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Editorial

Dear Members,

Good day!

On the occasion of Poila Boishakh I Wish all members **'SHUBO NABO BARSHO'**.

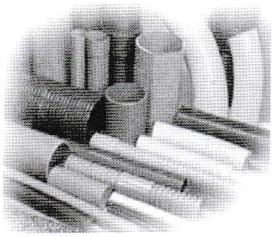
Bengali New Year is the first day of the Bengali calendar, celebrated mainly in West Bengal. It connects all ethnic Bengalis irrespective of religious and regional differences in India. Poila Boishakh is all about spreading love and happiness, gift giving and praying for each other's well being and prosperity. It is considered to be an auspicious time for marriages. These days people wear new clothes and go about socializing. This day being auspicious, new businesses and new ventures are started. The Muhurat is performed, marking the beginning of new ventures.

Apart from Bengali New Year, 'Baisakhi' - The Punjabi Harvest Festival also falls in this month. This day is also considered auspicious for new ventures and business transactions. So we are in the midst of a New Year, a harvest festival Baisakhi and a New Financial Year 2012-13. Let us now take on the New Financial year 2012-13. To start off the financial year financially sound we have to work out and have a financial plan or strategy in place to become financially independent.. The financial new year is a good time for making resolutions. It's a great time to take stock of where you are financially and how to improve your situation. Take a moment to reflect on your past. Have any of your actions or lack thereof held you back from achieving your goals? Making a resolution means stopping bad habits and moving forward in a constructive way to better your financial position or comfort levels.

From the recent happenings in most of the European economies, it is quite clear that 2012 will be a rough ride for the European Union. A recent World Bank report has also cautioned this the euro-zone crisis along with weakening growth in several big emerging economies may have some downside effects on developing countries. Keeping these dimming global growth prospects, it is the right time for us to work out and have a financial plan or strategy to meet the future.

Yours truly,

Pradip Nayyar
Editor



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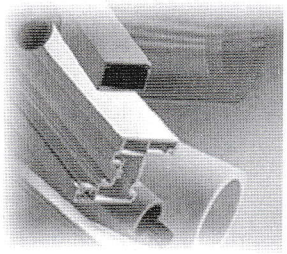

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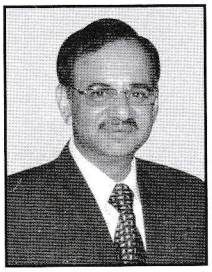

Dear Members,

Holi greetings;

I thank you all for the whole hearted support you are giving to the INDPLAS 2012 chairman. With your support only we will be able to reach our target.

The work of "INDPLAS'12" EXHIBITION is going on in full swing. Members are coming forward and giving their valuable time and suggestions. I would request all the members to come forward and help IPF to make this dream project a grand success.

Prices of polymers are rising every day and it is becoming difficult for small processors to cope up with the upward trend. Industry is losing as the customers are reluctant to revise prices so frequently.

I wish all of you a bright **Happy New Year Samvat 2060 and a Happy Bengali New Year 1419.**

With warm regards

Rajesh Mohta
President

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SCIENCE CITY GROUND, KOLKATA, INDIA
OCTOBER 5 - 8, 2012

Jointly Organised by :

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SECRETARIAL REPORT

Dear Members,

The financial year 2011 – 12 has come to an end. Some achievements may have been achieved by each one of us and some mistakes also may have been made. I wish all members and pray to God and in the new financial year that has commenced on 1st April 2012 all of us will do good business that in turn will promote the interest of our Federation.

I would also like to convey my good wishes to all of you on the occasion of "Shubo Nobo Borsho".

Preparations for Indplas'12 is going on in full swing. Both Haldia Petrochemicals Ltd. and Indian Oil Corporation Ltd. have confirmed that they will participate in Indplas'12. Mass e-mails are regularly going to exhibitors of Indplas'12, Plastivision 2011, Plexpo 2010 and Indplas'06. The Federation is getting good response for space booking.

In response to our application given earlier Haldia Development Authority had requested us to submit a Project Report for granting land in Haldia. In this connection, the Federation has written to the Chief Execxutive Officer, Haldia Development Authority that IPF will work as a facilitator for the setting up of Poly Park at Haldia on the same lines as IPF did for the Poly Park at Sankrail, Dist. Howrah.

An IPF delegation visited Chinaplas 2012 held at Shanghai New International Expo. Centre, Shanghai, PR China from April 18-21, 2012.

The Federation has requested all sponsors of Indplas'12 to make their payments towards Indplas'12 & IPF KC since the Federation will soon commence work at IPF Knowledge Centre.

Wishing all members "Shubo Nobo Borsho" once again,

With best wishes,

Pradip Nayar
Hony. Secretary

"Biopolymers: A Developing Trend In Drug Delivery System."

Smaranika Pradhan, Pratik Deshpande, Priyanka Chalak,
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JAW AHARLAL NEHRU ENGINEERING COLLEGE,
DEPARTMENT OF BIOTECHNOLOGY ENGINEERING. AURANG ABAD, MH

1. Abstract :

Biopolyrners occupy a major portion of biomaterials used for controlled release formulations and drug-targeting systems because this class of materials presents seemingly endless diversity in topology and chemistry. Drug delivery is the method or process of administering a pharmaceutical compound to achieve a therapeutic effect in humans or animals. Drug delivery technologies are patent protected formulation technologies that modify drug release profile. During the past decades, a large number of drug delivery systems, mostly in the forms of micro spheres, films, tablets, or implantation devices, have been designed to achieve sustained drug release by taking advantage of the peculiarities of polymers. Engineered polymers are the materials used today to construct carriers with controlled drug delivery properties. Today, the concept of drug delivery is not limited to prolonging the duration of drug release; instead, it implies strategies for realizing temporal and spatial distribution control in the body. Optimizing polymer architecture is an intelligent strategy to develop desired pharmaceutical products.

Keywords: Biopolymers, Drugdelivery system, Microspheres, technologies, optimizing polymer architecture.

2. Introduction:

2.1 Biopolymers:

Polymers, including **biopolymers**, are made of repetitive units called monomers. **Biopolymers** are polymers produced by living organisms. Cellulose, starch and chitin, proteins and peptides, and DNA and RNA are all examples of biopolymers, in which the monomeric units, respectively, are sugars, amino acids, and nucleotides. Biopolymers are renewable because they are made from plant materials which can be grown year on year indefinitely. Some biopolymers are biodegradable, they are broken down into CO2 and water by microorganisms. In addition, some of these biodegradable biopolymers are compostable: they can be put into an industrial' compo sting process and will break down by 90% within 6 months.

