



Message from the President

Mr. Roberto Caliarì, President of Vetrotex worldwide in his New Year message to the customers had the following information to share:

- Vetrotex is gearing up to meet both the **global** and **regional** needs of markets and customers. This includes not only optimisation of capacities in the existing plants but also additional capacities in new locations such as India.
- Importance of both **glass fibre** manufacture and **technical fabrics** businesses in the Vetrotex strategy.
- Focus on **innovation**, with an investment of 4% of sales on new products development leading to a large number of new products in the Vetrotex portfolio.
- Optimisation of **logistics** through TWIST (Transworld Information system) project to increase speed and flexibility of response to customer demands.
- Commitment to **environment protection** through recycling of glass waste and finding alternative applications for glass scrap.

With the successful integration of glass fibre and fabric manufacturing activities, Vetrotex is emerging as number one in the glass reinforcement business. This further adds to the responsibility for contributing to growth of the market and introducing value added products on regular basis. Vetrotex stands **fully committed** to this important aspect.

From the Editor's desk

Welcome to the third issue of "COMPOSITES NEWS" – a publication from Vetrotex India that encourages readers to think!

With economists predicting 7-8% GDP in the aftermath of the budget; the signs are definitely positive for a satisfactory industrial growth this year; hopefully, this should apply to the composites industry as well. In order to measure up to the growing needs of the Indian composites market, Vetrotex India has embarked on a project that would result in enhancing and modernising its present manufacturing facilities at Hyderabad. Mr. Roberto Caliarì, President Vetrotex world wide, in his message has emphasised the Vetrotex commitment worldwide to the growth of composites.

With advancement in GRP processing techniques, the need for improved and varied forms of glass fibre reinforcements need not be overemphasised. Whilst conventional forms (mat, rovings etc) would continue to be popular, Vetrotex India is focusing on introducing a variety of "user friendly" reinforcements (PM grade mat for RTM, Combination mat for hand lay-up & pultrusion etc.). These products would facilitate processors in optimising cost (arising out of the use of specialised reinforcements) that result in higher glass content contributing to more strength at lower component thickness. Introduction of innovative reinforcements is one of the approaches in reducing cost without compromising on strength/quality of the moulded products.

In our last issue, we had mentioned about focussing on popularising GRC (Glass Reinforced Concrete) in India through the Cem-FIL range of products offered by Vetrotex. Readers would be pleased to note that the concept is fast catching on with several leading hoteliers, builders and architects having already ventured into use of alkali resistant glass fibres for their upcoming projects.

Innovation is the key to maintaining the leading competitive edge. It is with this objective that Vetrotex is working with customers in furthering the growth of the composites industry in India.

Our next issue in July should hopefully coincide with commencement of commercial production at our plant in Hyderabad after the rebuild.

Till then, happy reading!



S.SUNDARAM

Vetrotex News

DESIGN SERVICES

The growing applications of composites call for cost effective designs. Glass Fibre Technology Centre, Vetrotex India works towards this objective to meet the critical aspects of product design of the end users.

The **Vetrotex India Design cell** is committed to offering the Indian fibreglass industry complete design support to help in the growth of composites and is presently involved in the following activities:

> **Customised/tailor made** design solutions for end use applications like chemical tanks, pipes, pallets, etc.

> Development of user-friendly Design packages

- i) A comprehensive layer-by-layer stress strain analysis for Laminates.
- ii) Design packages for pipes, pressure vessels and chemical tanks.
- iii) Design of products for specific applications (various railway & automotive components), which involves working closely with end users - ICF / RCF, Telco, TVS.

For any specific assistance on design aspects of composites, please write to

Dr. P.S. Shembekar, Manager
Glass Fibre Technology Centre,
Vetrotex India, Thimmapur,
Palmakul - 509 325 or e-mail at

pshembekar@vetrotex.springsmx.ems.vsnl.net.in

New Applications at a Glance

Product : L & T Komatsu Engine hood
Developed by: M/s SAN Motors, Bangalore



Product weight: 13 Kgs., Process: RTM, Reinforcements used: CFM & PM Grade mat

Product: Pallet (Pay load 1.8T, dynamic)
Developed by: M/s Sky Engineers, Miraj



Product weight: 17 Kgs., Process: HLU, Reinforcements used: CSM & WR

Product: 3.8 Mt. Antenna reflector
Developed by: M/s Polymer Concepts, Hyderabad



Product weight: 150 Kgs., Process: HLU, Reinforcements used: CSM & WR

Product: Armada Instrument Panel
Developed by: M/s Fiberglass Fabrications, Chennai



Product weight: 3 Kgs., Process: RTM, Reinforcements used: PM Grade mat

Underground Petroleum Storage Tanks-An overview

GRP Under Ground Petroleum Storage Tanks have finally come of age, thanks to perseverance by glass fibre/ resin manufacturers and processors alike in convincing Oil Companies and Department of Explosives of the advantages of GRP tanks in lieu of mild steel. GRP tanks conform to the safety and environmental standards, there by meeting the requirements of Petroleum Act, Government of India.

