India are the boom in housing sector coupled by government policies fuelling strong growth in housing sector. The retail boom in the Indian economy has also influenced the demand for higher end products. Overall the bullish growth estimates in the Indian economy has significantly influenced the growth of the Indian Ceramic tile industry.

The main product segments are the Wall tile, Floor tile, Vitrified tile and Industrial tile segments. The market shares (in value terms) are 20%, 23%, 50%, and 7% respectively for Wall, Floor, Vitrified, and Industrial tiles. The tiles are available in a wide variety of designs, textures and surface effects. They cater to tastes as varied from rustics to contemporary marble designs in super glossy mirror finishes.

Both, traditional methods of manufacturing (tunnel) and the latest single fast firing methods are deployed in manufacturing. Some of the latest trends in manufacturing methods can be seen in India.

The industry also enjoys the unique distinction of being highly indigenous with an abundance of raw materials, technical skills, infrastructural facilities despite being fairly capital intensive. A total of over 5, 50,000 people are employed in the sector. Out of this, 50,000 people are directly employed and 5, 00,000 are indirectly

associated. The potential is huge considering the per capita consumption of ceramic tiles in India. Currently it is at 0.50 square meters per person in comparison to over 2 square meters per person for like countries like China, Brazil and Malaysia

Where We Stand and What We Must Do?

As a foreign exchange earner or a global player, Indian Tile industry has captured the attention of the world in the ceramic tiles segment. To compete internationally, our plants must be geared up to large units currently operating in China and Turkey is driven by economies of scale. These will also help us in lowering our cost of production significantly. Also, infrastructural support is a key factor that determines the speed of growth. Better infrastructure will bring in better growth in terms of consistency and sustenance. Freight, supply of power and gas remains the key cost-related issues impacting the industry. Availability, consistent supply and reasonable rates are extremely important for the growth of the ceramic tile industry.

Also, the prevailing anomalies pertaining to Basic Customs Duty on import of ceramic tiles from China and raw materials imported from abroad need to be corrected to prevent dumping of tiles from China. Rural thrust should be enhanced by favorable excise duty and MRP structure

Current Status of the Industry

The ceramic tiles industry in India has followed similar trends internationally which have been characterized by excess capacities and falling margins. Countries like Malaysia, Thailand, Indonesia, Sri Lanka and Vietnam are setting up their own plants. China has emerged as a major competitor. Producers from Spain and Italy have the advantage of lower transportation costs while exporting to USA and Germany. In India, the per capita consumption is as low as 0.50 square meters per person compared to China (2.6 square meters per person), Europe (5 to 6 square meters per person) or Brazil (3.4 square meters per person). Rising disposable incomes of the growing middle class and 40 million units of housing shortage hold out a great potential.

A major change that took over the ceramic tiles industry, was the introduction of vitrified and porcelain tiles. These new entrant product types are said to be the tiles of the future. Internationally these tiles are already the major sellers. This category of products account for almost 50% of total tile sales by value in this industry. These new products and the conventional wall & floor tiles have together made the organized industry grow to a formidable Rs. 7,200 crores industry. This coupled with a spate of expansions by many players make the industry look very promising in the future.

The Indian Industry has developed an export market although at the lower end. In volume it constitutes less than half a percent of the global market. (Presently India does not figure in the list of major exporting countries). But this reality could change as Indian exports are rising at an accelerating growth annually. The top-end of the global export market is presently dominated by China (36.8%) and Italy (15.1%)

Morbi Ceramic Cluster of Gujarat

The heart of not only Gujarat ceramic industry but also India's ceramic industry is Morbi which is located 250 Km away from Ahmedabad in Rajkot District. The main products are wall tiles, floor tiles, vitrified tiles, and sanitary ware. The cluster commands about 70% of the market share of these ceramic products. The ceramic industry's location in Morbi is based on sound logistical reasons: the basic raw materials for making ceramic products-such as various types of clay, red and black soil, minerals such as calcite/ wollastonite, and frits and glazes-are readily available either locally or from neighboring Rajasthan.

