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- Since 2011, formal cooperation with the AIGMF and Kanch with the goal of providing the Indian sub-continent with the best possible forum for the exchange of news and views between glass manufacturers and their suppliers. Glass Worldwide's international readership also benefits from being informed about the latest developments from the important Indian market.



The image features a background of overlapping green triangles in various shades, creating a dynamic, abstract pattern. In the bottom left corner, there is a blue oval logo with the white text "AIGMF". In the bottom right corner, the text "glass" is written in a blue, lowercase, sans-serif font, with "WORLDWIDE" in a smaller, blue, uppercase, sans-serif font directly below it. A small blue globe icon is positioned between the two words.

Children's vision of 'Glass Protects' unveiled in India



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A photograph of two men in dark suits and ties standing side-by-side. The man on the left is younger, with a beard and glasses, wearing a red tie. The man on the right is older, with grey hair and glasses, wearing a patterned tie. The man on the right is holding a silver trophy. In the background, a poster for 'WORLD'S MOST POWERFUL' is visible.

Harriet Searcy, recently elected AICM President, alongside former President Susan Searcy with the prestigious C. K. Somerville Award.



Managing Director of I n Cycle, Ayl Dunthorne
accepted the 2000 Fellowship. I wrote a report for her
on the 2000 Fellowship. I wrote a report for her



Dr. Manoj Chandra Paul, 2003 winner of the C.R. Bhowmik Award

Research Institute (ICGRI), Kolkata. Separately, the 'Balkrishna Gupta Award for Exports' was awarded to M/s La Opala RG Ltd by former President Proceso Gupta. Both awards are supported by Glass Worldwide, preferred international journal of the AIGMF in association with Kanch.

Mr M K Bansal of Shri Srinagar Glass Works and U K Anandam of IISH-USA are part of the AISHA-Awards judging panel.

Industry legends and school children honoured



The G.K. Gervais Award for Innovation and Excellence is presented to: **Chris Mackay**

The 'Aapka Glass Bottle' roadshow was highlighted, displaying a selection of drawings by school children on glass packaging, along the Swachh Bharat Abhiyan (Clean India Campaign), a vision set by the Prime Minister on the part laid by Mahatma Gandhi. Along with the paintings, an exhibition of glass water bottles and other packaging solutions were placed on display. The roadshow will travel to other cities showcasing the vital role of glass, being the only 100% recyclable packaging material.

Winning students were awarded cash prizes: First prize (Rs. 10,000); to Archisha Shyam aged 13 years, class eight student at Orchids International School, (Jalahalli) Bangalore; second prize (Rs. 7000) to Prerak Singh aged 11 years, class six student of BSA



Honorary AGMFF General Secretary, Kalkash Chandra Jain, AGMFF signatories and invited guests were presented with an exhibition of glass water bottles and other non-plastic solutions.



Diamonds Mohan Gupta collected the 'Eminent Ganga Ganga Award for Exporters' on behalf of Government of India, Delhi and others.



Nitin Dhand, Zonal Sales Manager at Fossil Glass Wines Ltd collected the C. Sengupta award for Innovation and Technology on behalf of M. H. Kherke.

Latest industry news and highlights from this issue at www.glassworldwide.co.uk

AIGMF activities reported globally via Glass Worldwide articles



Focus India

AIGMF marks 75th anniversary

To mark The All India Glass Manufacturers' Federation's 75th anniversary, Vinit Kapur, Secretary explains the organisation's principal activities, its aims and objectives, as well as profiling the AIGMF's current office holders.

QW: Who does the AIGMF represent and what are its overriding aims and objectives?

Founded in 1944, the AIGMF is the umbrella organisation for all categories of large, medium and small-scale glass manufacturers in different parts of India.

The federation's main aims and objectives are to encourage, promote and develop the manufacture of glass articles of all kinds. A series of committees meet regularly to ensure the promotion of glass, to study and research advances in glass technology, to secure the necessary supply of raw materials required for the manufacture of glass articles and to make representations whenever necessary to the Union Government or any unit of the Union of India for the removal of difficulties that might hamper the trade of glass articles or for special facilities to be granted to assist the local glass industry. In addition, the Government or public authority is drawn to difficulties faced by the glass industry, soliciting their help and support through concerned action.

All those engaged in the manufacture of glass and glass articles are enrolled as 'ordinary' members of the AIGMF and those associated with the glass industry are enrolled as 'affiliate' members of the federation.

QW: Who are the organisation's office bearers?

President - Raj Kumar Mittal,

Managing Director, Mittal Group of Glass Industries, Firozabad,

A commerce graduate, Raj Kumar was elected as Chairman of the Indian Industries Association (IIA), Firozabad Chapter and President of UP Glass Manufacturers' Syndicate (UPGMS). He has been associated with the glass industry for almost 30 years and heads five glass companies in Firozabad.

Senior Vice President - Bharat Somani, Vice President - Hindusthan National Glass & Industries Ltd., Behadurganj (Bihar)

A Bachelor of Commerce (Honours) graduate from the University of Delhi with a professional course in management from the Indian Institute of Management in Ahmedabad, Bharat Somani has benefited from multifarious hands-on training in the glass industry from various visiting companies around the world, notably in Germany, Italy, the USA and Japan.

Vice President - Sanjay Agarwal, Managing Director, Kewlity Glass Works, Firozabad,

A BSc graduate, Sanjay Agarwal was elected Vice Chairman of the Indian Industries Association (IIA) Firozabad chapter and Vice President of UP Glass Manufacturers' Syndicate. He heads GT Group of Industries, a business that specialises in the manufacture of glassware, scientific ware/glass bangles and glass handicraft items.



Former AIGMF President, Secretary Vinit Kapur at an AIGMF 75th anniversary event held last July in co-operation with the Centre Glass & Ceramic Research Institute and the Indian Ceramic Society.

Honorary General Secretary - Kalish Chandra Jain, President Sisecam Flat Glass India Ltd, Mumbai,

Kalish Jain is a mechanical engineer by profession and has worked in the glass industry since 2005. He is currently President of Sisecam Flat Glass India Ltd, with responsibility for flat glass operations in India. Mr Jain has 46 years of industrial experience in various industries ranging from steel to paper. He has also chaired the functioning of CIPPS - Confederation of Construction Products and Services for over two years.

Honorary Treasurer - Hargun C Bhambhani, Managing Director, Sunrise Glass and Pvt Ltd, Gujarat,

Located near Harnai port in western India, Sunrise Glass is a diversification of the Astron Group into the glass container business, a company originally created in 2011 by the late visionary Jasmukh Dhai Thakkar. Hargun Bhambhani, a family associate, has taken forward the vision of Harnai Dhai Thakkar and provided dynamic leadership to Sunrise Glass. It is his strong commitment for customer satisfaction and hard work to exceed customer expectations that has resulted in 100% growth in just eight years.



The AIGMF is the umbrella organisation for all categories of glass manufacturers in India.

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Focus India



In addition to a guided tour of the Port of Duqm, the AIGMF delegates made visits to the Indian Embassy in Muscat and the Duqm Glass factory.

