

### From the Editor's desk

At the outset, we wish readers a **Happy and Prosperous New Year** and also welcome you to another edition of Composites News.

The millennium year was an eventful year for Saint-Gobain Vetrotex India in more ways than one, - the shutdown of our plant for rebuild in the first quarter of 2000, the manner in which we were able to service major direct accounts even during shutdown (through a planned stocking of critical products), the commissioning of the new furnace, the name change of the company including the logo; and last, but not the least, the commencement of exports to the Asia Pacific Region.

The sluggish economy, especially in the second half of 2000, was however a dampener as was evident from the downward revision of the GDP from 7% to 5.8% by the Government of India. The automobile sector had to bear the brunt of a significant slowdown, which had a negative impact on other related aspects. In the process, the GRP industry also had a truncated growth. The silver lining, however, was the growth in the telecom sector which today is on a home run!

With the Technical Fabrics Business Unit poised to play a major role in the composites business worldwide, Saint-Gobain Vetrotex India already has a headstart in offering to Indian customers a range of speciality products such as multiaxial fabrics, insect screens, glass grids, tissue, etc. Advances in technology call for use of speciality

reinforcements that provide premium performance (compared to traditional reinforcements) for even existing applications and that too, at a lower cost. What is required is a clear understanding of customer needs and desired end performance characteristics of the composite - it is here that the marketing team would be able to advise customers on the proper choice of reinforcements through a techno-commercial approach that encompasses cost-benefit analysis studies.

The current issue of Composites News coincides with the inauguration of Saint-Gobain Reinforcements Centre at Thimmapur. The centre would be extensively involved in providing a range of comprehensive technical services to Indian customers and work towards accelerating the pace of the composites industry in the country. Our commitment to work for the growth of the Indian GRP industry has been amply substantiated by the setting up of the Saint-Gobain Reinforcements Centre (SGRC).

One hopes that the union budget (which is round the corner) would provide the necessary impetus to kickstart the economy again and put the Indian industry back on track after a bleak millennium year!

Till our next issue - happy reading!

*Sundaram*  
S. SUNDARAM

### Saint-Gobain Reinforcement Centre (SGRC)

The erstwhile Glass Fibre Technology Centre (GFTC) has been revamped and christened as Saint-Gobain Reinforcements Centre (SGRC). The SGRC mission is to increase the usage of glassfibre composites usage in India by substituting traditional materials such as steel, wood and aluminium. SGRC would work closely with customers, end users, consultants and Government agencies in getting GRP specified for various applications and usher in a sense of quality consciousness in the industry on the moulded products (by ensuring proper choice of reinforcements, resins, additives etc).



## Vetrotex India News

**Vetrotex India restarted its new furnace in July after a 3 month shut down for rebuilding. The key highlights of the rebuilt project were as follows :**

- ❖ After the rebuild of the furnace, the Thimmapur plant capacity has been doubled to 12,000 MT. The total investment made for rebuilding was Rs. 55 crores and plant was shutdown for 3 months.
- ❖ The new furnace incorporates the latest technology of Vetrotex with a state of the art DCS control system. The bushings and automatic winders are also of new generation and the plant incorporates the new tex control system with online measurement for superior quality control.
- ❖ The batchhouse has now been fully automated and the control of the incoming raw materials has also been made a lot stricter. Even the size binder storage, mixing and delivery system are totally new with superior controls for improved quality and lower waste.
- ❖ The mat forming chamber has been totally modified for better uniformity and increased line speeds. The assembled roving set up has undergone a major upgradation with new machines, post coating systems and density control systems.
- ❖ The finished goods warehouse and handling systems have also been mechanized for better handling and to avoid damage during storage.
- ❖ The Saint-Gobain Vetrotex India plant after the rebuild is now comparable with other Vetrotex plants in terms of capability to deliver quality products. It however differs from the other plants in one significant way. While most Vetrotex plants are specialized on a narrow range of products the Vetrotex India plant will continue to make the full range of reinforcements. This is because the plant is primarily targeted for sales in India. However to start with, a good part of the production will be exported till the Indian demand grows and catches up with the supply capability.
- ❖ After rebuild, all products manufactured will be more closely aligned to the Vetrotex worldwide product design and in line with this, the product codes have been adopted and changed. This is going to improve the overall quality levels, since the Vetrotex worldwide quality norms will now become applicable for the products manufactured in Thimmapur.



## GRP Pallets

Vetrotex India Application Development Team has developed a cost effective two-way GRP pallet for its in-house use by RTM route using roving. The pallets are currently used for handling finished goods to avoid damage. The pallets have been successfully tested for 2 T dynamic load. Saint-Gobain Vetrotex India has applied for a design patent and plans to popularize the use of this cost effective pallet for many other industries.

A lower cost pallet with 1 T capacity is now under development.

### Potential

The pallets are widely used in various industries for safe handling and storage of materials, optimum utilization of shop floor, ease in transport and improved productivity.

