

## From the Editor's Desk

Polypropylene business recorded a growth of 12% on year to year basis during Financial Year 2012-13. Processing sectors have witnessed a capacity addition of ½ Million Metric Tonne across various segments during this year in Polypropylene alone.

Our initiative on market development resulted in new areas of growth of Polypropylene. In our endeavor to strengthen partnership with customer, we have launched "Product Knowledge Program (PKP)" on Pan India basis. Nine such events already conducted with overwhelming response from all of you. In addition, we have participated in end-use driven programs to propel new growth avenues of Polypropylene.

Reliance Foundation has initiated a novel social project on Women's Hygiene in rural India, we are pleased to carry an article on this. We have also included two technical papers on Long Fibre PP and Polypropylene Packaging.

From Repol team, I wish to convey sincere thanks to customers & OEMs for the incessant support to augment healthy growth of Polypropylene. Wish you all a very profitable year ahead!

Happy Reading!!

C. Paparao



## Product Knowledge Programs across Regions - Value to Customers

We at Reliance Polymers believe in building partnership with our customers through knowledge sharing of global market trends, technologies and latest emerging downstream business opportunities. We have organized 9 product knowledge programs (PKP) for our customers across India during Jan – Mar '13. We plan to organize more PKPs in FY 13-14.



## Golden Peacock National Quality Award for Nagothane Manufacturing Division

Our Nagothane Manufacturing Division (NMD) has won the Golden Peacock National Quality Award for the year 2012. Sh. Avinash Shrikhande, Site President,



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## Meet our Leaders

Mr. Chandrasekhar Rajagopalan joined RIL as President-Commercial in the role of Chief Financial Officer-Petrochemicals.

**Mr. Chandrasekhar** has more than 25 years of experience in Business, General Management, Merger & Acquisition and Finance. He has managed businesses in India, Europe and Americas.

Prior to joining us, he was associated with Essel Propack Ltd. He also had successful stints with Lupin, Tata Oil Mills and Hindustan Petroleum Corporation Ltd.

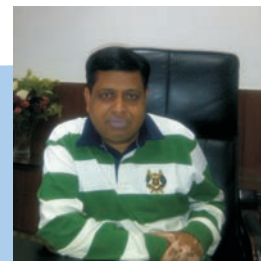
Mr. Chandrasekhar is an Associate Member of Institute of Chartered Accountants of India, Institute of Company Secretaries of India and Institute of Cost & Works Accountants of India.



## M/s Safeflex International Limited

**M/s Safeflex International Limited**, an ISO:900 and ISO 22000 HACCP approved company, is into the field of Polymer processing since 2007. The company has established itself as preferred supplier to all its overseas customers.

Promoted by technocrats, the company started with 2700 TPA in 2007 which will grow to 24,000 TPA in 2013. Its day to day operation is headed by Mr Jitesh Agrawal, a textile engineer from IIT Delhi.



Mr. Jitesh Agrawal

Both the plants of M/s Safeflex International Limited are at Pithampur, near Indore, which are dedicated to FIBC, Geotextiles, Shade nets, Bird nets and Safety nets. 80% of Company's production is exported to more than 25 countries across 5 continents..

Needless to say, Company's growth would not have been possible without active support and guidance of its business associates, Reliance Industries Limited being the major one.



## Mittal Group of Industries

Mittal Group of Industries is a group that prides itself with high level of competence in Extrusion, Weaving and Finishing technology; commenced production under the able leadership of Shri R.P. Agarwal in the year 1985.

Currently under the dynamic leadership of Mr. Manoj Kumar Agarwal, the company has grown by leaps and bounds. The main emphasis is quality product and customer satisfaction. This goal was achieved by using the best of raw material, latest technology and a highly sophisticated laboratory. Various systems of checks were developed along with trained personnel employed for quality management. The group has now become a multi-locational / multi-product conglomerate in Raffia Industry with manufacturing sites spread across West Bengal & Jharkhand in Eastern India and Chhattisgarh in central India. The total processing capacity of the group is 18000 tonnes per annum.



Mr. Manoj Agarwal

Mr. R. P. Agarwal

Adhering to the quality standard, the company has stepped into global market and one constituent of the group – M/s. Mittal Technopack Pvt. Ltd. is now ISO 9001:2008 and ISO 22000:2005 certified, enjoys 100%EOU Status and rated as Star Export House by Government of India.

The Group, apart from catering to domestic market, is also serving key customers in many countries including UK, USA, Australia, Middle East, Canada, Africa and European countries.



