Indian packaging industry

- Indian packaging industry is estimated at US$ 14 billion and growing at a rate of more than 15% annually. These figures indicate a change in the industrial and consumer set up.

- The Indian fascination for rigid packaging remains intact. It is estimated that more than 80% of the total packaging in India constitutes rigid packaging, the oldest and the most conventional form of packaging. The remaining 20% comprises flexible packaging.

- India’s per capita packaging consumption is less than US$ 15 against world wide average of nearly US$ 100.

- The large and growing Indian middle class, along with the growth in organised retail in the country, are driving demand in the packaging industry. Another factor, providing substantial stimulus to the packaging industry, is the rapid growth of exports, requiring superior packaging standards for the international market. [Source: IBEF]

Container glass industry

Overview

The Indian container glass market is estimated at 320 million euro accounting for 12% of the packaging industry. The market for container glass has been growing at a rate of 8% over the last five years. The demand in the container glass industry is driven by a growth in end-user segment like processed foods (FMCG), beverages, beer, liquor, pharmaceutical and retail.

World glass container per capita consumption (Kg.)

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>10.6</td>
</tr>
<tr>
<td>France</td>
<td>10.5</td>
</tr>
<tr>
<td>Germany</td>
<td>10.2</td>
</tr>
<tr>
<td>Spain</td>
<td>9.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>9.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>9.3</td>
</tr>
<tr>
<td>Austria</td>
<td>9.0</td>
</tr>
<tr>
<td>Poland</td>
<td>9.1</td>
</tr>
<tr>
<td>USA</td>
<td>7.6</td>
</tr>
<tr>
<td>UK</td>
<td>7.2</td>
</tr>
<tr>
<td>Hungary</td>
<td>6.9</td>
</tr>
<tr>
<td>Mexico</td>
<td>6.7</td>
</tr>
<tr>
<td>Argentina</td>
<td>6.5</td>
</tr>
<tr>
<td>Italy</td>
<td>6.4</td>
</tr>
<tr>
<td>Belgium</td>
<td>6.0</td>
</tr>
<tr>
<td>Japan</td>
<td>5.5</td>
</tr>
<tr>
<td>China</td>
<td>5.3</td>
</tr>
<tr>
<td>Thailand</td>
<td>5.0</td>
</tr>
<tr>
<td>Turkey</td>
<td>4.8</td>
</tr>
<tr>
<td>Brazil</td>
<td>4.3</td>
</tr>
<tr>
<td>India</td>
<td>1.4</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Advantage glass

- Environment friendly
- Natural product
- Lowest pollution (total life cycle) – emissions at various recycling levels are lower in glass compared to aluminium and PET
- Light and convenient
- Inertness to heat
- Inertness to ultra-violet rays
- Visibility of product
- Lowest cost (per life cycle)
- Longer re-cyclability
- Versatility of design
Growth drivers

Growing food processing industry
The Indian food market, according to the ‘India Food Report 2008’, is estimated at over US$ 182 billion, and accounts for about two thirds of the total Indian retail market. Further, according to consultancy firm McKinsey, the retail food sector in India, is likely to grow from around US$ 70 billion in 2008 to US$ 150 billion by 2025, accounting for a large chunk of the world food industry. This would grow from US$ 175 billion to US$ 400 billion by 2025, driving the demand for packaging alternatives, especially glass containers. [Source: IBEF]

Increasing rural consumption
The FMCG industry in India was worth around US$ 16.03 billion as on August 2008, and the rural market accounted for a robust 57% share of the total FMCG market in India, overtaking the urban market (43%). The rural per capita consumption of FMCGs would equal to current urban levels by 2017. Industry analysts also expect the FMCG sector in rural areas to grow 40% against 25% in urban. [Source: IBEF]

Growing beer consumption
The Indian beer industry has been witnessing steady growth of 7-9% per year over the last 10 years. The rate of growth remained steady in recent years, with volumes passing from mere 70 million cases in 2002 to 155 million cases in 2008. The Indian beer market is dominated by strong beers (>5% alcohol by volume), which accounts for 70% of the total beer industry. The premium beer market is a mere 5% of the total but this segment is rapidly expanding, touching a growth rate between 35-40%. As a result, the demand for container bottle will surge. [Source: All India Brewers’ Association]