In recent years, there has been a steady expansion of biopolymer research activities in both the private and the public sectors. Concems about the environmental impacts of petroleum-based polymers have led many companies to investigate several different classes of biologically derived polymer materials. Advances in chemistry and the biological sciences have also stimulated research efforts in the biopolymer area. The potential applications of biopolymer are extremely diverse, ranging from packaging to food additives and industrial chemicals to pharmaceuticals. Novel biopolymer materials are being investigated by Government and university researchers, large agricultural and chemical firms, and small biotechnology enterprises.

2.2 Biopolymers in the field of drug deliyery system:

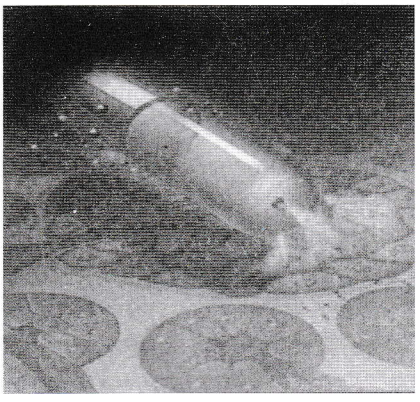


Fig 1: Drug Delivery System

Biopolymers have occupied a central status in drug release control as well as in the fabrication of drug delivery systems. In comparison with other classes of materials, polymeric materials, including natural, semi natural, and synthetic polymers, present countless opportunities to modulate the properties of drug delivery systems other than to meet several criteria such as biodegradability, biocompatibility, and reproducibility because of their diversity in - chemistry, topology, and dimension.

Synthetic and natural biopolymers are finding their way into a variety of applications in materials science and biointerface engineering, such as tissue engineering scaffolds, drug delivery matrices, and as detectors and transducers in biosensors. Commonly used natural biopolyrners include cellulose, collagen, hyaluronic acid, and fibrin gels. In contrast to these naturally occurring biopolymers, engineered" peptide-based biopolymers have recently attracted much attention as a new class of materials. Prototypical examples of engineered peptide-based biomaterials include poly-amino acids, elastin-like polypeptides, silk-like proteins, coiled-coil domains, tropoelastin- based peptides, leucine zipper based peptides, peptide amphiphiles, beta-sheet forming tonic oligopeptides, and beta- hairpin peptides.

Drug delivery systems (DDS) utilizing polymers that degrade in the body have attracted considerable attention in recent years. The use of biopolymers for drug delivery can minimize tissue reaction and allow for the administration of drugs by methods other than injection. Controlled-release drug system is a combination of a biologically active agent (i.e., the drug) and a support vehicle. The support vehicle can be either a matrix or a reservoir device. In a matrix system, an active drug is dissolved or dispersed uniformly throughout a solid polymer. Drug release from the matrix can be controlled by either diffusion or an erosion process. In a reservoir system, the polymer acts solely as a barrier that controls the rate of drug delivery by diffusion.

Polylactic and polyglycolic acid copolymers are the most widely used drug vehicle materials.

Other biopolymers being investigated include poly amino acids, derivatives of chitin, and some Chemically modified starches. One reason for this rapid growth is the large number of genetically engineered protein drugs that are now being introduced. Encapsulation of proteins in biopolymer materials prevents the proteins from being prematurely destroyed by attacking enzymes. Another factor contributing to the growth of drug delivery systems is that they provide a means for extending the patent life of drugs. The major area of application for these novel sustained-release systems is in the treatment of cancers and geriatric diseases. For the most part, the industry leaders in drug delivery systems are relatively small, technologically sophisticated firms that frequently have close relationships with academic research centers. Since DDS development lies outside the traditional expertise of most pharmaceutical companies, large firms have typically acquired this technology through contracting, licensing, joint ventures, and acquisitions. In recent years, however, most large pharmaceutical companies have initiated modest in-house research efforts.

3. Methodology :

During the past decades, a large number of drug delivery systems, mostly in the forms of microspheres, films, tablets, or implantation devices, have been designed to achieve sustained drug release by taking advantage of the peculiarities of polymers. Today, the concept of biopolymer drug delivery is not limited to prolonging the duration of drug re lease; instead, it implies at least two strategies for realizing temporal and spatial distribution control in the body. Temporal control stresses the selection of a predetermined kinetics of the drug release during treatment, whereas spatial distribution control aims to precisely direct a drug vehicle to desired sites of activity. Many medications such as peptide and protein, antibody, vaccine and gene based drugs, in general may not be delivered using these routes because they might be susceptible to enzymatic degradation or cannot be absorbed into the systemic circulation efficiently due to molecular size and charge issues to be therapeutically effective. For this reason many protein and peptide drugs have to be delivered by injection.

Cross-links are bonds that link one polymer chain to another. It is a well known fact that polymers with a high enough degree of crosslinking have "memory". With this "memory", such cross-linked polymers can be exploited

for a number of useful purposes including modifications for improved drug delivery and release. Several reports have indicated that the cross-linking density, molecular weight, electrical charge of polymers and other factors might have a profound effect on the release rate of drugs from polymer-based multiparticulate drug delivery systems.

3.1 Factors to be taken in consideration for drug delivery system:

3.1.1 Drug Encapsulation:

Drug can be encapsulated by micelle encapsulation or microsphere encapsulation. There are two methods to load drugs: physical and chemical encapsulation.

(A) **Micelle Encapsulation**

A **micelle** is an aggregate of surfactant molecules dispersed in a liquid colloid. A typical micelle in aqueous solution forms an aggregate with the hydrophilic "head" regions in contact with surrounding solvent, sequestering the hydrophobic single tail regions in the micelle centre. This phase is caused by the insufficient packing issues of single tailed lipids in a bilayer. Micelles are approximately spherical in shape. Other phases, including shapes such as ellipsoids, cylinders, and bilayers are also possible. The shape and size of a micelle is a function of the molecular geometry of its surfactant molecules and solution conditions such as surfactant concentration. temperature, pH, and ionic strength. The process of forming micellae is known as micellization and forms part of the phase behavior of many lipids according to their polymorphism.