In quest of continuous improvement in product profile, the Group has recently commissioned an AD-STAR line of Starlinger for manufacturing Block Bottom Bag at their manufacturing site in Bilaspur (Chhattisgarh) with a capacity of producing 1,60,000 bags per day.

Mr. Manoj Agarwal and entire team of Mittal Group favours close relationship with Reliance Industries Ltd. – Polymers division and appreciates effort and support extended from Reliance Polymers team.



## Agriculture Meets

Participated in 6 KisanMela / Agricultural Seminar organized by the industry across 6 states to promote Polypropylene Crop cover, Fruit cover, Leno and Silage packaging with FIBC.

- IPI Seminar on Agrotect, Bangalore, Karnataka.
- KrushiPragat, Kolhapur, Maharastra
- KisanMela, Bhagalpur, Bihar
- Seminar of Agro textiles, Purulia, West Bengal
- KisanMela, Pantnagar, Uttarakhand
- Seminar of Agrotextiles, Jabalpur, Madhya Pradesh



## Dairy Conference

Leading Dairy technologists & academicians gathered at Mumbai for 41<sup>st</sup> Global Dairy Conference (March 14-16, 2013). Our presentation on Polypropylene FIBC "Silage Bag" was well appreciated by the guests.



## Textile Conference

Participated in two textiles conference organized by FICCI (Technotex Exhibition & Conference, Delhi) & ITTA (Geotextile Conference, Delhi). The subject covered was Technical Textiles & Geotextiles.



## Packaging Conference

Participated in two events on One day National Workshop on "Packaging of Fresh & Processed Foods" in Bhopal and EFIBCA, Delhi. It was organized by Indian Institute of Packaging & Sponsored by Ministry of Food Processing, Govt of India.





## Emerging Trends & Opportunities in Rigid Packaging, Chennai

Customer Meet on “New Trends & Opportunities in PP Rigid Packaging” was organized bringing all the stakeholders at one platform. Apart from presentation by Reliance Polymer team, 5 presentations were delivered by CavinKare, Shyam Plastics, Sumitomo Demag, e3 Plastech, Machinefabrik on various new opportunities



## Role of Geotextile and polymers in Infrastructure - Goa



Reliance Polymer group organized workshop on “Role of Geotextile and Polymers in Infrastructure” organized on 22<sup>nd</sup> Feb 2013 at hotel Mandvi, Panaji, Goa. Program was inaugurated by Hon. Cabinet Minister Sh. R Dhavlikar, Public Works, Transport & River Navigation, Govt of Goa. It was also attended by Senior Govt officials, Sh. J J S Rego, Principal Chief Engineer, Public Works Dept., Govt. of Goa; Sh. S T Nadkarni, Chief Engineer- Water Resources & Ex-officio Addl. Secretary, Govt. of Goa; Sh. D J S Borkar, Chief Engineer – I (PHE, Roads & Bridges), Public Works Dept., Govt. of Goa who assured full support to promote Geotextile usage in the infrastructure development of Goa.

## New Opportunities in Polypropylene, Mumbai

Mumbai & Daman Region jointly organized a “Customer Meet” in Mumbai on 25<sup>th</sup> March 2013. Over 150 key personal of our esteemed customers, OEMs, DCA & dealers attended the program.



## Emerging Trends & Opportunities in Rigid Packaging, Bhubaneswar



CRM on “Packaging of Sweets and Food items in PP Rigid Container” was organized bringing all the stakeholders at one platform.

## Polypropylene Long Fibre Reinforced Thermoplastics

### Introduction

Polypropylene, the second largest Polymer produced in the world, has good balance of properties, process ability and the cost economics. As the result, it has been witnessing a positive growth and getting into more and more new applications.

The advantages of PP is its ability to get compounded with many materials like mineral fillers and glass fibres which enhances the properties to meet the stringent requirement of the engineering application for Automotive industry.



### PP LFRT (Polypropylene Long Fibre Reinforced Thermoplastics)

PP short glass reinforced materials are widely used in many applications. However, for Automotive Industry, key requirements are weight saving and enhanced performance at an affordable cost for replacing metal and engineering plastics. One of the ways to enhance the high performance of Polypropylene is the usage of long glass fibres reinforcement.

In the conventional short glass fibre based PP compound, the fibers after moulding of the component retains the length of 1mm resulting in low level of mechanical properties. The properties increases manifolds if fibre length is retained >3mm in the final moulded product as in case of PP LFRT.