AIGMF delegates explore opportunities in Oman

A delegation from the All India Glass Manufacturers' Federation (AIGMF) accepted an invitation from the Port of Duqm in the Sultanate of Oman recently to explore opportunities provided by the new seaport for Indian glass manufacturers. The Port of Duqm is the gateway to the planned special economic zone at Duqm (SEZAD), which spans over 2000 square kilometres and is the largest integrated free zone development in the region. Mohammed Ali Ghazi reports.

Last year's AIGMF tour was preceded by Port of Duqm representatives attending an AIGMF executive committee meeting in Hyderabad, where opportunities for glass manufacturers in Duqm were raised. The delegation to Oman was led by Raj Kumar Mittal, AIGMF President, along with representatives from the container and solar glass sectors. The delegation also made a courtesy visit to the Indian Embassy in Muscat and met Ambassador Manu Mahaveer, who was briefed about the prospect of AIGMF members setting up glass manufacturing units in Duqm.

Free zone incentives

Potentially, glassmakers may be attracted by the free zone incentives that Duqm offers, including 30 years of corporate tax exemptions, no customs duties, free repatriation of profits and 100% foreign ownership.

Delegates took the hour-long flight from Muscat to Duqm, which lies in central Oman. Their visit started with a guided tour of the SEZAD area, which includes several different areas, including an industrial zone, a residential zone and a tourist zone, all served by a recently built international airport and the seaport, which is operated by

Port of Duqm Co SAOC. SEZAD also includes a series of mining areas, where prospects for several industrial

minerals such as limestone, dolomite, silica sand/quartz, salt, shale and clay are being explored and mined, close to



AIGMF delegates with executives from the Port of Duqm.



Spreading knowledge

► Latest technical advances



Vial forming innovations from Indian specialist

Having improved production capacity with additional manpower, a different building and the introduction of advanced tooling machines, OCM India is working to optimise its glass processing equipment, starting with the 16 station TAM vial forming machine, which represents the Ahmedabad factory's main product. Alessandro Crescentini reports.

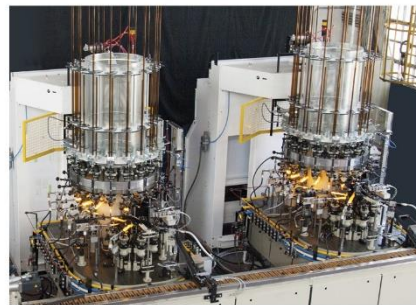
Originally manufactured by OCM India, the 16 station TAM16 vial forming machine was created to satisfy the expectations of local vial manufacturers looking for a simple index rotation machine, with good productivity and a reasonable price. Increasing local quality standards stimulated the company to study the latest developments and improvements to be applied to its machine in close co-operation with the Engineering Department at OCM's Italian headquarters.

With a maximum mechanical speed of 1700 pieces/h, the recently announced TAM114 indexing rotation machine provides the same vial quality of European-made continuous rotating forming machines like FLA20 and FLA35 models, manufactured at OCM's Italian facility. Several of the innovations applied to this machine are visible in the main mechanical, electronic and pneumatic components. In the devices aimed at improving glass tubing operations and to obtain the best final product in the context of hydrolytic resistance.

The control of machine functions is performed via a user-friendly touch screen, developed with the same graphics concept of other OCM machines produced in Italy and France. The TAM114 development comprises the OCM Group's equipment portfolio by covering the needs of factories more oriented to index rotation machines.

CAMERA INSPECTION

On demand, the forming machine can be equipped with the OPTIVAL camera inspection system for dimensional control. OPTIVAL software can be implemented in the touch screen to attain a fully integrated control system from the cabinet. This camera system was developed with the same concept



TAM114 vial forming machine in operation.

of the device already available for continuous rotation vial machines and allows users to check production in real-time, to detect any type of centering problem in the chucks and to verify accurate machine settings.

For the most advanced installations, the TAM114 machine can be adapted for connection to the ROBOLASS automatic loader, in order to minimise manual handling of the glass tube.

ADVANCED LUBRICATION

The oil pump design adopted for forming tool lubrication and all pneumatic components are sourced from leading European suppliers and the latest plunger lubrication system allows users to spray oil from inside the tool and consequently, to keep the machine in a clean working condition, without the risk of glass contamination. A special piping and cabling

design was realised, with special attention given to safety conditions. In addition, the completely renovated chucks are manufactured according to OCM vial and ampoules continuous rotating machines, in order to make the centering operation easier and more accurate.

Mechanical improvements have been applied to critical operations like glass tube bursting and cutting, where 'smokes' must be removed as much as possible from the glass surface.

OCM and OCM India can also provide post-forming lines, specially conceived to receive the output of two TAM114 forming machines. The first complete line was recently installed at one of India's biggest glass factories, located in Maharashtra. ■

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German quality precision parts from India

An established supplier to GPS and Verallia factories worldwide, Accuramech has recently made its extensive range of precision IS machine parts available on a global scale. Viral Modi, Managing Director, spoke exclusively to Glass Worldwide.

Located in the Indian engineering hub of Pune, Accuramech's roots date back to 1997 when a French entrepreneur founded a company called HBD, with the sole purpose of supplying IS machine parts to GPS America, a Saint-Gobain company. In 2009, HBD was acquired by Saint-Gobain and renamed Accuramech. This transformation of the parent organisation into a multinational firm provided the capability to leverage the technical knowhow of Verallia. As a result of Saint-Gobain's involvement, Accuramech extended its customer base to include European plants as well as North American facilities and GPS Glasproduktions-Service in Essen, Germany. Accuramech's relationship with GPS has seen business double between the two companies over the past two years.



Santi Modhi (Accuramech), Anil Kumar (GPS), Anil Kumar (Accuramech), Parto Makharia (Accuramech) and Stephanie Berth (Accuramech) at GLASSPEX India exhibition.

A collage of IS machine parts offered by Accuramech.



Klaus Radtigh (GPS Chairman), Stephanie Berth (Project Manager, Accuramech) and Viral Modi (Accuramech Managing Director) at this year's GLASSPEX India exhibition in Mumbai.

EXPANSION FOCUS

Accuramech is headed by Viral Modi, who previously worked at three different Verallia plants in North America. His initial priorities were to ensure that the company had a wide range of parts to offer, not just to Verallia but also to other glass companies. The focus now is to expand.

The core values of Accuramech are 'highest quality, customised service through new development and competitive pricing'. As a result of substantial investments in R&D and a 50% increase in staffing levels in 2012, the company is now in a position to make a strategic decision to broaden its scope and make its parts available to other glass and IS machine manufacturers. "We were waiting to fulfil our existing customer needs and have a wide range of parts in our catalogue to offer to external customers" explains Mr Modi.

Continuing the successful cooperation between Accuramech and GPS remains a key priority. "In fact, we are thinking of doing bigger things together. Not just parts but more assemblies, bigger and heavier parts"

says Accuramech's Managing Director. GPS has also provided positive feedback to the co-operation. "They are supplying from India but it is German quality – that is the key message" states Markus Krul, head of sales at GPS. Sandy Howells, Marketing Manager, also confirms that no compromises would ever be made on quality: "For all incoming parts, we put them to the same standard quality test. All vendors have to meet the quality criteria whether they are from Europe or India. Accuramech meets our requirements and together, we achieve what GPS is renowned for – best quality." >



Close inspection of parts at Accuramech's Pune facility.