The chemical encapsulation is carried out by forming a drug polymer conjugate core in the micelle. Compared to chemical encapsulation, the physical encapsulation of drugs within the polymeric micelle core is more attractive because many polymers and drug molecules do not bear reactive functional groups, and the pharmacological effectiveness of the drug is maintained without chemical modification. Physical encapsulation usually operates through dialysis or O/W emulsion methods. Parameters including solvent type, concentration, and duration can affect the morphology of the micelles and its drug encapsulation. It is worth noting that polymer architecture also greatly influences drug encapsulation, Therefore, it is reasonable to conclude that drug encapsulation mainly relies on the intrinsic interaction affinity between drug and certain groups of hydrophobic block.

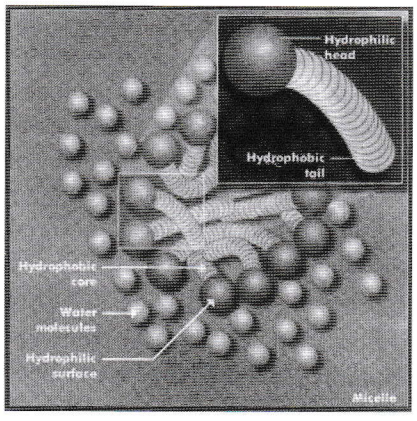


Fig 2: schematic cliagram of micelle

(B) Microsphere Encapsulation:

Microspheres can be defined as solid, approximately spherical particles ranging in size from 1 to 1000 / lm. They are made from polymeric, waxy, or other protective materials such as starches, gums, proteins, fats and waxes and used as drug carrier matrices for drug delivery. Natural polymers as albumin and gelatin are also used in preparation of microspheres.

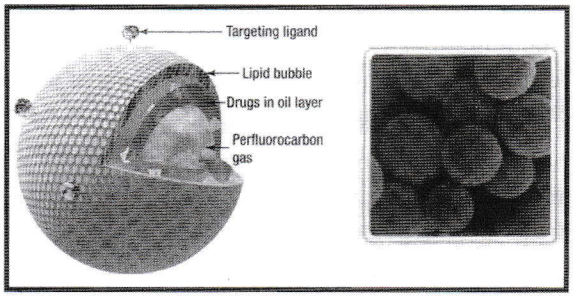


Fig 3: schematic cliagram of microsphere

Biodegradable micro spheres have the advantage over large polymer implants in that they do not require surgical procedures for implantation and removal. They are degraded in the body to biocompatible materials. Biodegradable microspheres are used to: * Control drug release rates. *Conserve the stability of some drugs as proteins and peptides. *Also to target drugs to specific sites in the body, thereby optimizing their therapeutic response, decreasing toxic side effects, and eliminating the inconvenience of repeated injections. *They are also used in gene delivery and in diagnostic materials. Examples on polymers used in microspheres CDDS 1- Chitosan MS. 2-Gelatine MS. 3- Polyadipic anhydride MS 4-Gellan- gum MS. 5-Polypeptide MS. 6-Albumin MS. 7- Poly lactic acid

(PLA) MS. 8-Poly lactic - co- glycolic acid (PLGA) MS. Controlled release delivery Biodegradable micro spheres are used to control drug release rates thereby decreasing toxic side effects, and eliminating the inconvenience of repeated injections. Biodegradable microspheres have the advantage over large polymer implants in that they do not require surgical procedures for implantation and removal.

PLGA copolymer is one of the synthetic biodegradable and biocompatible polymers that has reproducible and slow-release characteristics in vivo.

Drug targeting could be the greatest advantage of microspheres. Most drugs are targeted in the body to give desired results either in specific tissues or organs. A good example of how microsphere technology could be implemented is targeting cancer cells in chemotherapy, as drugs and chemical agents attack cancer cells but have a toxic effect on healthy ones which could very easily cause the cells to die.

Microspheres have been prepared by three basic methods as well as other modified methods:

1- Solvent extraction I evaporation method (single and double emulsification)

2- 2- Coacervation or phase separation.

3- 3-Spray drying. 4- Modified methods.

1 - Solver t extraction/evaporation method: Oil phase (polymer + solvent)'is injected into the aqueous phase (water + surfactant), the solvent dissolves into the aqueous phase and evaporates at the air-liquid interface. This method was successfully used for numerous of water insoluble and slightly soluble drugs encapsulated in micro spheres such as lidocaine, naletrxone, bupivacaine, 5-aminosalicylis acid, flurb ipro fen, all-trans retinoic acid and testosterone.

2 - Coacervation phase separation: This method is based on dispersion of drug as solid or organic solution in organic polymeric solution, then addition of the second solvent in which the polymer is insoluble where phase separation occurs and polymer loaded with drug precipitate as microspheres. BSA is an example prototype for this method.

3 - Spray drying: In this technique the drug and polymer are mixed in a solvent system, and then the solvent is evaporated by spraying the solution leaving the polymeric particles loaded with the drug. This method generates heat so it is not suitable for heat sensitive drugs [116]. Fluconazole and tetracycline hydrochloride are examples on drugs prepared by this method.

3.1.2 Biodistribution:

Biodistribution in the body is an integrative problem related to the size, CMC (In chemistry, the critical micelle concentration (CMC) is defined as the concentration of surfactants above which micelles are spontaneously formed. Upon introduction of surfactants (or any surface active materials) into the system they will initially partition into the interface), surface charge, and the targeting moiety of the micelle. low CMC and small size can insure shape integrality to retain the drug and extend the circulation time of micelle, which facilitates the accumulation of drugloaded micelle and subsequent drug release at the target site. In addition, surface charge is another predominant factor that affects micelle biodistribution. Having an electrically neutral surface on the micelle should suppress the unspecific uptake. Incorporating drugs into Bstealthy micelles, which present a hydrophilic shell such as PEG, is the most effective method to prolong plasma half-lives of the drugs by reducing interactions with the blood components and RES uptake. Additionally, the molecular weight of PEG has proven to remarkably affect biodistribution

3.1.3 Drug Release:

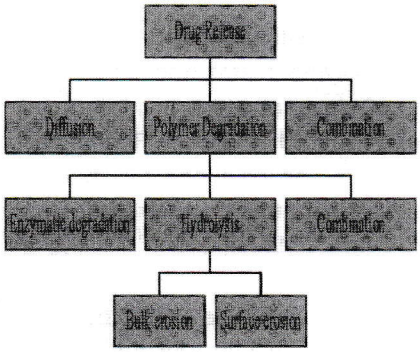
Typically, a drug exerts its action only after it releases from the micelle core. But this does not mean the quick drug release rate is optimal; otherwise, there would be serious drug loss during circulation. When drugs are physically encapsulated in stable polymeric micelles, the drug release rate is controlled by the diffusion out ofthe micelle core and/ or by dissociation of the micelles. The diffusion rate may be quite low if the drug prefers to interact with the core-forming block. The design of block copolymer micelles with glassy cores under physiological conditions also favors release in a sustained manner. The localization of the solute in the core/shell structure, micellar size, and molecular volume of the drug are other factors that also influence the rate of drug diffusion from the polymeric carrier. More attractive examples in this case refer to the pHsensitive

micelles, thennosensitive micelles, and reversibly cross-linked micelles. Based on the fact that many pathological processes in various tissues and organs are accompanied by local acidosis or temperature increases, pH-sensitive or thermosensitive micelles can be designed to achieve targeted drug release.