Outlook
The Indian economy is projected to achieve a sustainable GDP growth of around 6.5% whereas the annual growth of the packaging industry is expected to double to around 20-25%. The container glass industry, which grew at a compounded annual growth rate (CAGR) of 8% over five years, is expected to grow over 8% in the future. [Source: IBEF]

The demand for container glass will grow on account of the forecasts that packaging material for beverages will mainly be of glass, especially for high quality packaging. Glass container plants will improve technology levels to produce thin and light-weighted bottles. Beer bottles should be made in more specifications, meeting the demands of customers at various levels. Based on the analysis of the current market demands at home and abroad, tubular vials for antibiotic use will increase gradually, although injection vials will still remain in the greatest demand.

Business driver – 1
Raw material resource management
At HNG, corporate sustainability is derived from an ability to steady raw material cost structures across various market cycles either by tying up with new vendors or through acquiring lease rights. The Company’s principal raw materials comprises sand (quartz), limestone (calcite), cullet (broken recyclable glass), soda ash, dolomite and feldspar. Soda ash prices constituted 49 percent of the total raw material cost (value wise), followed by cullet (25 percent), sand (12 percent) and other raw material (14 percent). The Company’s priority in this regard continued an emphasis on modest raw material cost combined with anytime availability leading to efficient, uninterrupted
production at all times.

**Highlights, 2008-09**
- Leveraged a decades-rich relationship with soda ash vendors like Magadi (East Africa), Tata Chemicals, Gujarat Heavy Chemicals and Nirma leading to stable supplies
- Widened supply sources through the enlistment of a chemical soda ash supplier from Iran
- Imported around 50 percent of its annual soda ash requirement of 100,000 tons
- Hedged against unforeseen supply disruptions through an average 20 days inventory for raw materials available in vicinity of 250 kms and 30 days inventory for other critical raw materials
- Reinforced the price-value proposition through relatively stable raw material sourcing despite price revisions
- Used natural soda ash over chemical soda ash with a corresponding price advantage of around 10 percent

**Road ahead**
- To increase quantity of imported Soda Ash from 50% to 70%
- Proposed entry into long-term (annual) contracts with vendors leading to win-win situations
- Proposed organised cullet collection from vendors, improving availability
- Proposed optimisation of logistic costs through silica procurement from captive mines located within 250 km of each plant (Prospecting Licenses applied for)

**Business driver – 2**

**Manufacturing and operations**

At HNG, our competitive edge is derived from an ability to service the growing needs of customers. In turn, this advantage is derived from its position as the largest Indian container glass manufacturer with planned growing capacities.

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**Our six manufacturing facilities**

<table>
<thead>
<tr>
<th>Rishra</th>
<th>Bahadurgarh</th>
<th>Rishikesh</th>
<th>Puducherry</th>
<th>Nashik</th>
<th>Neemrana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated batch-mixing facility</td>
<td>IS manufacturing lines</td>
<td>Two furnaces</td>
<td>One furnace</td>
<td>IS manufacturing lines</td>
<td>One furnace</td>
</tr>
<tr>
<td>IS manufacturing lines</td>
<td>On-site bottle printing facility with four decorating lines</td>
<td>Furnace II used for Green glass manufacture</td>
<td>Fully automated batch-mixing facility</td>
<td>On-site printing facility with three decoration lines</td>
<td>One furnace</td>
</tr>
<tr>
<td>On-site bottle printing facility</td>
<td>Foundry and mould workshop</td>
<td>Off-site printing facility with three decorating lines</td>
<td>On-line automatic OI inspection machines</td>
<td>On-site bottle printing facility with three decorating lines</td>
<td>One furnace</td>
</tr>
<tr>
<td>On-site mould repair shop and design facility</td>
<td>100% energy feed through captive power generating facility</td>
<td></td>
<td>On-site modern finished goods warehouse</td>
<td>Mould workshop for product design and manufacture</td>
<td></td>
</tr>
<tr>
<td>Amber, flint and green glass manufacturer</td>
<td>Amber, flint and green glass manufacturer</td>
<td></td>
<td>Sand beneficiation plant, foundry and mould workshop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Highlights, 2008-09