Factory Spotlights & Personality Profiles

► Examples: SGD Pharma & HNG



SGD Pharma quality, made in India

More than 9000 tonnes of moulded Type I pharmaceutical glass containers and 4000 tonnes of tubular vials and ampoules (corresponding to more than 700 million pieces) are produced annually at the Vemula (India) glassworks of SGD Pharma. Sardar Akshay Singh, Managing Director of SGD Pharma India, spoke to *Glass Worldwide* about the fully integrated facility's extensive capabilities, prospects and opportunities.



Sardar Akshay Singh, Managing Director of SGD Pharma India

The Indian pharmaceutical sector has been the subject of impressive growth rates in recent years, a trend that continues to bode well for Type I moulded and tubular glassmakers like SGD Pharma India Ltd. Collectively, the sector was valued at US\$33 billion in 2017 and is expected to reach US\$55

billion by 2020. India's pharmaceutical exports stood at US\$17.77 billion in 2018 and have reached US\$10.80 billion in the current financial year (up to October 2018). Indian pharmaceutical companies and their subsidiaries have established a strong presence in the USA during the last couple of years, with higher ANDA approvals, the loss of patent exclusivity and cost cutting measures adopted by several nations has pushed demand for generic products. Indian pharmaceutical companies have enhanced their investments in research and development and successfully received higher approvals from the USFDA within the last decade. Out of a total of 1642 ANDA approvals between 2009 and 2018, Indian companies have secured 94.4% of these approvals and received a total of 1642 ANDA final approvals. Furthermore, of the 1310 tentative approvals, Indian companies are responsible for 500 from the USA

FDA, which works out to over 58.2%.

In 2018, Indian pharmaceutical companies received 230 ANDA approvals from the USA FDA. In fact, the FDA approved 813 ANDAs in 2018, slightly over the previous year's figure of 846. Thus, Indian pharmaceutical companies captured 35.7% of total approvals in 2018. Similarly, the USA FDA approved 126 tentative products during 2018, against 174 products a year earlier and Indian companies secured 77 tentative approvals in 2018, compared to 81 in 2017. Furthermore, the country accounts for approximately 30% by volume and about 10% value of the \$100 billion USA generic market. The local biotechnology industry is also expected to expand at average annual growth rates of about 30% and reach US\$100 billion by 2025.

The high quality tubular market for India and neighbouring countries in Asia-Pacific corresponds to approximately 70,000 tons of tubing. With high growth rates in the pharmaceutical sector and a change of regulations for China, there has been a significant increase in demand for glass primary packaging, for which the raw material suppliers, especially glass tubing, are meeting in capacity expansion in China and India.

As a result, Akshay Singh anticipates positive local market opportunities for his homebased glass business. The SGD Pharma India Ltd Managing Director has been associated with the Hyderabad-based pharmaceutical glassware specialist since its creation as Cogent Glass Ltd a decade ago. He has led a major investment at the Vemula glass production site and overseen its growing importance within the international SGD Pharma organization. With five plants in France, Germany, China and India, the company manufactures more than eight million vials every day. Its mission is to improve and protect patient health by supplying high quality, stable and innovative glass primary packaging. Through continuous improvement and innovation, SGD Pharma is committed to reinforcing patient safety by improving the physical, chemical and cosmetic properties of its products.

Integrated infrastructure

SGD Pharma is a world leader in glass pharmaceutical packaging for healthcare. To improve market share, its offering to customers and to increase the company's geographical advantage, SGD Pharma acquired Cogent Glass, a moulded and tubular Type I glass manufacturing facility in 2015.

The SGD Pharma India glass plant is strategically located on the Hyderabad-Bangalore highway, approximately 120km away from Hyderabad and spread across 36 acres. The new corporate office is located in Hyderabad, which is an important pharmaceutical hub in the country.

All manufacturing equipment is sourced from the world's leading manufacturers of glass forming machinery. For example, the carbon past is from ZEPPE (Germany).



Major vials from SGD Pharma India



A collection of tubular ampoules and vials.



Focus India



On the Spot... Sanjay Somany

Describing the company's move away from the float glass sector to focus on core hollow glass activities, HNG's Chairman and Managing Director, Sanjay Somany, spoke exclusively to *Glass Worldwide*, preferred international journal of the AIGMF.

GW: What was the motivation to recently sell the company's shares in HNG Float Glass to your joint venture partner, Sisecam?

The partnership with Sisecam was very successful. They are good people and it was a pleasure to work with them. We wanted HNG Float Glass to grow and I am now very confident that it will go from strength to strength, because that is the backbone of the deal agreed.

It was a similar situation to selling the HNG Global plant in Germany to BA Glass in 2016. At both points of time, we felt that we had good value for our equity and I was a suitable option for all parties. Our family believes it must always be a win-win situation for us to move away. For us, continuity of business is a prime mover, so if we were not completely sure that the partner would progress the business and sustain the people, we would not consider selling.

We have great pride in what was achieved at HNG Float Glass and the company will continue to do well.

GW: Are there any plans for HNG to return to the float sector in the future?



Sanjay Somany describes glass packaging at HNG's booth.



HNG, recently the completed site of its manufacturing in HNG Float Glass to joint venture partner Sisecam.

We have not even considered this but if we did, we would ideally go back to Sisecam because they were great business partners and I enjoyed working with them.

GW: So HNG is now focusing on its core business in the Indian glass container sector?

Container glass is obviously our primary business and will continue to be so. Despite the big challenges in the market, we are now at least able to get higher volumes out of the door, even though the bottom

and top lines are still under pressure. In my interview with *Glass Worldwide* two years ago when I described the difficult market conditions as a 'bip', we subsequently encountered many additional factors such as, for example, 'demonetisation', currency availability and the liquor ban within 500m of the highway. Recent transport strikes have also hampered getting raw materials to our factories.

These factors made inoperable holes in the business at that time; industry in general suffered and everybody in the glass industry had their fair share of worries.

GW: How is HNG adapting its business to meet such challenges?

Our main priority currently is to maximise the situation and make sure that the prices are remunerative. The price increase in energy, for example, has been more than 40% but it's basically impossible for us to pass that on of course.



According to Sanjay Somany, HNG remains committed to improving fuel efficiency, as well as reducing emissions, NOx, SOx, and water discharge costs etc.



Factory Spotlights & Personality Profiles

► Examples: AGI & Borosil



The AGI facility in Bonga was commissioned in 2009 and a new furnace was commissioned in 2013.

Developing opportunities for glass packaging from a position of strength

Rajesh Khosla took over as President and Chief Executive Officer at AGI glasspac in May 2018, having previously worked extensively in the international steel and associated industries. Just over a year after his appointment, Mr Khosla spoke exclusively to *Glass Worldwide* about AGI glasspac and the business growth opportunities that exist for one of the region's leading glass packaging manufacturers.