3.1.4 Need for control drug delivery :

For most of the pharmaceutical industries existence, drug delivery induced simple, fast-acting responses via oral or injection delivery routes Problems associated with this approach

- ❑ Reduced potencies because of partial degradation
- ❑ Toxic levels of administration
- ❑ Increase costs associated with excess dosing
- ❑ Compliance issue due to administration pain.



As the cost and complexity of individual drug molecules has risen the problems with the classical delivery strategies over took their benefits.

Goal of more sophisticated drug delivery techniques

I. Deploy to a target site to limit side effects
2. Shepard drugs through specific areas of the body without degradation
3. Maintain a therapeutic drug level for prolonged periods of time
4. Predictable controllable release rates
5. Reduce dosing frequent and increase patient compliance

4. Classification:

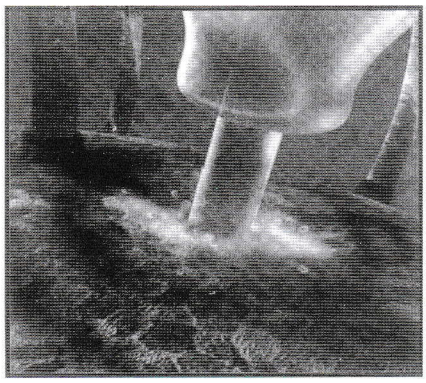


Fig. 5: Drug targeting

Any polymer selected for drug delivery formulation is commonly classified according to

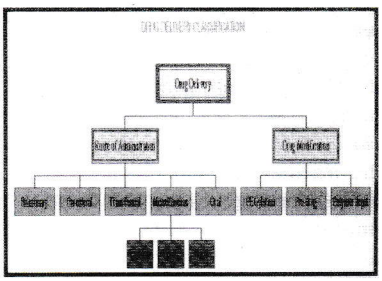
- chemical nature [such as polyester, polyanhydride, poly(amino acid)]
- backbone stability (biodegradable, nonbiodegradable) and
- water solubility (hydrophobic, hydrophobic Optimizing polymer architecture is an Intelligent strategy to develop 'desired pharmaceutical) products

Routes of admnistration and classification of drudelivery systems

The principal routes of administration for medicinal products are listed below.The choice of an appropriate route of administration for a specific bioactive will be influenced by many factors, such as required time of onset of action or drug targeting issues. Similarly, selection of drug delivery class is based on these and other numerous factors, as well as features related to the properties of the bioactive material itself, such as solubility and stability

4.1 Routes of administration:

Most common routes of administration include the preferred non-invasive peroral (through the mouth), topical (skin), transmucosal (nasal, buccal/sublingual, vaginal, ocular and rectal) and inhalation routes.[4][5] Many medications such as peptide and protein, antibody, vaccine and gene based drugs, in general may not be delivered using these routes because they might be susceptible to enzymatic degradation or cannot be absorbed into the systemic circulation efficiently due to molecular size and charge issues to be therapeutically effective. For this reason many protein and peptide drugs have to be delivered by injection.



5. Applications of Biopolymer:

5.1 Polymers as Therapeutics'

Product	Disease	Drug Release
Copaxone	multiple Sclerosis	parenteral injection
Renage1	end stage renal failure	oral
Emmele	HIV/aids prevention	topical
Vivagel	HIV/aids prevention	topical
Macugen	Age- related molecular	topical

5.1 Polymer-protein conjugates:

Product	Disease	Drug Release
Adagen	SCID	parenteral injection
Zinostatin Stimader	cancer	local infugen
CD870(PEG-anti TNF - tab)	Rheumatoid Arthritis	parenteral injection
Oncaspar	cancer	parenteral injection
PEG-INTRON	hepatitis C	parenteral injection
PEGASYS	hepatitis C	parenteral injection
PEG-visomant	acromegaly	parenteral injection
Nutasta	cancer	parenteral injection

5.3. Other Potential Application:

Controlled release

The great promise of biodegradable polymers biomaterials lies in the ability to develop unique medical implants that are medically relevant, bioresorbable, and able to function in mechanically dynamic microenvironments. The tunable mechanical properties and biodegradation kinetics suggest that this material platform is particularly suitable for drug delivery and tissue engineering applications. The application of biodegradable polymers is particularly suitable for drug delivery systems that are composed of large implants on the order of 1 mm to 10 em in length. Devices on this length scale would benefit immensely from mechanical compliance and be able to be implanted into tissues that undergo significant mechanical deformation. such as the lungs, heart, and joints. The compliant mechanical properties of biodegradable polymers are also suitable for conformal coatings for medical implants that undergo mechanical activation such as stents. Virtually all tissues and organs in the human body exhibit curvature across at least one dimension. Polmers biomaterials are able to conf01111 to these features to create intimate contact with tissue across large areas and to reduce inflammation associated with mechanical perturbation. Drug delivery systems based on photocrosslinkable acrylated stare e-caprolactone-co-D,L-lactide) have been studied for use in delivering protein therapeutics [57]. In vitro drug elution studies using vascular endothelial growth factor (VEGF), interleukin-? (IL-2), and interferon-gamma (IFN-gamma) were performed using this material system. The protein of interest was colyophilized with albumin and trehalose, a stabilizing excipient, to form microparticles. These particles were then loaded into a macro mer solution and photo crosslinked to form the final device. Zero-order release kinetics was demonstrated for over 18 days with adequate bioactivity. The polymer matrix was stable for up to 50 days, at which point the mass decreased dramatically. The release kinetics can be tuned by adjusting the concentration of trehalose in the formulations, which is used as an excipient. In principle, release kinetics can also be altered by tuning a number of material parameters including the cross linking density and hydrophobicity of the star ([epsilon]-caprolactone-co-D,L-lactide).

Processing parameters such as particle loading and formulation conditions can also be used to tune the release kinetics.