- Implemented vacuum pumps in production lines, enhancing output rate, quality and energy efficiency.
- Added a booster in a Bahadurgarh furnace, enhancing capacity and reducing power consumption.
- Reduced bottle weight on an average 15 percent through innovative redesign; the weight of 180 ml mcd-1 bottles declined 13 percent from 217 grams to 189 grams, 377 mcd-1 bottles declined 15 percent from 352 grams to 300 grams, 750 mcd bottles declined 16.08 percent from 628 grams to 527 grams, pickle bottles declined 7.50 percent from 200 grams to 185 grams and glucose bottles declined 10 percent.
- Drove continuous change in container bottle design, developing new products.
- Introduced Japanese technology to shrink job change and stabilisation time, enhancing capacity utilisation.
- Commenced hot end and cold end coating through lubrication for scratch resistant bottle manufacture, which increased bottle strength and longevity.
- Developed new moulds and casts to reinforce moulding and casting operations.
- Changed mould metal mix from cast iron to Minox (bronze), which increased machine speed, enhanced quality and reduced defects.
- Virtually eliminated storage breakage from an erstwhile 0.1 percent through efficient pallet stacking.
- Implemented ERP to integrate operations, planning and decision-making.

The benefits of light weighting

<table>
<thead>
<tr>
<th>Consumer benefit</th>
<th>Company benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Enhanced availability</td>
<td>• Faster production rate (productivity increased by 8–10 percent)</td>
</tr>
<tr>
<td>• Reduced transportation cost</td>
<td>• Optimum raw material use</td>
</tr>
<tr>
<td>• Accelerated bottling process</td>
<td>• Overall cost reduction</td>
</tr>
<tr>
<td>• Increased bottles per ton</td>
<td>• Increase in profitability</td>
</tr>
<tr>
<td>• Reduced price per bottle</td>
<td></td>
</tr>
<tr>
<td>• Improved bottle quality</td>
<td></td>
</tr>
<tr>
<td>• Enhanced bottle transparency</td>
<td></td>
</tr>
<tr>
<td>• Increased strength following uniform and optimum wall thickness</td>
<td></td>
</tr>
</tbody>
</table>

The science of light weighting

- Existing bottle glass is analysed
- Analysis result leads to conclusion of how much weight reduction is possible
- Bottle design is drawn such that during forming, no glass distribution related issues should arise; should have a smoothened profile making blowing easier and increasing forming efficiency
- Once the design is approved engineering commences and sample mould casting is sent for
- Internal trial is conducted (bottle performance check in the lines)
- Customer approval is sought
- After approval receipt, commercial production commences

Road ahead

- Proposed implementation of the vacuum pump across all production lines by 2009-10
- Proposed capacity expansion by 50 tonnes and 100 tonnes through the re-building of Bahadurgarh furnaces in 2009-10
- Proposed Rs. 170 cr capacity expansion from 600 TPD to 800-850 TPD in 2009-10, estimated to operationally break-even by 2010-11
- Proposed commercialisation of narrow-neck-press-and-blow (NNPB) operations across all plants leading to enhanced light weighting by 25–30 percent
- Projected commissioning of Rs. 600-cr greenfield float glass manufacturing facility in Vadodara (Gujarat) by September 2009
Business driver – 3
Quality
At HNG, quality is not an intangible virtue, but represents the convergence of all product attributes to enhance durability and progressively evolve from breakdown-maintenance to preventive maintenance philosophy.

The Company’s ISO 9000:2000 certification vindicates its quality brilliance, catering to customer specifications with inspection across 140 defect parameters, which are well within customer tolerance levels.

Highlights, 2008-09
- Tightened supervisory control on job change to enhance product quality
- Received ISO 22000 certification for food safety management systems for the Rishra and Puducherry plants
- Implemented three Six Sigma projects on quality improvements
- Conducted extensive research on customer requirements to obtain data on quality, packaging, light weighting, bottling speed and pressure, capping facility, etc; around 50 customer plants were visited to provide superior quality and customisation.
- Formed a six-member team for pre-dispatch inspection (PDI) ensuing packaging inspection and proper loading.