There are 459 industrial units operating in the cluster, of which 178 produce wall tiles, 52 produce floor tiles, 26 produce vitrified tiles, and 43 produce various kinds of sanitary ware. Around 40 units manufacture spray-dried mud, which is supplied to the smaller units. In addition, there are about

120 tile units that produce roofing tiles. The ceramic units may be categorized as small, medium or large, based on their production capacities.

The cluster produces 5.28 million tonnes per year (tpy) of ceramic products. Of this, tile units account for about 5.10 million tpy, and sanitary ware 0.18 million tpy. The production of roofing tiles is about 0.36 million tpy. The annual turnover of the cluster is estimated to be 100 billion (\$ 2.2 billion approx.). The cluster provides direct employment to about 68,000 people. About 50 new wall and vitrified tile units are coming up in the cluster.

Sonata Tiles and Ceramics Pvt Ltd

SONATA TILES, based on construction, was established in 2001, near SABAR dairy, Himmatnagar. It is an ISO 9001-2008 certified company. Products of Sonata are famous for Quality than other tiles manufacturers in Himmatnagar. It works with 2000 employees and supports its employees with a friendly organizational culture.

Sonata manufactures & supplies wide range of tiles such as Floor tiles, vitrified tiles, wall tiles, porceling, bron tough, parking tiles, glaze tiles, ceramic tiles & ceramic floor tiles. It deals with 25 factories & exports the product in Australia, South Africa & Dubai.

Sungres is the second product line of Sonata. Sungres focuses on designs used on tiles. As most of its functions use electricity, Sonata has its own wind mill of Rs. 4-5 crores. The detailed operations in Sonata are mentioned below:

Imports of Raw Materials

Sonata uses raw materials such as sand, stone, phosphate powder, soda ash, potassium, salt clay, hydrated red sand & sun clay for its production. These materials are imported from Russia & other countries. In India, some of these materials are bought from Rajasthan.

Approval of Raw Materials

The raw materials after loading, once stored in the backyard, are first verified in laboratory before use. This helps the final product to meet its requirements. Test results in measurement of their purity and contents present in it. Alteration in the form

or content of material is preferred if required.

The tests are carried to compare standardized characteristics with the present. Samples from the bulk of raw material are taken and justified with the standards. These standards are already mentioned in their book of contents. Even laboratory have standard outputs of each by-product of different sections, generally in form of circular biscuits, so as to verify the characteristics of every output from different sections. Vernier scale is used to jot down the dimensions of the biscuits. Weight machines for the verification of biscuits are done, in vacuum covered with glass, to come up with exact measurements. Different scales are also used for the approval of the raw materials.

Storage of Raw Materials

Once the raw materials are approved, are collected in circular tanks of required quantity. These tanks are coded with some numbers; they represent a unique identity of the mixture. Generally, mixtures have fixed containers as per the contents. Some containers might be coated to store highly acidic mixtures such as H_2SO_4 (sulphuric acid).

Manufacturing Unit

The formation of final product takes place in manufacturing unit through various processes. The complete manufacturing unit works on electricity. The work starts initially from determining correct ingredients for the product desired via methods involved in manufacturing those products via finishing of the products to packaging of the final certified product. These processes are conducted in different sections of the campus, where several machines work automatically through SCADA SOFTWARE, which follow a pre-described path or process guided by the instructor.

Thus, how this manufacturing unit works, sections are mentioned below:

Slip House

Crushing & Grinding of Raw Material

Being approved, these raw materials are

collected in a V-shaped container. A mixture of raw materials might contain some solids or clusters. Hence, V-shaped container crushes these clusters and passes this powered mixture to Boll Mill via Conveyer Belt. This powdered mixture is known as Hard Stone.

The conveyer belt is made of hard-flexible rubber with a life of approximately 5-6 years. It rotates circulatory in horizontal direction from v-shaped container to boll mill. The belt is deeper in midsection- to hold the powdered mixture such that the powder does not spread from ends while moving. Now, this powder is supplied to boll mill for further process.