6. Challenges and Oppurtunities in Emerging Drug Delivery System : A Future Prospect

6.1 Challenges:

Historically, drug delivery has taken the form of injection, infusion, ingestion, and inhalation, with additional variations of each category. For example ingestion may be in tablet, capsule or liquid form; inhalation may be via use of a dry powder inhaler, an MDI, or a nebulizer. The challenge for both drug and drug delivery companies is to deliver both existing and emerging drug technologies in a manner that improves the benefits to the patients, healthcare workers

- and the healthcare system. Areas that are being targeted for improvements through device development include:
- Improved efficacy
- Reduced side effects
- Continuous dosing (sustained release)
- Reduced pain from administration
- Increased ease of use
- Increased use compliance
- Improved mo bility
- Decreased involvement of healthcare workers
- Improved safety for healthcare workers
- Reduced environmental impact (elimination of CFC's)

To provide these benefits, a number of approaches are being (or in some cases have been) developed. The conunon "tlu"ead running through the approaches is the concept of self-administered, targeted, sustained release with increased bioavailability. Determining which of the emerging approaches best meets stakeholder needs is a complex, multifaceted problem.

7. Recent Polymers:

LIST OF CURRENT AND POTENTIAL SUPPLIERS OF DRUG DELIVERY SYSTEMS.

COMPANY	PRODUCT	APPLICA TION	POLYMERS OF INTEREST
Abbot laboratories	Lupron Depot	Microsphere injectable for protein drugs	Polylactlc-poly glycolic acid
Alza Corp	Alzamet	Injectable delivery of antiinfective drugs and peptides; surgical implant products	Pol yanhydrides (synthetic degradable polymer)
Scios Novo, Inc	Biodel	Targeted, time-released therapies for anticancer and antiinfective drugs	Polyanhydrides
Enzytech	Pro lease	Microsphere encapsulation of interferons, growth hormones	Polylactic acid
Merck and Co	In development	Implant for release of gyrase inhibitor	Polylactic-poly glycolic acid
Syntex Inc	In development	Controlled release of beta-Infection; microencapsulation of peptide harmones	Polylactic-poly glycolic acid
Battelle Corp	In development	Process for developing microsphere	Polylactic acid
American Cyanamid	In development	Implant for release of estradiol in livestock	Polylactic-poly glycolic acid
Emisphere Technologies		Oral delivery system for heparin, Zadaxin (hepatitis), and poultry vaccines	Polyamino acid
Southem Research Institute	In development	Microsphere for encapsulation of DNARNA for stimulation of Interferon production	Polylactic-poly glycolic acid
Allergan	In development	Implant and Injectable devices	Not known

Table 1: *recent polymers used in drug delivery system.*

Contd. to Page 23

GLIMPSES

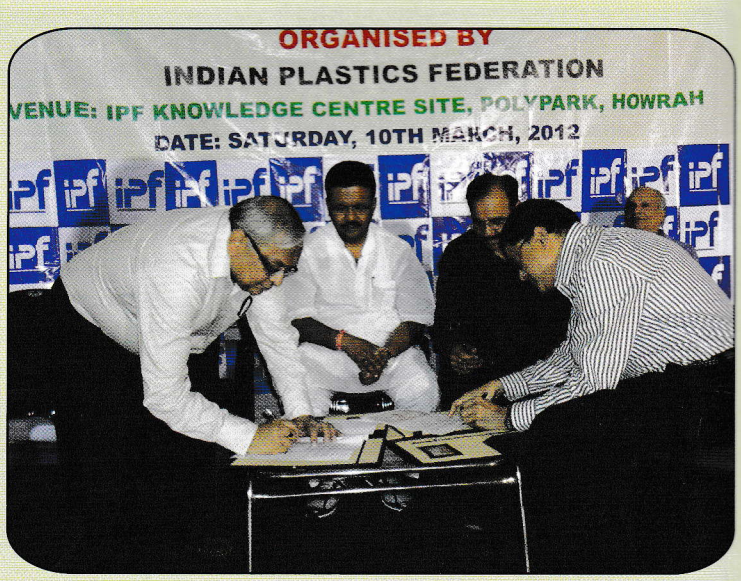
An Interactive Session at IPF Knowledge Centre, Sankrail, Howrah on 10th March, 2012

On Saturday, the 10th March 2012 the members visited IPF Knowledge Centre site at Poly Park, Sankrail to have a look at the progress of work at the site and an interactive session with the Hon'ble Minister of Municipal Affairs & Urban Development, Government of West Bengal. Janab Firhad Hakim, who has kindly accepted IPF's invitation to be the Chief Guest at the interactive session organized by IPF on that day. He also visited Indian Plastics Federation Knowledge Centre site. About 100 members visited the site and participated in the interactive session. Shri Amar Seth, Chairman, IPF Knowledge Centre Sub-Committee explained to the members in detail the main objectives of IPF Knowledge Centre. Janab Firhad Hakim assured IPF of his whole hearted support for the Knowledge Centre without any financial obligation. The Minister was suitably felicitated at the function.

On the very day a MOU has been signed in between Indian Plastics Federation and Globsyn Skill Development Pvt. Ltd. for running the course at IPF Knowledge Centre with prior approval of syllabus from NSDC. This course will be endorsed and approved by National Skill Development Corporation, New Delhi before its acceptance by Indian Plastics Federation.

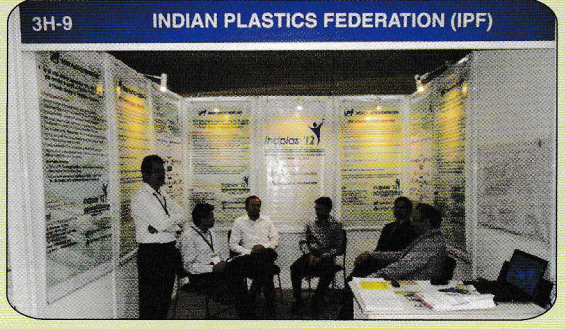
The HOLI MEET usually conducted at IPF office was celebrated at Poly Park, Sankrail this year followed by [illegible]ch.