Road ahead
- Commence more Six Sigma projects for further quality enhancements
- Automate quality inspection for quality excellence
- Start ‘clean room production’ for pharmaceutical bottles, complying with US-FDA norms

Business driver – 4
Marketing and distribution
At HNG, dependability is derived from an ability to demonstrate container glass packaging options that are superior than competing companies and packaging alternatives on the one hand as well as making timely product deliveries on the other, leading to customer delight. This ability is derived from an ongoing quest for R&D-driven excellence and plant positions in customer-proximate locations - a holistic delivered solution.

Highlights, 2008-09
- Enhanced net value of revenue from customers
- Enhanced quality designs, service and value-for-money, driving overall sales volume by 10 percent
- Accelerated bottle light-weighting, reducing material and logistic costs
- Customised products and widened the product mix, strengthening the customer experience
- Successfully addressed the design challenge for the sophisticated ‘Gorbatschow’ liquor bottle
- Added several brand-enhancing clients like Carlsberg and John Distilleries, among others, to its formidable customer list.
- Enhanced its global footprint through a deeper presence in Europe, Asia and America

Road ahead
- Proposed market share expansion through product development, bottle light-weighting and enhanced NNPB product proportion in the corporate portfolio
- Increased export share through an entry into new geographies as well as a consolidation in the existing ones
- Proposed increase in installed capacity by around 14 percent to service growing market and consumer needs

Business driver – 5
Safety, health and environment
At HNG, manufacturing process involves several operations which can adversely impact employee safety, employee health and the surrounding environment, warranting investments in safety equipment, processes, practices and people. The Company deputed a professionally qualified safety, health and environment officer in each of its manufacturing facilities.

Highlights, 2008-09
- Conducted monthly training programmes on safety aspects
- Commenced the water re-cycle plant in which effluent water is chemically treated for gardening, cullet washing and other jobs.
- Implemented several effluent control devices to reduce water pollution
- Enhanced the number of fire extinguishers in the factories
- Conducted first-aid training programmes by St. John Ambulance at the Rishra plant
● Introduced repellents for enhanced hygiene
● Conducted yoga classes for employees and their families

Road ahead
● Become a zero discharge company
● Enhance focus on air pollution control by the implementation of modern devices
● Focus on better housekeeping

Business driver – 6
Information technology platform
At HNG, robust IT infrastructure facilitates time-critical and proactive decision-making. HNG undertook the following initiatives to remove its IT infrastructure bottlenecks:

Highlights, 2008-09
● Implemented SAP in Rishra, Bahadurgarh, Puducherry and Nashik plants, involving a Rs. 15-crore investment; the platform encompassed financial management, material management, production planning, plant maintenance and quality management to enhance organisational integration and performance
● Set up the SAP central site at the Bahadurgarh plant and a disaster recovery site at the Rishra plant
● Improved the speed of network devices – from 10/100 mbps to 1,000 mbps – at the Bahadurgarh plant for accelerated communication

Road ahead
● Introduce human resource management under the SAP platform
● Bring the Neemrana and Rishikesh plant under the SAP platform
● Improve network devices for all plants
● Introduce window deployment services (WDS) in all plants for faster IT operations

Business driver – 7
Talent management
At HNG, the most enduring capital is the sum of our people qualifications, experience and enthusiasm, reflected in a rich tradition of innovation, re-engineering, productivity and people retention.

Highlights, 2008-09
● Possessed a 2,997-member team on direct pay roll and around 3,582 contracted employees (as on March 31, 2009)
● Added 400 members in 2008-09 to service its growing capacity and customer requirements
● Maintained a prudent mix of vigour and experience
● Sustained employee retention and attendance at rates higher than industry standards
● Strengthened its training based on departmental assessments, imparted by in-house experts and also external faculty.
● Strengthened its performance appraisal framework (employee rating from 1 to 100 across parameters) linking performance with incentives.

Road ahead
● Proposed recruitment of about 60 engineers and management trainees from premier Indian institutions like the National Institute of Technology (NIT), Jadavpur University, Bengal Engineering College, Roorkee University, Delhi Engineering College, the Institute of Chartered Accountants of India and Indian Institute of Management followed by a month’s induction training
● Proposed annual appraisal by departmental heads based on KRAs communicated at the year-start
● Proposed introduction of a performance-linked incentive scheme for senior employees
Managing uncertainties at HNG

Risk is the uncertainty about events and their possible outcome that can impact performance and prospects. At HNG, our objective is to reinforce a culture of responsible risk management at all levels and functions so that risks can be estimated, controlled and countered.