GRP tanks score over conventional mild steel tanks on the following:

- **Excellent corrosion resistance** - avoids corrosion due to galvanic action, stray electrical currents and soil conditions.
- **High mechanical strength retention** - minimum reduction in mechanical properties even over a 40-year period.
- **Minimum maintenance** - eliminates periodic maintenance of the tanks, as GRP is corrosion resistant and unaffected by soil conditions.
- **Environmental aspects** - no risk of oil leakage.



Though the prime cost of GRP tanks is more than conventional tanks, the higher cost can be justified in view of the distinct inherent advantages of GRP. These aspects are highlighted in the life-cycle cost benefit analysis given below:

A. Tank Cost (Rs.)

	15 KL		20 KL	
	GRP Tank	MS Tank	GRP Tank	MS Tank
Cost of tank	133000	80000	150000	100000
Installation cost	25000	25000	25000	25000
Total cost	158000	105000	175000	125000
Interest	71100	47250	78750	56250

B. Comparison over 40 years (in Rs.)

	15 KL		20 KL	
	GRP Tank	MS Tank	GRP Tank	MS Tank
Life of the tank (yrs)	40	20	40	20
No. of tanks required	1	2	1	2
Cost per tank	158000	105000	175000	125000
Interest	71100	47250	78750	56250
Total cost/ tank	229100	152250	253750	181250
Scrap value	-	6400	-	6400
Net value	229100	145850	253750	174850
Total Cost	229100	291700	253750	349700
Savings with GRP Tank		27.32%		37.81%

Assumptions

1. Nil inflation cost in steel tank cost after 20 years has been considered
2. 15% simple interest has been considered.
3. No change in interest for new MS tank after 20 years
4. 100% Finance by loan repayable in 5 years.
5. No maintenance costs considered for MS tanks.

CONCLUSION

GRP underground petroleum storage tanks are proving to be the ideal means of storing fuel. These tanks will continue to offer a positive, economic and eco-friendly alternative to the petroleum distribution system in India.

New Products

COMBINATION MAT

Increased cycle time and higher labour costs associated with large surface areas and products with high thickness, have always been of concern to GRP processors. To address this problem, Vetrotex India has introduced "Combination mat" (comprising of chopped strands and woven roving that are mechanically held together) in a range of densities from **560 to 1200 gsm** with speciality widths (from 100mm to 1000mm) to suit the end user applications.

The advantages of Combination mat are:

- > Better consolidation compared to laying individual layers of CSM & WR leading to higher mechanical properties.
- > Lower cycle time in contact moulding.
- > Increased lay-up ease.
- > Reduced labour cost.

Combination mat is specially recommended in marine and chemical industries which involves large lay-up areas and higher laminate thickness. To derive maximum advantage (strength+economics) from the use of Combination mat; a judicious choice of the "correct" density of Combination mat is essential.

Based on actual tests carried out, typical comparison of Combination mat and individual layers of CSM/WR is shown below:



Property	Unit	Combination mat	CSM/WR layers
Tensile strength	MPa	235	233
Tensile modulus	Gpa	11.0	10.8
Flexural strength	MPa	393	311
Flexural modulus	Gpa	14.4	13.1
No. of layers(3)	—	CSM 300 + WR 610	CSM 450 + WR 610
Glass loading	Gm/m ²	910	1060
Glass content	%	51.7	51.3

TECH TIPS

- ✓ Guide pins are always advisable for deep draw closed moulds, which also enhances mould life.
- ✓ Addition of styrene to the resin at the moulding stage reduces mechanical properties.
- ✓ Additives are now available in India that can be used to remove entrapped air in the resin for closed mould techniques.
- ✓ Usage of plastic wedges during part removal, avoids edge chipping of the mould as well as the moulded component.
- ✓ Non skid & decorative textured surface can be incorporated in the mould by the use of suitable textured Rexene sheet in the pattern.
- ✓ Productivity & mould life can be increased substantially by giving 1-2° draft angle in case of deep draw products.
- ✓ Special emery paper (coated abrasive) is available with zinc stearate (Nofil) coating for sending GRP product to avoid the problem of loading of the paper while sanding.
- ✓ GRP sheathing on wooden boats increases life considerably.

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

Market Development Cell

Vetrotex Industries India Pvt. Ltd.

Thimmapur, Palmakul - 509 325, Hyderabad - Bangalore Highway, Andhra Pradesh, India

Tel : 08548 57714 to 57718, Fax : 08548 57713, e-mail : mktg@vetrotex.sprintmx.ems.vsnl.net.in