### Comparison

| Properties                     | Pallets |               |      |
|--------------------------------|---------|---------------|------|
|                                | Wooden  | Thermoplastic | GRP  |
| Static load carrying capacity  | medium  | medium        | high |
| Dynamic load carrying capacity | medium  | medium        | high |
| Chemical resistance            | low     | medium        | high |
| Life                           | short   | medium        | long |
| Creep                          | no      | yes           | no   |
| Warpage                        | yes     | no            | no   |
| Termite proof                  | no      | yes           | yes  |
| Weather proof                  | no      | yes           | yes  |
| Maintenance                    | yes     | nil           | nil  |

### Features

- ◆ moulded-in antiskid surface possible
- ◆ suitable openings for standard lifting equipments like fork-lift, hand-pallet truck and stacker
- ◆ selective resin system for different applications / working environments
- ◆ any identification, graphic or label can easily be permanently embedded right on the surface of the pallet



### Conclusion

It is evident from the cost benefit analysis that the GRP pallets are economically and technically viable alternative to wooden and thermoplastic pallets. Wood is getting scarce and wooden pallets also need periodic maintenance. Thermoplastic pallets are costly and prone to creep.

- ◆ single piece construction
- ◆ easily washable and disinfected - ideal for manufacturing and storage of food and pharmaceutical products

### Cost

Traditional design of GRP pallet uses hand lay-up technique. This gives in-consistent quality. The normal RTM process uses expensive reinforcement and hence make the product expensive. The new product designed by Vetrotex uses conventional reinforcement (roving) and the RTM process ensures consistent quality and high productivity, thus meeting the cost expectations.

### Cost Comparison

A life span of GRP pallet is 10 years. The cost benefits offered by GRP pallets are highlighted in the following table for the requirement of 500 nos. and a dynamic load carrying capacity of two tons.

| Description           | Unit        | Pallets        |                |                |
|-----------------------|-------------|----------------|----------------|----------------|
|                       |             | Wooden         | TP             | GRP            |
| Pallets required      | nos./10 yrs | 2750           | 1000           | 500            |
| Cost of pallet        | Rs./pc      | 1000           | 3500           | 2500           |
| Cost of pallet        | Rs./10 yrs  | 2750000        | 3500000        | 1250000        |
| Interest              | Rs.         | 2437500        | 3937500        | 1875000        |
| Scrap Value           | Rs.         | 13750          | 250000         | -              |
| <b>Total Cost</b>     | <b>Rs.</b>  | <b>5173750</b> | <b>7187500</b> | <b>3125000</b> |
| Cost vis-a-vis of GRP | Rs.         | 2048750        | 4062500        | -              |
| <b>Savings</b>        | <b>%</b>    | <b>65.56</b>   | <b>130</b>     | <b>-</b>       |

### Assumptions

- \* 50% of wooden pallets are replaced every year.
- \* Thermoplastic pallets are replaced after 5 years.
- \* 15% simple interest and no inflation is considered.
- \* Scrap vale of wooden pallets is Rs. 5 per pallet.
- \* Scrap vale of thermoplastic pallets is Rs. 250 per pallet.

## New Products

### Assembled roving

P 203 is an established Vetrotex product worldwide for SMC applications. This product has now been added into Vetrotex India product range and is being manufactured at Thimmapur plant. This is targeted for both Indian market and exports. P 203 is a proven product, which is highly user-friendly for SMC applications.

#### Properties :

- Y excellent processability
  - ! easy unwinding and chopping
  - ! good strands distribution
  - ! no fuzz
  - ! no static electricity
- Y easy wet-out and impregnation
- Y very good properties of moulded parts
- Y no colouration
- Y highly pigmentable
- Y good mechanical properties

P 203 is used for sheet moulding compounds (SMC), but is also an ideal choice to mould pipes, tanks using filament winding process.



## TECH TIPS

- ✓ Alternate use of CSM and WR avoids delamination instead of use of only WR to increase the strength of the product. In such cases combination mat (CSM and WR) is the best-preferred alternative, which reduces resin consumption and increases productivity.
- ✓ Texturised roving is advised at the corners and edges to increase the strength, where it is difficult to place the reinforcement.
- ✓ Addition of thermoplastic additives like polyvinyl acetate reduces the resin shrinkage.
- ✓ Electrical insulation of the product can be achieved by addition of fillers like alumina trihydrate, calcium sulphate, mica, silica, talc, etc.
- ✓ Chemical resistance of the product can be achieved by addition of fillers like calcium metasilicate, calcium sulfate, koloin (china clay), mica, talc, etc.
- ✓ Directional properties in a product can be achieved by the use of uni-directional mat.
- ✓ Printed papers are available, which can be used to make aesthetically appealing panel boards or decorative panels.
- ✓ A combination of continuous filament mat (CFM) & PM grade gives better mechanical and resin flow properties in RTM process.
- ✓ Thermoplastic web can be used in RTM process to increase the rigidity and to reduce the injection time at lower pressures which in turn reduce the mould cost for non-load bearing products.
- ✓ A 5 mm "pinch-off" determines the product edge as well as avoids "rushing" of resin towards vents without filling the mould in RTM.

If you are interested in more details on any of the subjects covered in this publication, please contact:

### Saint - Gobain Vetrotex India Ltd.

#### Saint-Gobain Reinforcements Centre

Thimmapur - 509 325, Hyderabad - Bangalore Highway, Andhra Pradesh, India.  
Tel : 08548 - 57714 to 57718, Fax : 08548 - 57713, e-mail : sgrc@saint-gobain.co.in