The manufacturing of LFRT is a special process which involves processes such as wire (glass fibre) coating, cast extrusion, and pultrusion. Further these LFRT granules are moulded into various components by injection molding process to retain the maximum length of glass fibre.

### Major Characteristics of PP LFRT

- Extreme Toughness/Durability
- Dimensional Stability
- Weight Reduction
- Recyclable

### Typical Property Chart of PP LFRT

| Properties`                 | Test method | PPSF 40% | PP LFRT 40% |
|-----------------------------|-------------|----------|-------------|
| Tensile Strength(Mpa)       | ISO-527     | 95       | 115         |
| Flexural Modulus(Mpa)       | ISO-178     | 6500     | 8450        |
| Notched Izod Impact (KJ/m2) | ISO-180     | 16       | 24          |
| HDT @1.82Mpa load (°C)      | ISO-75      | 145      | 159         |

### Various Grades of PP LFRT

PP LFRT is commonly available with glass fibre loading upto 50%. The fibre length usually maintained in the granules is 12mm and above.

Following are two categories available.

- Masterbatch with high concentration of glass fibre.
- Ready to use pellets.

Second category is most commonly used in India.

After molding the fibre length will be retained to 3-4mm. In general, higher the retention of fibre length, better the properties.

There is one more process of making PP LFRT component. In this process both Compounding and Injection process are performed in-line which is called In-line compounding.



### Applications

PP LFRT is mostly used in Automotive Industry replacing expensive engineering plastics and metal for weight saving and cost reduction without compromising the performance level.

Some of the LFRT applications are as under:-

Front End Module Carrier, Gear Shifter Base, Battery Tray, Tail Gate, Door Module, SUV Side Foot Step, Engine Cover, Bumper Beam etc. India few cars are already started using while it is most common abroad.

### Future prospects

Light weight car for increased fuel efficiency, safety requirements for pedestrian, cost competitiveness through part consolidation are some of the key demanding requirements of the Automotive Industry. PP LFRT plays a very significant role in meeting the above requirements.



## Polypropylene in Food Packaging

### Introduction

Packaging fulfils the diverse role from protecting products, preventing spoilage, contamination, extending shelf life, ensuring safe storage thereby helping to make them readily available to consumers.

India is one of the largest producers of commodities like Food grains (220MnMT), Sugar (20MnMT), Milk (180MnMT), Fruits, Vegetables (150MnMT), Pulses (20MnMT) and tea. Due to varied crop pattern, localized production of commodities, safe and hygienic storage, transportation and distribution and protection against wastage, hence packaging is of utmost importance.

### Why Polypropylene (PP) for packing?

PP has emerged as the most preferred choice of packaging material for various products, ranging from food, beverages, chemicals, electronic items and so on. It offers unique advantages over conventional materials.

- 1) Safety : PP is safest material for packaging of food products as it does not react with food. Pilferage and contamination is difficult.
- 2) Shelf Life : PP based packaging material offer better shelf life
- 3) Cost : PP is the most cost effective medium of packaging when compared with any other material, the cost of transportation is reduced considerable on account of lower weight and less damage
- 4) Convenience: PP can be converted in any form with various processing techniques, thus can pack any type of substances like liquids, powders, flakes, granules, solids.
- 5) Waste: Packaging in PP reduces the wastage of various food products, typical example is potatoes or onions packed in leno.
- 6) Aesthetics : PP Packaging increases the aesthetic value of products and helps in brand identity
- 7) Handling and Storage: Products packed in PP are easiest to handle and store as well as transport.
- 8) PP is easy to recycle.

Every day there are new products packed in PP replacing conventional products and when we think of packaging a new product the first choice that comes up is PP based packaging material.

### Foods products packed in PP

There are various food items those are effectively and economically packed in various types of plastic packaging materials. The details are summarised below.

#### 1) Food Grains, Pulses and Sugar

Various studies and field trial have been conducted both in food storage go-downs and laboratories to establish suitability of PP Woven Sacks for long-term storage of Food grains and sugar. The studies have been conducted from reputed institute like Indian Agricultural Research Institute (IARI), Indian Grain Storage Management and Research Institute (IGMRI), Industrial Toxicological Research Centre (ITRC), and Indian Council for Agricultural Research (ICAR) etc. Test and trial parameters were selected in view of most important parameters with respect to Food grains storage and packaging. (The detailed report on these studies can be obtained by sending a mail to [PP\\_businessdevelopment@ril.com](mailto:PP_businessdevelopment@ril.com))



#### 2) Fruits and Vegetables

India is the 2nd largest producer of fruits and vegetables in the world. But our national loss of F & V is as high as 35%. Lack of cold storages, PHM, improper packaging and abusive handling of farm produce are major reason of losses. Horticulture produces are sent to various Mandis by trucks without any packaging or mainly in wooden box, paper cartons, jute bags and crates. PP Leno bags with number of advantages offer the most efficient and cost effective solution. Due to these advantages Leno bags have become first choice for hard skinned and vegetable packaging. Export norms by some countries too specify use of leno as packaging material particularly for onion, potatoes etc.