GLIMPSES



IPF participation in INDPACK 2012 at Guwahati

Indian Plastics Federation participated 'Indpack 2012' - 15th National Packaging Exhibition & Conference organized by Indian Institute of Packaging (IIP) and North Eastern Regional Agricultural Marketing Corporation Ltd (NERAMAC) held at Maniram Dewan Trade Centre, Guwahati from 15 – 17th March, 2012. Though it was an exhibition mainly for Packaging, packing machineries and materials the organizer allotted a 9 sq meter stall to Indian Plastics Federation on a reciprocal basis. About 45 participants from different plastic fraternity such as packaging materials, machinery etc. were participated in the exhibition. Indian Plastic Federation took advantage of this facility in promoting 'Indplas12' – an International Exhibition on Plastics from 5 – 8 October 2012 at Science City Ground, Kolkata. Indian Plastics Federation distributed Brochures and leaflets of Indplas12, membership forms and other related activities on IPF. From IPF its president Mr. Rajesh Mohta and two other staff represented. IPF also distributed leaflets of Indplas'12 to every stall at the exhibition and gained mileage.



GLIMPSES

A Workshop on Union Budget 2012 - 13

A workshop on Union Budget 2012 – 13 was held on 23rd March 2012 at IPF Conference Hall. Two eminent speakers viz. Mr. Rohit Surana and Mr. K. K. Chapparia spoke during the workshop. Mr. Rohit Surana shared his views on Indirect Taxes and Mr. K. K. Chapparia on Direct Taxes. Members of IPF has received a clear scenario on the impact of taxes after Union Budget 2012 -13. Snapshots of the workshop are shown.

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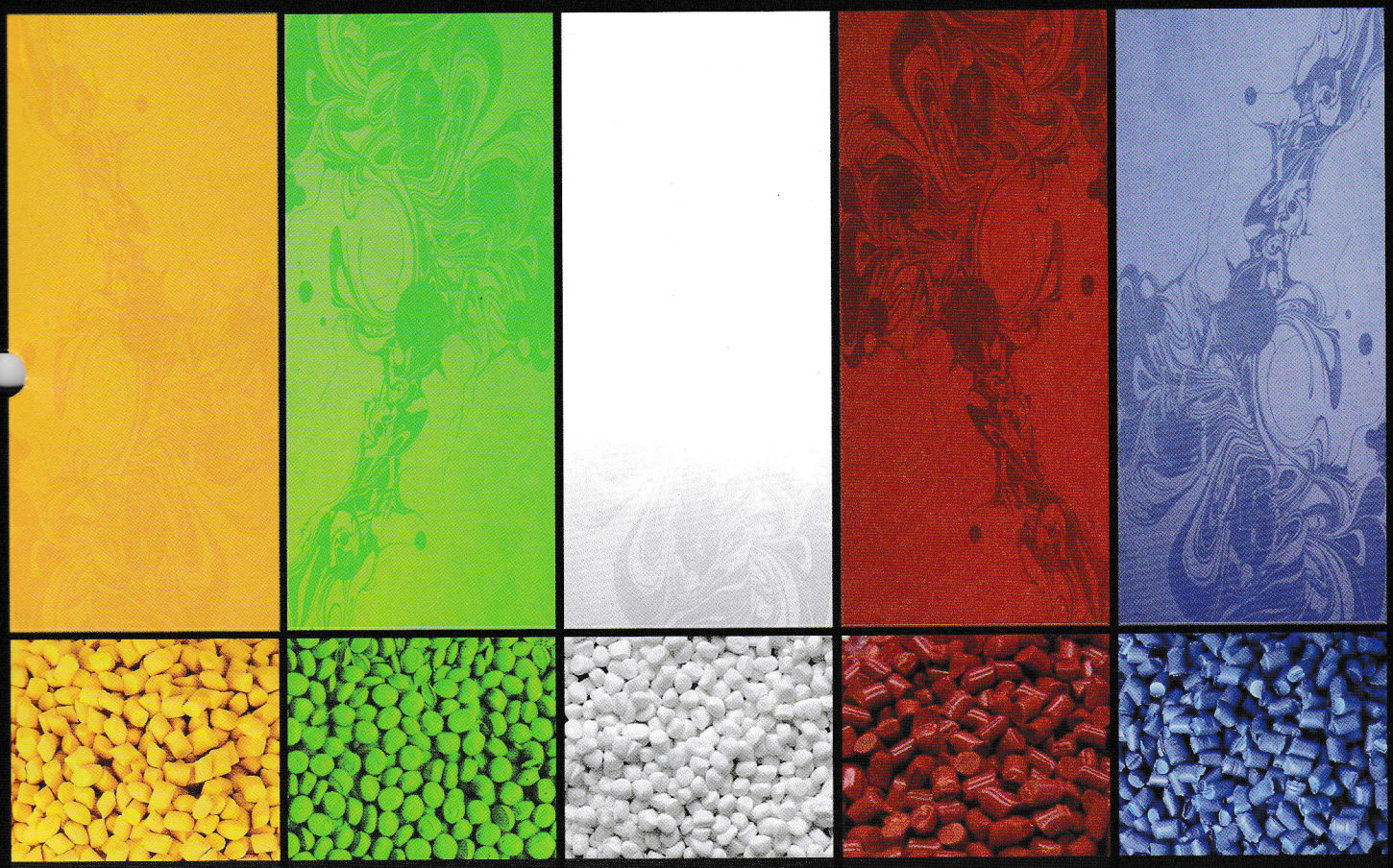

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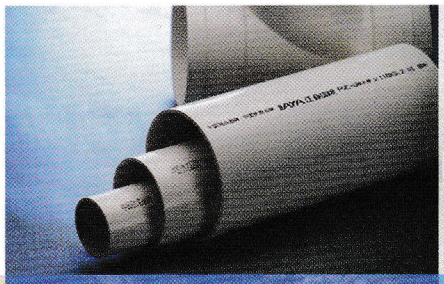

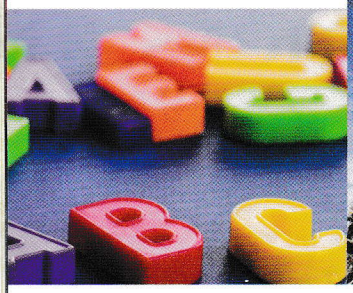

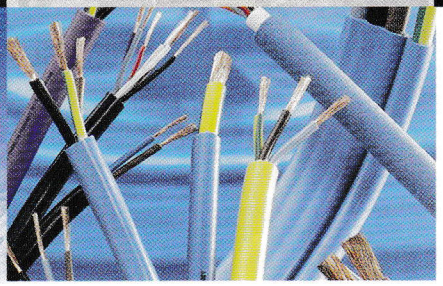

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Next Generation Wear Resistance for Plastics Processing Feedscrews

Introduction : Maintaining a close tolerance between the feed screw OD and barrel ID is of vital importance to the production efficiency of an injection-molding machine or extruder and to the quality of the parts produced. The basic principles of plasticizing in injection molding are the same as those in extrusion. Feed screw failure is most often the result of abrasive wear, adhesive wear, corrosion or any combination of these. Many factors can influence this wear rate such as, screw design, barrel condition, abrasive fillers, corrosive by-products, and process temperature settings. Traditional methods to combat feed screw and barrel wear include surface nitriding, hard facing of flight lands with super alloys, chrome plating and the manufacturing of screws from high-grade tool steels.