The boll mill, a circularly moving huge container, runs through a circular belt that is wounded around boll mill & drives through an electronic motor. This circular belt is 1.25 inch long. It rotates vertically to rotate the boll mill continuously. Sometimes, belt tends to break if pressure is more. Also, time by time, depreciation of the belt takes place. The life of this circular belt is 1 year approximately.

Once the powder is loaded in the mill, water is continuously supplied into the mill through pipes, to convert powder into slurry. This water also helps in maintaining the temperature of the mill & save it from heating high. It takes 3 hours approximately to make slurry from powdered mixture. The capacity is of 60 tonne of liquid mixture (of powder & water).

The boll mill works on the instruction through Scada. The instructor switches on & off the buttons as per the schedule. Mill approximately works shift after shift with a difference of 4 hours a day. A shift is of 2 hours 50 minutes. Around, 1 hour is required to empty the slurry from the mill. It ranges from Rs. 1 crore to Rs. 60 crore. The boll mills are manufactured in India as well as in China, Italy and Spain. Sonata imports boll mill from China.

Extraction of Pure Material

The slurry is purified to remove the IRON content present in it. It is important to remove the iron content, as it can compound

to decay of slurry in long run. For this, the slurry is passed through magnetic rods. It extracts the iron & passes rest of the slurry into the Storage tank. The slurry moves slowly plain surface, below which magnetic rods are circulating to move the surface vertically like a downward escalator. A grey colored layer is observed. A worker is always present and continuously clears the magnetic rods when it is covered with certain amount of iron. This saves rods from corrosion and gives ease to work. This purification process of slurry takes net 50-60 minutes.

The waste (i.e. grey ironed layers) is collected aside & again sent to boll mill for slurry (still it contains some non-diluted particles). Thus, waste is converted into use. Moreover, iron reduced-slurry is headed towards storage tank. The tank is 40-50 tonne deep from ground. Further, a silicate liquid is mixed with the slurry. This does not tend the slurry to freeze during upcoming processes. Sonata overall uses 7 types of purification process and believes in updating itself with technology up-gradation.

Panel Board

Structuring of Material

The purified slurry has to be converted into powder form. This powder form will further be used as a base for the final product. Spray dryers are used to dry the slurry. The slurry is passed via a conveyer belt around the panel board. Hot air is used to drying the slurry. This heat comes from burning coal inside. The panel is covered from top to maintain heat.

Proximity Sensors are used for automatic movement of the belt. This method is preferred as it costs less. When the slurry moves from storage tank to panel board via conveyer belt, a section of belt is taken itself by sensor. The belt stops for a while. Heat is passed and again the process is repeated with post sections. Heating continues till the slurry takes form of sand-type structure.

Now, this sand is stored in tanks, namely Saylo. There are 4 tanks in Sonata. SS Blade is used, which gives power to stay dry & evaporates rest of the moisture from

the sand. These tanks have a capacity of 300 tonne & can store the mixture for 2-3 days. Coal is bought from Kutch, Morbi, Surat & Nagpur.

Creating Basis for Final Product (GAS-E-FIRE)

Fidder supplies the sand like material to the hard iron press. The press is used to form a tile type structure as a basis of final product. The press weights 4200 tonne of capacity. It means high pressure is applied on the sand mixture. The process works on sensory system. Sand & water are supplied through fidder on the base of press. Water helps in moulding the sand into tile shape (by creating moisture) & also keep the base of machine clam. As the sand & water reaches the base, sensor instructs the machine to press and within approximately 2 seconds sand takes form of a tile.

The press works on hydraulic oil (water to make oil cool). The press on the sand is supported by 200-300 power of motor. A 'dia-box-in' machine is used to press tile by wall clip. Production in a day ranges from 3200 to 3500 tiles. The thickness of baked tile can be measured through BAKER with unit of 'mm'. The weight machines determine its weights in 'kg'.