With two state-of-the-art manufacturing facilities, the AGI glasspac division of HGL Ltd is one of India's leading glass container manufacturers and the largest in the south of the country, with a 17% market share nationally. The business employs approximately 3000 people and manufactures high quality glass containers to meet the stringent and demanding quality needs of food, pharmaceuticals, soft drinks, spirits, beer, wine and other industries.

The company's first plant in Hyderabad was commissioned in 1977 and following several phases of significant investment since 2005, is now a modern plant with a capacity of about 600 tonnes/day. A second plant some 15km away in Bonga was opened in 2009 with a capacity of 500 tonnes/day. Subsequently, a second 500 tonnes/day furnace was commissioned in 2013.

According to Rajesh Khosla, AGI has a different perspective from other local glass manufacturers with respect to its working environment, manufacturing tools, its vision for the future, its plans for expansion and passion for value addition. "An environment has been created, for

example, where innovation, research and development and best practices are an integral part of the working culture," he explains. "Furthermore, manufacturing tools like business

excellence and total productive maintenance have been introduced, showing that AGI glasspac does not stick to traditional methods, taking full advantage of worldwide cultures that are implemented globally. AGI has a medium-term, five year plan for horizontal and vertical movement."



Rajesh Khosla, President and Chief Executive Officer of AGI, speaks in May 2019.

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Customer focus drives positive results for Indian glassmaker

A hot topic of conversation at last October's glasspex INDIA 2019 exhibition in Mumbai involved the positive performance of Borosil Glassworks and the diversified company's latest pro-active investments. Shreevar Kheruka, Managing Director, exclusively explained his influential role in the family-owned glassmaking organisation's return to success to *Glass Worldwide*, preferred international AIGMF journal.



Shreevar Kheruka took over as Managing Director of Borosil in 2011.

Borosil Ltd is the market leader in India for laboratory glassware and glass packaging. The parent company, Borosil Glass Works Ltd was established in 1962 in collaboration with Corning Glass Works. This business became a wholly-owned Indian enterprise in 1988, managed and directed by members of the Kheruka family from headquarters in Mumbai. Sister company Borosil Renewables Ltd specialises in the manufacture of high performance solar



Tapan, Pradeep Kheruka concentrates on the Borosil Renewables solar business.

glass. Other production specialties include lighting, extra clear patterned glass and pharmaceutical glassware. In 2016, Borosil completed its acquisition of Hopewell Tableware (manufacturer of tempered opal glass tableware) and Klasspack, a producer of glass ampoules and tubular glass vials. Both businesses have now been successfully integrated within the Borosil Group.

In the 2000s, however, the business has encountered severe financial difficulties, before ultimately returning to its current position of stability and profitability. Labour problems, challenging bank lending

rates and escalating fuel costs all combined to impact the company's performance, at a time when cheap imports started to flood the local market. In addition, it became necessary to source some products from outside India to satisfy customer requirements. "It was a very difficult situation," Shreevar Kheruka confirms "but I was blessed to be placed in a position to be able to address such huge challenges."

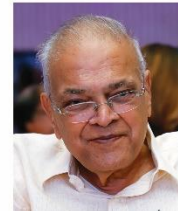
Over the years, the company has operated four different manufacturing sites in India but its two main production sites are at Bharuch in Gujarat and at Jalour in Rajasthan.

Family glassmaking dynasty

Shreevar Kheruka was six years old when his grandfather, Mr B L Kheruka, who already owned a glass manufacturing business in Kolkata, took the decision to acquire Borosil from Corning in 1988. "Where I grew up in the Marwari or Gujarati community of north west India, the area is famous for its entrepreneurial families, where it is normal to hear business discussions at the dinner table. Even though I might not have been aware of it on a career level, subconsciously the knowledge and experience keeps going in and as children, we would visit the glass plant in Kolkata every weekend. So when our family took over Borosil and relocated to Mumbai, I was fully aware of the company."

Following the completion of his studies in India, Shreevar Kheruka completed a dual finance and international relations degree at The Wharton School of the University of Pennsylvania in the USA. He then worked for two years at Monitor Consultants (now Monitor Deloitte) in Boston, before returning to Mumbai in 2006 to join the management team at Borosil.

It was always envisaged that Shreevar Kheruka would follow in the footsteps of his father and grandfather and work in the family glassmaking business. During four years at university in the USA, he was exposed to different types



Mr B L Kheruka is still executive Chairman at Borosil.



The Borosil Bharuch factory at Bharuch, Gujarat.



Spotlight features on India



FOCUS ON INDIAN SUB-CONTINENT > India

► Market reports



FOCUS ON INDIA

Indian flat glass revival on the cards

Via exclusive interactions with a number of leading producers such as Asahi India Glass and Gold Plus Glass, Sunder Singh tracks the development of the Indian flat glass industry.

The second most populated country on the planet, India is often considered a nation of contrasts by many outsiders. In an earlier, the same is true of the country's flat glass industry. Despite a number of investments in the infrastructure sector and a revival in the construction industry, India has not witnessed a single flat glass plant in the past two years. (Sunder Singh's third visit in March 2014 was the last address). In fact, the reverse has happened, with the closure of a flat furnace by Asahi Glass.

MARKET OVERVIEW
Served by eight flat glass lines from five producers, the \$360 tomorrow's flat glass market is one of the most under-served. In fact, during the last two years, most producers have been running at low capacity utilisation rates, resulting in an output level of less than 5000 tonnes/day.

Even taking the theoretical \$360 tomorrow's capacity into consideration, the annual output of flat glass is about one million tonnes for a population of 1.2 billion, resulting in a meagre 1.52kg/year per capita consumption, making it one of

the lowest per capita rates of flat glass across the globe. In comparison to India, most Asian countries have a significantly higher per capita flat glass usage. However, from another corner this could be seen as a major opportunity for investment in the infrastructure sector and a revival in the construction industry. India has not witnessed a single flat glass plant in the past two years. (Sunder Singh's third visit in March 2014 was the last address). In fact, the reverse has happened, with the closure of a flat furnace by Asahi Glass.

GROWTH FRINGS
The flat glass industry has been going through a lean patch for the last three years. A change of government in New Delhi in mid-2014 brought good news for glass industry stakeholders. However, the country's construction sector is yet to see a healthy turnaround, leading to depressed demand for flat glass.

However, 2015 has brought better news for the industry. The announcement of 100 smart cities and robust economic demand is bringing life back in stalled construction projects across the country. The flat glass industry is expected to register double digit

growth, according to most flat glass producers. The country's automotive industry too has started to register healthy growth rates for the last three quarters, which should add fuel to the flame.

DUMPING ACCUSATIONS
Indian flat glass producers cite dumping as a significant hindrance in the development of the domestic flat glass industry. A few years ago, it was reports from China that forced more than 10% of total flat glass consumption in the country. More recently, however, the imposition of flat glass from the Middle East has been increasing at a brisk rate. Although the Indian government has imposed antidumping and safeguard duties, imports from these countries still take place.

In a move in late 2013, three prominent glass producers (Sunder Singh's visit, Gold Plus Glass industry Ltd and HCL's flat glass Ltd) took a collective approach to the Indian authorities alleging dumping of flat glass from Iran, taking cognisance of the application, India



Recent glass buildings provide the view of modern progress by the hand of modern architecture.