### 3) Dairy Products – Milk and Milk Products

Dairy Industry is of crucial importance to India. Dairy products are a major source of cheap and nutritious food to millions of people in India. Even though India is the largest producer of milk, milk does not reach each individual as cost of handling and storage as well as transportation is high. New developments with PP for packaging of flavored milk will help in considerable increase in its shelf life. Efforts are on to increase shelf life even at room temperature.



### 4) Health Drinks

Health drinks like Bournvita, Complan, Boost, Horlicks are gaining popularity in India. The consumption of these products is increasing multifold. Until few years back, all of these were packed in glass jars and refill packs. Polypropylene jars have now replaced almost all the glass bottles and offer numerous advantages over glass.

### 5) Processed / Semi Processed Food / Bakery products

Invent of PP based flexible packaging has given a boost to processed food consumption all over the world. PP monolayer and multilayer films address all the packaging needs of the processed foods from barrier properties, microwave-ability, shelf life to aesthetics.



### 6) Ready to eat food

Retortable and ready to eat foods are being very common because of the present life style

Both flexible and rigid PP products are used for packing of these products. Microwave ability, better shelf life, hygiene and aesthetics are the positive factors that are in favor of PP.

### Recyclability of PP

As PP is non-biodegradable, its disposal is sometimes a problem. The most effective way of handling this issue is to recycle the products after use. Recycled PP finds many applications especially where food packaging is not done.



### Conclusions

- 1) PP offers a safe, hygienic and cost effective means of packing both raw and processed food products.
- 2) Use of PP based products for packaging reduces food spoilage in storage, transportation and on shelf in the retail stores
- 3) In India, raw materials, machineries as well as finished product companies that are required to manufacture PP packaging products are amply available.

For detailed information on any of the above please write to [pp\\_businessdevelopment@ril.com](mailto:pp_businessdevelopment@ril.com).

### Golden Peacock National Quality Award for Nagothane Manufacturing Division (Contd. From Page 1)

NMD, received the award on behalf of RIL at a grand Award Gala Nite at 'The Lalit Ashok' in Bangalore on Friday, February 8, 2013, in the presence of a distinguished gathering of business leaders, jurists, academics, environmentalists, economists, legislators and policy makers. Honourable Union Minister for Petroleum and Natural Gas Dr M Veerappa Moily was the Guest of Honour at the event.

The Golden Peacock Awards, instituted by the Institute of Directors, are regarded as a benchmark of corporate excellence. The awards celebrate and honour the best of the best in recognition of their unique achievements. The theme for the World Congress this year was 'The challenge of integrating leadership and quality of governance for sustainability'. Sh. Shailza Singh from the NMD made a presentation on NMD's best practices.





## Launch of Menstrual Hygiene Programme

Reliance Foundation initiated the 'Menstrual Hygiene Programme' on International Women's Day on March 08, 2013 in Kheda district, Gujarat. This programme seeks to address the lack of awareness amongst women on menstrual hygiene, which results in severe health problems among women. Inadequate protection also adversely impacts women, especially school going girls, leading to drop-outs.

Under the programme, Reliance Foundation launched an affordable range of sanitary napkins called 'Meeta'. In the first phase, the programme will reach out to 500,000 women in over 850 villages in Anand and Kheda districts of Gujarat. As a part of this initiative, awareness raising activities will be undertaken through village based volunteers reaching out to women in some of the most vulnerable communities across rural India. Reliance Polymers team has actively supported Reliance Foundation in finalization of specification, construction of material, type & vendor of sanitary napkins.



## INDUSTRY EVENTS

Fire Safety with Polymers, Mumbai, 19<sup>th</sup> April

IDEA 13, Miami, USA, 23-25<sup>th</sup> April

Poly India, Chennai, 25-27<sup>th</sup> April

Plastomotive 2013, Pune, 3-4 May

Chinaplas, Guanzhou, 20-23<sup>rd</sup> May

Concrete Conference, Mumbai, 12-13<sup>th</sup> June



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