This tile base is a fresh baked sand and not even so hard to work on! Thus, this baked tile is passed via ceramic rolls to the ignition machine known as Sacmi. These ceramic rolls have a capacity of 1300-1500. Moreover, the ignition machine is used to prepare the base stronger. The baked tile is baked at high temperature. Mixture of sand & coal is used to produce fire. Fire zone consists of a burner known as Kilin. Temperature is about 1200-1300 ° C. Roller grinding machine is used to carry tiles inside the ignition machine. This roller machine breaks or corrodes after 5-6 years.

Two products lines transfer the hot baked tile base with a hot air of temperature of 110 ° C. Sonata purchases Sacmi from Italy. Now, this hot tile needs to be cooled. Water is sprayed over the material. Around 12 tanks of water are used in Sonata.

Lab Room

The lab rooms verify all the end products of individual processes. Approximately 5-6 tiles every day are selected from the slot of tiles for testing. From 1 box, 4 tiles are taken for testing that weight around 30 kg. Both quantitative & qualitative testes are carried. Tested tiles are reused in one or other work, else sold to earn some money. POT MILD is used for testing small sized tiles.

Lace Department

This department consists of small boll mill for grinding & crushing in small quantity.

Gloss on Tile

As soon as the tile starts getting cold, gloss liquid is spread over the tiles through air power. This gloss is known as FRIT. Frit is transparent-milky liquid with high viscosity. 2 layers of matt gloss are enabled over the tiles. This makes the tile surface smooth to print and even the surface shines. It's an initial stage of finishing of tiles. Moreover, an air blow is given for gloss to settle on the surface. It takes around 2-3 minutes to dry.

Printing on Tile

Design selected by customer is guided to the printing machine. After the gloss, a Chipku chemical is spread on the surface. It helps print to settle on glossy surface. The chipku solution takes few seconds to dry. It too helps to have print without any miss prints. Digital printing is done in Sonata. 'Rough machine' is used for designing the pattern on the tiles.

Printing is done in three steps: 1. First base 2. Column change 3. Negative print

Digital Upper Coating

PUG chemical is used for printing the designs. The upper coating is done for hardness over the tiles. The digital machine enables pictures of any desired ink & colour. This machine weights 6200 tonne. Mejia (China), Italy & Spain are the major exporters of digital machines.

Now, these digitalized tiles are loaded through two loading production machine lines. Thus, overall there are 4 productions

lines to divert the production from one port to the other.

What Differentiates Sonata

Technology Upgradation

Sonata believes in upgrading itself with respect to time. Their tagline: "Innovations that lead to trust. Designs that inspire creativity" justifies the intentions in innovations & creativity.

Sonata have upgraded with technology from Roller to Sensor systems. It focuses on going tend in tile designing, named "Rustic Punch".

Marketing Techniques

Sonata understands the importance of water and has its slogan as "Water is Essential". It has been marketing on e-commerce portals. Even "Shweta Tiwari, TV Actress" has been the brand ambassador for Sonata. The company is working on its expansion plant to make it up to 10 to 12 acre of land.

Credit Terms

Sonata tries to make its payments to dealers within 30-60 days of order date. Thus, it experiences good relationship with its dealers & suppliers.

Industrial Relationship

IR is between employer-employer, employer-employee & employee-employee. Sonata focuses on benefiting its employees or workers and follows worker welfare & labour protection laws. Staffs & labors consist with people who are above 18 years. Each & every worker is given Life Insurance before joining the field.

The technical staffs works in two shifts, out of which 8 hours are required to work out of 12 hours. While, labors have to be present 24*7 as production is on for 24 hours. Thus, the plant have around 250-300 workers working. Hence, each of them is given fooding & lodging services in the plant itself.

Problems Faced by Sonata

- High cut throat competition: many sellers. less buyers.
- Electricity cut offs frequently.
- Waste management.