Indian glass industry set for 'brisk action'

Although India's flat and container glass sectors have not been the subject of major capacity expansion or the entry of new players in recent times, both are gearing up for brisk action. With the GLASSPEX India exhibition returning to Mumbai on 13-15 March 2015, Sunder Singh evaluates the leading players in both sectors.

Four months is not a long time for the revival of a country's industry but in its first few months in office, the national government in New Delhi has made remarkable progress with respect to India's moribund economy and struggling industries. Economic indicators, which were falling quarter after quarter over the last three years, have started to improve.

Signaling a turnaround for the economy and adding to the current festive cheer, the first quarter (April-June) GDP growth came in at a higher than expected 5.7%. This latest growth performance is the highest for the last nine quarters. The Q1 GDP growth has been buoyed by a sharp turnaround in manufacturing, coupled with a strong showing by the local mining and construction sectors. Industries that were running at very low capacity utilisation rates are redrawing their plans against the prospect of healthy anticipated demand.

GLASS CONTAINER TRENDS
Dominated by Hindustan National Glass, Piramal Glass and AGI Glasspac, the Indian glass container industry involves a dozen mid-scale producers besides these three. HNG is in the process of stabilising

its capacity following massive additions at its existing Nasik unit and commissioning of the greenfield project at Naidupet, Andhra Pradesh. Of the other players, Piramal and Janta Glass have added capacity and modernised their production facilities. Two small glass container units belonging to liquor manufacturers Mohan Meakins and Khodiyar Glass faced closure due to their operations becoming uncompetitive.

The Indian glass container industry has been facing the consequences of a double-edged sword; on one side, lower growth in end user segment and oversupply in the glass market and on the other a rising prices for raw materials and fuel. Major end user liquor and beer growth had contracted from double to single digit in the last two years. Following the change in government office in New Delhi and resulting economic rebound, however, producers are gearing up for brisk business in coming year.

The country's production and supply of container glass increased steadily in line with demand until 2012 (10800 tonnes/day), with capacity additions by all key players pre-2012 years, combined with sluggish demand, leading to >



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low capacity utilisation. With steady demand growth anticipated in the coming years and no major extra capacity additions expected, existing capacity utilisation is expected to remain at healthy levels.

Company	Location	Capacity (tonnes/day)
HNG	Punjab	4000
AGI Glasspac	Andhra Pradesh	3000
Piramal Glass	Gujarat	600
Hindustan Glass	Odisha	320
Mohan Meakins	Uttar Pradesh	250
Sunder Glass	Gujarat	220
Janta Glass	Gujarat	220
Industries Glass	Uttar Pradesh	210
Health Glass	Madhya Pradesh	150
Wharfedale Glass	Madhya Pradesh	150
Pragati Glass Industry	Gujarat	150
First Glass Industry	Gujarat	150
Shree Chakra Glass	Uttar Pradesh	100
Small scale producers	Punjab	700
TOTAL		10800



Barbar Eshart Glass is a supplier to Universal and an exhibitor at GLASSPEX India.



taking part here at GLASSPEX India, Bottero supplies equipment to Piramal Glass.

Spotlight features on India

► Conferences & exhibitions



5th glasspex INDIA and 1st glasspro INDIA 2017

glasspex and glasspro take place at India Expo Mart, Greater Noida next February. Companies involved in glass equipment manufacture, the glass industry and the glazing trade can now register for both trade shows.

The fifth glasspex INDIA will be staged from 23 to 25 February 2017 at India Expo Mart, Greater Noida, close to New Delhi. Co-located on the lines of its flagship show, glasspex Düsseldorf, glasspex INDIA will showcase the entire array of glass, ranging from production to processing and application, offering trade visitors technological innovations, progressive processing techniques and the latest trends in glass applications.

glasspex INDIA has become established as a platform for the exchange of ideas, making contacts and business deals in the Indian market. Exhibitors from 13 countries (India, Germany, France, the UK, Italy, Singapore, China, Taiwan, Czech Republic, Austria, Iran, Finland and the USA) participated in 2015 and expressed their satisfaction with the quality of the 2012 visitors.

Exhibitors in 2015 included: Accureach Industrial, AIGMF, AMBRO D.J. (Dishes, BOD, Busters, Camels, Cansco, CHUD, Diembauch, Dukhram Maurya, Electroglass, EMS, Emmet, Enes, Eurotherm by Schneider Electric, Fickert & Winterling, FIC, Fives, Flammalic, Fobiel, Formis, Futronic, Gardner Denver, GIMAB, Glass Service Czech Republic, Glass Service Italy, GPS, Graphical, Heat Applications, Hindustan National Glass & Industries, Hindustan Patilum, HOKI, Indeltherm, Infralux, IRE, IRE, ISI, JSD, Joodi, LARS, Lubbock, LUNN, Mascot, Mepp, MSK, P-O Refractories,



Departure at the official opening of glasspex INDIA 2015. Glass worldwide is a media partner for the 2017 event.

OCME, Olivetti, Penneleam, Penning, Pneumofort, Pico, PSL, Quantum, Raffini, Ramsey, Raytek, Rondet, Sani-Globe SEPRIO, Sharnik, Shepess, Siemens, SOPL, Soral Ceramics, SGL, SGA, TESCO Group, Terna, VDMA, Wolk, Z & J Technology, Zucchi and ZWPE.

The complementary event, glasspro INDIA - international exhibition for flat glass processing and products - will open its doors at the same time in Delhi, showcasing the latest trends and innovations in flat and processed glass products and applications. Also on display will be the latest glass processing solutions, tools, auxiliary products and services.

"The motivation behind the launch of sister event glasspro INDIA is the endeavour to provide a platform dedicated to strengthen the flat glass sector" explained Birgit Horn, Director of glasspro at Messe Düsseldorf.

"Flat glass and its applications are mainly used in the construction sector, which represents the dominant end user market. The Build Fair Alliance, with its concept of providing integrated building solutions, is the perfect complement for the exhibitor and visitor profiles of glasspro INDIA."

Build Fair Alliance is an alliance between global exhibition organisers Messe Düsseldorf India, Nürnberg Messe India, Messe Frankfurt, FSI and ISHRAE to co-locate their events under one roof to provide one-stop integrated building solutions to stakeholders of the Indian construction industry. Events that are part of the Build Fair Alliance are: ACEEX India 2017 covering HVAC, refrigeration and building automation systems; FENSTERBAU FRONTALE INDIA 2017, focusing on facade and fenestration products; FSE 2017, highlighting fire safety and security solutions; ISH 2017, showcasing plumbing systems; and glasspro INDIA 2017, encompassing solutions and innovations for the flat glass industry. ■

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FOCUS ON INDIA

12th AIGMF International Conference

As a backdrop to glasspex INDIA and glasspro INDIA exhibitions and under the aegis of The All India Glass Manufacturers' Federation (AIGMF), a comprehensive two day conference entitled 'What Can Glass Do for You?' was staged on 24-25 February in Greater Noida. This was the next in a series of one day meetings and seminars, as well as two day conferences organised by AIGMF in recent years, particularly in connection with the glass INDIA exhibition, in the presence of and with the participation of international visitors. It represented the organisation's latest event for various aspects of glass science and technology.