Definitions of Wear

Abrasion is the mechanical removal of material. Abrasive wear occurs when material is removed by contact with hard particles. See Figure 1.

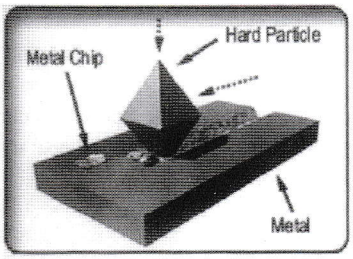

Figure 1
Abrasive wear, mechanical removal of material

The particles may be present at the surface of a second material or may exist as loose particles between two surfaces. Abrasive wear results when hard particles (fillers & additives) are compressed against the feedscrew and barrel, abrading the surface and removing material. Abrasive wear can be measured using standard ASTM test methods. Adhesive wear occurs when two solid surfaces slide over one another under pressure. See Figure 2. Surface projections experience plastic deformation and are eventually welded together by high pressure. As sliding continues, these weld bonds break leaving surface cavities, projections on the second surface, and frequently tiny, abrasive particles, all of which contribute to future wear of surfaces. Adhesive wear of a feed screw is metal-to-metal contact of flight lands against the barrel inside diameter. Corrosion is defined as the electrochemical deterioration of metallic materials by reaction with their environment. Many additives and polymers are corrosive at process temperatures. Corrosive attack coupled with abrasive filler can dramatically increase the rate of erosive flow-induced wear.

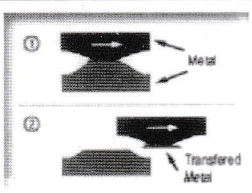

Figure 2
Adhesive wear, metal-to-metal contact and deformation

Traditional Wear Protection

Surface hardening to improve the wear resistance of materials can be of two basic forms: modification of the substrate surface or addition of harder materials. Surface nitriding is a diffusion method that modifies the chemical composition of an alloy material. The thermal diffusion process exposes alloy steel to 550°C (1000°F) in a nitrogen gas atmosphere. This produces an effective case hardness of 0.55 mm (.025") depth with 50/70 HRC hardness. Other materials such as carbon or boron can be used to produce similar case hardened surfaces. Hardfacing or flight armoring, involves the addition of material by weld overlay to provide the wear characteristics of a specific alloy. A two-pass weld process deposits up to 1.5 mm (.060") of material with a range of 40/60 HRC hardness. As a feedscrew contacts the barrel lining, adhesive wear occurs and this alloy weld overlay is intended to reduce this wear mode. Common alloys are cobalt based Stellite and nickel based Colmonoy materials. Feedscrew root and flight sides are typically chrome plated to provide abrasive wear protection along with flight armoring. A third method of surface hardening involves the fabrication of the entire screw from select tool steels. The wear resistance of tool steel is determined by the amount of hard carbides present in the microstructure as well as post-machining heat treatments. D2 contains 10-15% chromium carbides and exhibits improved wear resistance when heat-treated. CPM-9V or Powder Metal contains fine, disperse vanadium carbides (10%) that provide abrasion protection of screw root and flight sides. Powder Metal has become a common wear resistant feed screw material.

Thermal Spray Technology

Most thermal sprayed coatings contain relatively high residual stresses in tension. These residual stresses result from contraction of the individual particles as they solidify, shrink and pull away from adjacent particles and the substrate. The TAFA JP-5000 High Velocity Oxy Fuel (HVOF) system produces hard, dense coatings in compression. The compressive stresses of the JP-5000 result from lower temperatures and significantly higher particle velocities. The high velocity limits time at temperature, which reduces oxide formation and minimizes carbide dissolution. A miniature rocket engine burns a propylene/oxygen mixture, which accelerates particles to 750 m/s (2500 fps). This impingement velocity contributes to high bond strength, a minimum of 80 Mpa (12,000 psi). Two common wear resistant

powders are mixtures of 88% tungsten carbide and 12% cobalt, or 75% chromium carbide and 25% nickel/chrome. Hard tungsten carbides provide wear resistance by allowing abrading particles to slide over the cemented carbides leaving the softer matrix unaffected. Erosion of this softer matrix material eventually allows the hard carbides to fall out of suspension and a coating wears. Wear life is a function of the density of carbides at the point of abrasive/adhesive wear and the thickness of material applied. See Figure 3 and 4.

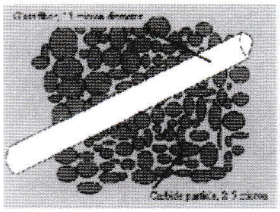

Figure 3
Wear mode of glass fiber over hard carbide

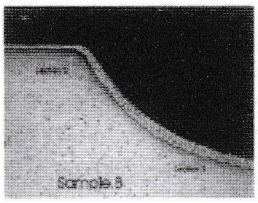

Figure 4
Cross section of carbide coating

Chrome carbides protect in the same way as tungsten carbides and are held in place by a nickel/chrome matrix. Chrome carbide is slightly less abrasion resistant than tungsten carbide but can withstand temperatures up to 700°C (1250°F) versus 480°C (850°F) for tungsten carbides

Wear Comparisons

Standard ASTM tests have been developed to allow comparisons of wear resistant materials intended for low-stress abrasive environments. In the ASTM G-65 test, a 130N (30lb) load is applied to a test specimen as it presses against a rubber wheel of 127 mm (9") diameter. Dry sand is introduced between the wheel and specimen as the wheel rotates a fixed number of revolutions. Volume loss in mm^3 is determined and this number is used to compare materials. Materials of higher wear resistance will have lower volume loss.