- High tax payment (15% wt & 20% excise duty)
- No government support
- High equipment installation & maintenance costs



Exhibit IV: Anti-dumping duty makes Gujarat's Morbi ceramics sparkle [Times of India Report, 1st April 2016]

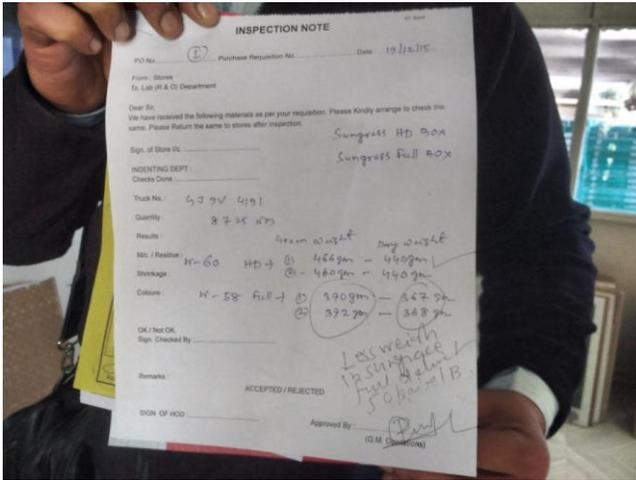


Exhibit I: Quality control/ inspection note

Ahmedabad: The anti-dumping duty on all types of vitrified tiles from China has come as a breather for the local ceramic industry, which was facing stiff competition from cheap Chinese imports. To protect local ceramic industry, government has imposed anti-dumping duty of \$1.37 per square meter on vitrified tiles from China.



Exhibit II: Moulding process

"Local tile manufacturers couldn't compete with China in Southern India, especially in Tamil Nadu and Kerala. With the anti-dumping duty, vitrified tiles from China will become 30% more expensive, providing a much-needed level playing field to us," said Nilesh Jetpariya, president of Morbi Ceramic Industry Association. The duty works out to Rs 8.25 a square foot. "As a result, Chinese vitrified tiles will get dearer by Rs 120 a box (each box has 15.50 sq feet of tiles)," he added.

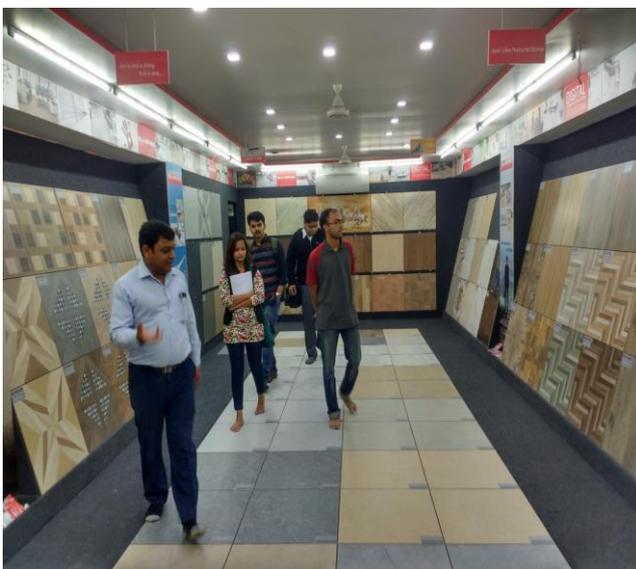


Exhibit III: Finished goods exhibition

With central and state government coming to the rescue of the beleaguered ceramic industry, the 2015-16 fiscal has proved to be a turnaround year for Gujarat's ceramic tiles makers. The state accounts for 60% of the Rs 30,000 crore Indian ceramics industry and majority of units here are located in Morbi, the largest cluster of ceramics makers in India.

As many as 350 manufacturers in Morbi had to close their units for a month in November as cheap tiles from China rendered them uncompetitive. Gujarat government also slashed value added tax (VAT) on ceramic products to 5% from 15% in this year's budget. The Union budget also cut basic

customs duty on silica sand, an important raw material for the ceramics industry, to 2.5% from 5%.

The long pending demand of the industry to allow use of coal-gassifiers for Morbi-based units has also been met by state

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government. All these have led to a significant reduction in production cost giving the industry a new lease of life [1-5].

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