With Glass Worldwide as official media partner, the AIGMF conference benefitted from multiple stakeholder partner involvement from Federation of Safety Glass (FSG), Confederation of Construction Products and Services (CCPS), Central Glass and Ceramic Research Institute (CSIR-CGRI) and Glazing Society of India (GSI). The event was supported by leading glassmakers and related companies, including HNGIL, HNG Float, Nirmal Glasstech Industries, Dukhram Maurya Engineering Co, La Opala RG Ltd and Mascot Engineering.

The conference was broadly divided into four sessions, covering the following main business interests:

- Glass as a vital building material



Xiang Vision's Joop Dalstra with AIGMF President, Harsha Kadam.



The conference opening address was delivered by Harsha Kadam, AIGMF President.

- For smart and solar cities.
- Processed or tailor-made glasses.
- Container glass for Swachh Bharat Abhiyan.
- Specialty glass (tableware, opal, crystal, figured etc).

Among the specialist presentations delivered were:

- 'The future of high performance all electric glass melting' (René Meuleman and Soetharam Jayaraman, Eurotherm by Schneider Electric).
- 'The importance of design and specification for the forehead and distributor' (Simon Parkinson, Parkinson Spencer Refractories).
- 'Container glass forming in 2020/2025: The dark factory' (Joop Dalstra, XPARG Vision).
- 'Glass: Enhancing quality of life and conserving energy' (Sanjeev Agarwal, Asahi India Glass).
- 'Smart solar glass for solar cities' (Sandeep Ranjive, Gujarat Borosil).
- 'Building envelope - Warm and humid climate' (Madhavi Subramanian Patil, HNG Float).
- 'Developing sustainable solutions for smart cities' (Sourabh Kankar, Gujarat Guardian).
- 'Glass: A healthy packaging material - Pharma and injectable packaging' (Sanjay Jain and Sanjay Tiwari, Piramal Glass).



Simon Parkinson of Parkinson Spencer Refractories was among this year's speakers.

- 'Environmental benefits of glass usage' (Vinay Saran, HNG).
- The full conference schedule is available on the AIGMF website, where papers can also be downloaded. AIGMF also used the occasion to officially release its 2017 issue of the Indian Glass Directory during the opening session. ■

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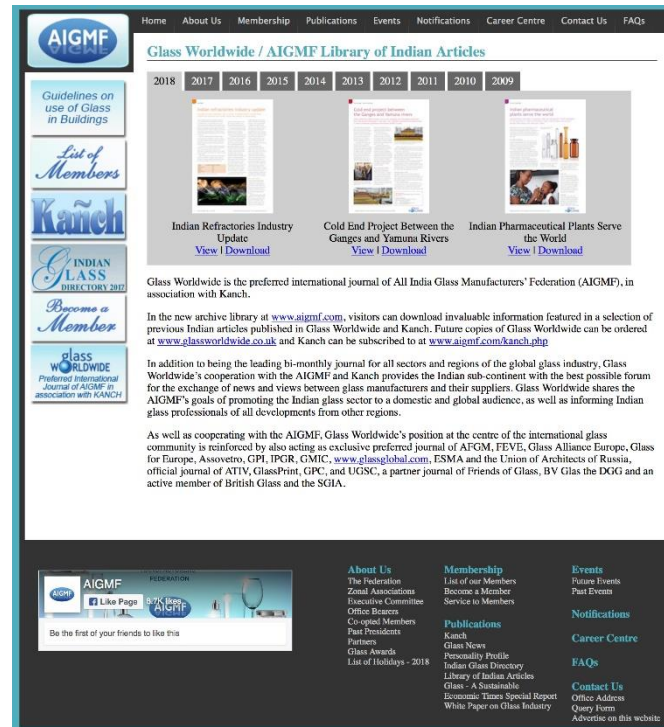
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Over 60 articles covering the activities of The All India Glass Manufacturers' Federation and member companies are available for FREE download from the AIGMF website, including:

- Indian market reports: architectural processed glass, container glass, float glass, optical fibre, pharmaceutical, raw materials, refractories, specialty glass and tableware.
- Exclusive interviews with figureheads from: AGI glasspac, Adarsh Kanch Udyog, Asahi India Glass (AIS), Borosil, Ceracon, Empire Industries-Vitrum Glass, Geresheimer, Gold Plus Glass Industry, HNG, La Opala, Mascot, Piramal Group, Pragati Glass, Saint-Gobain India, SGU Pharma India and many more!

Visit the AIGMF online library of Glass Worldwide articles at www.aigmf.com

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In the new archive library at www.aigmf.com, visitors can download invaluable information featured in a selection of previous Indian articles published in Glass Worldwide and Kanch. Future copies of Glass Worldwide can be ordered at www.glassworldwide.co.uk and Kanch can be subscribed to at www.aigmf.com/kanch.php

In addition to being the leading bi-monthly journal for all sectors and regions of the global glass industry, Glass Worldwide's cooperation with the AIGMF and Kanch provides the Indian sub-continent with the best possible forum for the exchange of news and views between glass manufacturers and their suppliers. Glass Worldwide shares the AIGMF's goals of promoting the Indian glass sector to a domestic and global audience, as well as informing Indian glass professionals of all developments from other regions.

As well as cooperating with the AIGMF, Glass Worldwide's position at the centre of the international glass community is reinforced by also acting as exclusive preferred journal of AFGM, FEVE, Glass Alliance Europe, Glass for Europe, Assovetro, GPI, IPGR, GMIC, www.glassglobal.com, ESMA and the Union of Architects of Russia, official journal of ATIV, GlassPrint, GPC, and UGSC, a partner journal of Friends of Glass, BV Glas the DGG and an active member of British Glass and the SGIA.