<table>
<thead>
<tr>
<th>Nature of risk</th>
<th>Risk explanation</th>
<th>Risk mitigation</th>
</tr>
</thead>
</table>
| Economy risk   | Slowdown in key downstream sectors could affect demand for the Company’s products | ● The Company caters to multiple sectors (processed food, beverages, beer, liquor, pharmaceuticals and organised retail) leading to a diversified income portfolio.  
      ● The Company caters to the top 10 companies in respective sectors, outperforming the industry average  
      ● The container glass industry grew 12 percent from Rs. 4,000 cr in 2007-08 to around Rs. 4,500 cr in 2008-09 and this growth is expected to sustain |
| Competition risk | Growing competition (organised and unorganised players) could affect growth | ● The Company retained its position as India’s largest container glass player with a market share in excess of 65 percent market  
      ● Accelerated bottle light weighting to benefit consumers  
      ● Widened the product portfolio to address a broader client base |
| Profitability risk | Profitability could be affected on account of declining realisations, product stagnation or cost increase | ● The Company improved its average realisations from Rs. 14,678 per tonne in 2007-08 to Rs. 17,127 per tonne in 2008-09  
      ● Reinforced its culture of product value-addition  
      ● Retained its industry cost leadership |
| Input risk | A disruption in quality raw material availability at the right price may affect the Company’s competitive edge | ● The Company intends to extend raw material supply contracts from three months to a year  
      ● Propose to have reasonable inventory for all critical raw material depending on lead time  
      ● Propose reduction in freight cost by having exclusive agreements with transporters for movement of raw material  
      ● Strengthening raw material sourcing by widening the vendor base  
      ● Plans to acquire silica mines in the vicinity of its six manufacturing units |
| Operation risk | Operational inefficiencies could increase the Company’s cost | ● The Company reinforced its pioneering industry status through the bottle light-weighting technology  
      ● Implemented the in-plant narrow-neck-press-and-blow technology to catalyse light weighting by up to 25-30 percent  
      ● Implemented vacuum pumps in production lines, enhanced productivity, improved quality and reduced energy consumption  
      ● Introduced Japanese technology in reducing job change and stabilisation time leading to enhanced capacity utilisation |
<table>
<thead>
<tr>
<th>Nature of risk</th>
<th>Risk explanation</th>
<th>Risk mitigation</th>
</tr>
</thead>
</table>
| Quality risk  | Inconsistent product quality can lead to client attrition | ● The Company possesses ISO 9000:2000 quality certification and is actively pursuing ISO 14000/18000/22000 certifications  
● Invested in sophisticated laboratories equipped with cutting-edge equipment (atomic absorption spectrophotometer, flame photometer, ramp pressure tester, vertical load tester, profile projector, impact tester and automatic thermal shock tester)  
● Stringent monitoring reduced rejections |
| Marketing risk | The Company may find it difficult to capitalise on emerging opportunities due to weak marketing | ● The Company enjoys a decades-rich relationship with its clients  
● Enjoys a 26-nation presence to be increased further in the financial year 2009-10  
● Deepened its global footprint in Europe, Asia and America. |
| Liquidity risk | A liquidity crunch could hamper operations | ● Reduced debtors’ cycle  
● Strengthened creditors’ period optimising working capital use  
● Sustained the working capital cycle |
| People risk   | A lack of skilled professionals could affect growth | ● The Company is continuously recruiting new professionals to drive its growth  
● Strengthened training at all levels  
● Enhanced employee retention to more than 95 percent |
| Funding risk  | An inability to mobilise adequate low-cost funds may stagger growth | ● The Company enjoyed a 0.36 debt-equity ratio, considered adequate to fund prospective expansions  
● Maintained a Rs. 917.71 cr reserve as on March 31, 2009; free reserves constituted 87.33 percent of the reserves and surplus balance as on March 31, 2009  
● Enjoyed a prudent mix of secured and unsecured loans |