AIGMF Federation

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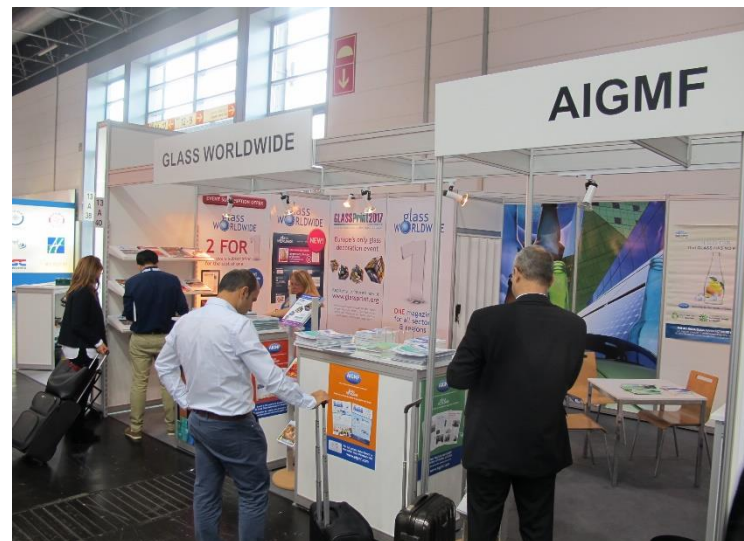
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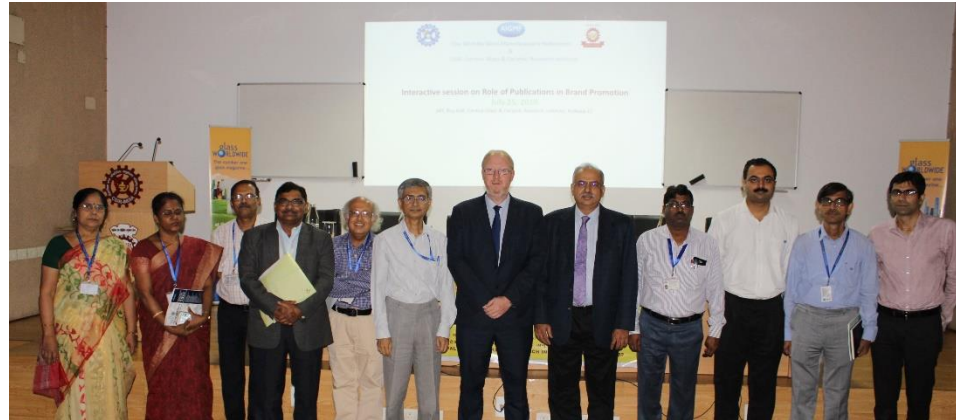
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What does it mean to you as an AIGMF member?

- ▶ Free Glass Worldwide subscription to all AIGMF members.
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- ▶ Editorial profiles covering you and/or your glassmaking companies in Glass Worldwide and Kanch.



Factory Spotlights & Personality Profiles

► Examples: AIS and Emerge Glass



On the Spot... Sanjay Ganjoo

Celebrating its 25th anniversary, Asahi India Glass (AIS) is a leading integrated manufacturer of all types of flat glass and a dominant player in the automotive and architectural glass value chains. Sanjay Ganjoo, COO Architectural Glass at AIS and former AIGMF President, spoke exclusively to *Glass Worldwide* about the company's recent investments and the current status of the different flat glass sectors in India.

GW: Since we last spoke in 2014, AIS has commissioned a float glass plant in Talaja and a fifth automotive glass plant in Gujarat. What are the highlights of the investment in Talaja and the plant's performance?

Being one of the leading glass manufacturing companies in the country, AIS enjoys 75% market share in the passenger car segment and caters to all major automotive brands, while we have approximately 20% of the total market share of the Indian float glass industry. We recently established our existing Toga facility in 2018 and it is now fully functional. The expansion gives additional capacity to produce 500 tons of float glass per day and we have seen an increase in our top client base by 60% in FY18-19, in the architectural segment because of this.

Due to the Talaja plant, we are able to serve customers more efficiently with a better product mix. As AIS has deep penetration in the rural and suburban areas, this plant will further help us grow in the architectural segment in the coming years.

GW: And the plans for the new automotive glass plant in Gujarat?

We have started work on our fifth automotive glass plant - a greenfield project in Gujarat - mainly to service the requirements of the Maruti Suzuki plant in Gujarat. It will be operational in this financial year. Our Gujarat project is a state-of-the-art automotive glass plant with the latest global technologies and the ability to manufacture all value added glass products for automotive requirements. AIS will make an investment of up to ₹200 Crores in this project, two phases. The plant will have capacity to produce 2.4 million car sets per annum. Our Gujarat plant will further strengthen our scale, flexibility and ability to seamlessly service customers across India.



AIS's automotive glass plant is a greenfield project in Gujarat.

This investment is in line with the Make in India initiative, launched by the Government of India. As a result, AIS will further expand its footprint across India with manufacturing plants and advanced sub-assembly units across multiple locations in the country.

GW: Now boasting 13 plants/sub-assembly units, what are AIS's current manufacturing capacities?

We currently have four auto glass plants in India in Bawal, Chennai, Roorkee and Talaja. We are coming with a new automotive glass manufacturing plant in Gujarat that will add up to 2.4 million car sets to our present capacity.

We now have a total capacity of 5.3 million laminated windshields and 4.3 million tempered car sets. Post Gujarat plant operation, our capacity will be 6.3 million windshields and 6 million tempered car sets. The growth will be sustained by further automating the process and enhancing high value improvements.

GW: Following this significant investment, what is AIS's position in the market and how well-positioned is the company to be competitive going forward?

AIS is India's leading integrated glass manufacturing company. AIS delivers top-of-the-line products and solutions through its three strategic business units for automotive glass, architectural glass and consumer glass. AIS is a pioneer in the automotive glass industry in India, with over three decades of proven leadership in technology, scale and O&M (Quality, Cost, Delivery, Development, Management). AIS is the only automotive glass company in the country to have received the prestigious Deming Application Prize in 2007.

Over the years, AIS Auto Glass has expanded from a single location manufacturing company into one with multiple production and assembling facilities across different regions of India. Today, we have four state-of-the-art production facilities at Bawal (Haryana), Roorkee (Uttarakhand), Chennai (Tamil Nadu) and Talaja (Gujarat).

AIS offers unmatched location flexibility to its customers, with multiple plants spread across the country, which run at optimum capacity and have the capability to make products in line with customer requirements. This will be further bolstered with the addition of the aforementioned greenfield facility in Gujarat, with the capability to produce the entire auto glass range.

With world-class car-sub-assembly units in Gujarat, ►

Factory Spotlight

Diversification that pays dividends

A leader in the Indian glass industry, Emerge Glass has not simply rested on its laurels. As part of its strategy for growth, the flat glass manufacturer has taken the step of diversifying into the container market. In an exclusive interview with *Glass Worldwide* (preferred international journal of the All India Glass Manufacturers' Federation), Managing Director Sumit Gupta discusses the launch of Emerge's hollow glass plant and why he believes it will give the company a global presence.



Sumit Gupta has used his 10 years of experience to bring momentum to the Emerge Glass plant.

Armed with an MBA from a reputed institute, in 2004 Sumit Gupta began his journey into the Indian glass industry with aluminum composite panels (ACP), which was followed by further projects and a foray into WPC, silicone sealant and sheet glass. By successfully instituting a manufacturing unit in Dubai for non-combustible metal composite panels, he set a precedent for the industry.

As Managing Director of Emerge Glass, Mr. Gupta has used his 10 years of experience to bring momentum to the brand, one of the leading manufacturers of facade and glass solutions.

Part of the Alstom Group, Emerge Glass established a manufacturing



The Emerge Glass site in Rajasthan houses a recently completed glass container factory.

unit in Rajasthan to cater for the needs of flat glass in the Indian industry. The factory produces sheet glass ranging in thickness from 1.2mm to 10mm and uses Glaverbel drawing technology to produce ultra-thin clear glass (1.2mm to 2mm). The company is "the only manufacturer in India with the capability of producing three different thicknesses of clear glass at a time - we enjoy an upper hand in market competition" says Mr. Gupta. "In sheet glass, we are number one" he notes, commenting on Emerge's position in the Indian flat glass industry.

Emerge also manufactures environmentally-friendly free from copper and tin aluminium-coated mirrors, produced on a horizontal sputtering magnetron line for enhanced image and clarity, ranging from 1.5mm to 5mm thicknesses. In addition, the company offers a glass frosting service, sandblasting clear sheet glass to make it suitable for privacy



Emerge Glass produces sheet glass ranging in thickness from 1.2mm to 10mm and uses Glaverbel drawing technology to produce ultra-thin clear glass (1.2mm to 2mm).

applications in bathrooms, conference rooms etc.

"Since our inception in 2013, we have earnestly ensured to manufacture the highest standards of glass solutions and constantly strive ►



On the basis of Glaverbel's Dutch Technology has provided bulk orders for the container project.



Factory Spotlights & Personality Profiles

► Examples: HNG & Saint Gobain



Indian visionary gains global recognition

John Wallis was among the invited guests at this year's Phoenix Award banquet in Berlin to celebrate the achievements of the 2013 Glass Person of the Year, Chandra Kumar Somany. They spoke prior to the event about C K's pride at receiving this recognition on behalf of the HNG family.

Having recently celebrated his 80th birthday, C K Somany could be forgiven for slowing down the pace of his busy lifestyle. His sons Sanjay and Mukul, together with grandson, Bhaskar, now head an experienced management team at India's leading glass container producer, a successful float glass business and a revitalised glass container operation in Germany. After six decades at the helm of Hindustan National Glass & Industries Ltd, however, C K still maintains a close involvement with one of the international glass industry's most enduring family dynasties. Now, his achievements have been recognised by the Phoenix Award Committee, confirming this visionary entrepreneur as the 43rd 'Glass Person of the Year' and staging a celebratory banquet in Berlin in his honour, surrounded by close family and friends.

The award is richly deserved

recognition for C K's efforts in the creation and constant development of HNG over a period of more than 60 years. Having started with a semi-automatic glass container production facility, HNG was India's first to convert to fully automatic operation in 1992.

Now a sprightly 80 years of age, C K still maintains an active interest in the company's affairs as non-executive Chairman. It is through his vision, a constant drive towards innovation and the adoption of the latest technologies that the HNG Group has emerged as a market leader in the Indian glass packaging industry. The group now operates seven fully automated container plants in India and one in Germany (HNG Global at Gardelwangen).

Separately, the group also has a 700 tonnes/day float glass unit, which is soon to more than double

in size via the addition of a second (1000 tonnes/day) furnace and production line. Leading Turkish float glass producer, Takyia Cam Sanayi AS, has recently created a joint venture with HNGFL and the Somany family, bringing valuable expertise in the development of value-added, high performance processed materials for automotive and architectural use. Mr Somany confirms that Siscam Group subsidiary Takyia Cam will be responsible for running a proposed specialist processing facility alongside the float plant. Both parties have a 50% shareholding in the venture, which is expected to exploit significant expansion opportunities in the local Indian market.

"It is very different to HNG's glass container business in terms of products, manufacturing methods and customer requirements but I think we have managed it very well" says the HNG non-executive Chairman.

Collectively, the extended HNG family has now grown to include approximately 14,000 people in India and Germany.

VISIONS NEARING REALITY

"Being the first Indian to receive the Phoenix Award makes me extremely proud on behalf of my nation, as well as everyone within the extended HNG family" says C K Somany. "It has been a collective effort that has resulted in this recognition, involving many colleagues



C K Somany (left) receives the 43rd annual Phoenix award from Gordon E. Jungst, 2013 Phoenix Award Committee Chairperson.



C K Somany has worked in the primary glassmaking industry for over 40 years.



Focus India



The 'World Glass Complex' at Ropar, Punjab, near Chandigarh spread over a campus of 577 acres.

A trail-glazer in the Indian glass industry

Mr B Santhanam, Managing Director at Saint-Gobain India Pvt Ltd, describes the origins, present-day activities and prospects for Saint-Gobain's glass business in the dynamic Indian market.

Saint-Gobain entered the Indian market in 1998. Subsequently, with a cumulative investment of over INR7500 crores, with 2018 sales in excess of INR 7000 crores, 6000 employees (2000 in the glass business alone) and 23 manufacturing sites, India has

become a key market for the group, so much so that it is identified as a stand-alone region in its global operations.

What has stood the company in good stead is a friendly industrial climate, growing impetus by the national government to 'Make-in-India', skilled labour and a persistent demand for its innovative products. In fact, 90% of the group's sales in India are manufactured locally.

Furthermore, with a pan-India dealer network and smart advertising strategies that ensure a strong connect with the final consumer, the brand recall of Saint-Gobain in India has been known to be as good as that in France. (Continued on page 68). ►



Mr B Santhanam, Managing Director, Saint-Gobain India Pvt Ltd.



A third float line has recently been commissioned at the 'World Glass Complex' near Chandigarh.



Emphasising the successful AIGMF/Glass Worldwide partnership, a selection of comments from AIGMF dignitaries include:



“Glass Worldwide is the **only** magazine outside India that I read cover to cover. Outside India, it is easily the industry’s best magazine in my opinion.” **Sanjay Somany, HNG**



“We subscribe to several copies of Glass Worldwide because it’s the global industry’s most useful magazine. Our senior people go through every issue because it is very informative on the industry’s latest developments.” **Vijay Shah, PGP / Piramal Glass**



Emphasising the successful AIGMF/Glass Worldwide partnership, a selection of comments from AIGMF dignitaries include:



“Glass Worldwide brings us expert information and education, such as new processes, development and equipment, without which we would be starved. We need this knowledge to continue to make better quality products at lower cost.”

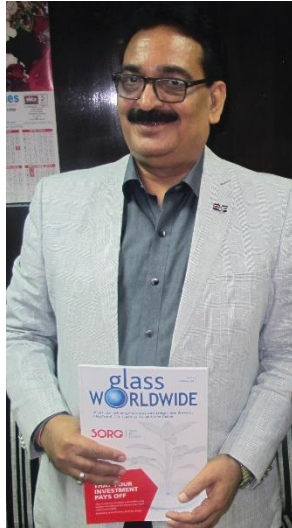
Mr Pradeep Kheruka, Borosil



“Glass Worldwide contains fantastic articles and on so many occasions I have read things that I did not know previously. Glass Worldwide brings knowledge to this part of the world where we are trying to understand the global industry and are just starting to get into the science of manufacturing.” **Mr Sanjay Ganjoo, Asahi India Glass**



Emphasising the successful AIGMF/Glass Worldwide partnership, a selection of comments from AIGMF dignitaries include:



“Glass Worldwide is the magazine that keeps us updated on the latest trends and information from the glass industry worldwide. Glass Worldwide is very popular among glass professionals in India and is often a common point of reference and discussion.” **Mr S S Parmar, Vitrum Glass (Empire)**



“Cooperation with Glass Worldwide is very good because it is recognised as the best glass magazine outside India.” **Mr Sushil Kumar Jhunjunwala, La Opala**



Thank you for your time, partnership and friendship



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