Table 1
ASTM G-65 Test Results

Block Alloy	Block loss	Ring loss	Ring Alloy
Bimetallic (FeCr)	0.137	0.220	Tungsten Carbide
Bimetallic (FeCr)	0.162	0.506	Molybdenum
Bimetallic (FeCr)	0.800	3.700	Stellite
Bimetallic (FeCr)	0.200	4.700	Colmonoy 56
Carbide	0.021	0.064	Tungsten Carbide
Carbide	0.100	0.150	Powder Metal
Nitrided Steel	0.001	0.001	Tungsten Carbide
Nitrided Steel	0.001	1.102	Nitrided Steel

Table 1 presents ASTM G-65 wear test results for common hardfacing materials, tools steels and carbide coatings. The test data indicate that tungsten and chromium carbides provide three times the wear life of CPM-9V, the next most resistant material tested. The table also shows that Rockwell hardness alone is not a good indicator of wear resistance.

Nitrided steel at 70 HRC is much less wear resistant than Powder Metal at 56 HRC. The ASTM G-77 test is a block-on-ring procedure which allows comparison of materials according to their sliding wear resistance against each other. The device consists of a rectangular block of one sample material pressed against a rotating ring of another sample material. A 130 N (30lb) load is applied to the stationary block for a fixed number of revolutions

Table 2
ASTM G-77 Test Results

	Hardness	Volume	Wear Vs
Alloy/Coating	Rockwell C	Loss mm3	Carbide
Tungsten Carbide	68-71	3	
Chrome Carbide	68-71	3.2	94%
Powder Metal	54-56	9.5	32%
D2 (FeCr)	60	12	25%
Colmonoy 56	49	15	20%
Colmonoy 83	48	10	30%
Stellite 12	47	19	16%
Stellite 6	40	29	10%
Nitrided Steel	70	37	8%

Table 2 presents ASTM G-77 test data for common feedscrew and barrel materials. The stationary block represents the barrel, and the rotating ring the feedscrew. Lower volume loss in mm^3 indicates better adhesive wear resistance. Note that traditional flight armoring alloys actually can cause wear to the barrel lining. Note also that tungsten carbide paired with nitrided steel and with no abrasive fillers, have a very low wear rate.

Comparative Wear in Application

Abrasive Wear

35% Long Glass Fiber Nylon

This processor makes pulleys for automotive serpentine belts in a 24 hour, seven day a week operation. A 57 mm Powder Metal tool steel screw measured 0.3 mm (.012") of OD wear in 10 months and metering section flights were "missing" at 20 months. A carbide-coated screw was installed and measured 0.18 mm (.007") of flight diameter wear in 12 months. By 24 months the 0.5 mm (.020") of carbide coating was breached in the compression section of the feedscrew, however the screw continued to operate another eight months.

60% Glass/Mineral Filled Nylon

This is a modified nylon with 25% glass fiber and 35% mica filler. A 70 mm screw operates 24/5 supplying a Just-in-Time auto assembly line. Past Powder Metal feedscrews had severe root erosion and flight side wear at 12-14 months of operation. A carbide-coated screw with 0.15 mm (.006") of coating was installed and operated for 32 months. When inspected, no root or flight side erosion was evident; however, flight diameter in the metering section was reduced by 1.0 mm (.040"). A new screw with .5 mm (.020") of coating and hardfacing was installed, and in 20 months of operation has not breached the coating.

Adhesive Wear

Rigid PVC

Pinking is described as a pencil-thin line of discoloration in the extrudate. It can result from metal contamination or from polymer degradation due to long residence times. Pinking is common at start up and is more pronounced in new equipment. An extrusion process of titanium dioxide filled rigid PVC experiences pinking at ten months from polymer degradation as a result of screw wear. Feedscrews are removed at 14 months and are refurbished and re-chrome plated. A new carbide coated screw and carbide-lined barrel were installed to test carbide's ability to reduce wear and resultant pinking. For a new system, a 40-hour wear-in period is usually required before new start-up pinking

is eliminated. It was reported that in 22 years of processing this material, this was the first time that no pinking had occurred and quality product was produced immediately.

Proprietary Ferrite Material

This is an extruded ferrite material and past hardfaced, chrome plated screws produce about 300 units before being replaced. Screw life is about three months and screws are not repaired when removed as significant erosive wear makes this uneconomical. A tungsten carbide-coated screw was installed with standard output of about 52 m/min (170 fpm). After nine weeks in process, the same 300 units of product have been produced and output rate is down only 7% to 49 m/min (159 fpm). The expectation is to double output over the previous feed screw.

Corrosion

High Temperature Polymers

This custom injection molder processes many different, filled and unfilled specialty polymers such as PEEK, PEI and ETFE. They operate equipment at high speed, pressure and temperature. To withstand the changing process environment, and protect from abrasion and significant corrosion Powder Metal feedscrews were used. Within eight months of service the metering flights of these screws were completely abraded. New 28 mm screws of standard steel were fabricated and coated with chromium carbide. After 24 months of service, these screws are still processing well in this high temperature corrosive environment.

Surface Finish

Clear Polycarbonate

A dedicated automotive lens cover process experiences a high scrap rate from black specks contaminating finished product. Surface nitrided or chrome plated screws result in an average scrap rate of 13% and require frequent cleaning to ensure useable output. A 70 mm coated feedscrew was installed in a multi-shot, multicolor press. The coated screw is dedicated to clear polycarbonate while adjoining screws process colored polycarbonates. Over 65 days the scrap rate average was 4.5%, down from 13%, and no black specks were observed in this clear material. Scrap was the result of black specks feedscrews processing the colored materials. The reduction in scrap, higher machine utilization and lower material costs has lead to equipping a complete four-color system with carbide-coated screws. The goal is to achieve a scrap rate under 1%.

Conclusions

The feedscrew and barrel are critical components of an efficient plasticating system and wear from abrasion, metal-to-metal contact as well as corrosion, carries a considerable cost to the plastics industry. Tungsten and chromium carbide HVOF coatings exhibit superior wear life compared to traditional wear resistant materials. The ASTM G-65 test indicates that carbide is three times more wear resistant than commonly applied wear resistant materials in abrasive environments. The G-77 test demonstrates that a carbide-coated feedscrew can extend the life of both feedscrew and barrel liner.

COMPANY NEWS

Projectile injection molding: New details from Röchling on innovative molding technique

The projectile injection molding technology (PIT) developed by Röchling Automotive has been recognized and awarded by Society of Plastics Engineers (SPE) already for its use on parts made for BMW and Ford. Now the company is offering additional details on the process, especially regarding the size, complexity and performance of the co-injection molded seal, which replaces an extruded one attached in a secondary process.

We've reported on PIT before, including on Röchling's victory last year at the Society of Plastics Engineers' Automotive Innovation Awards. Röchling (Mannheim) won for its work in molding a cowl grill for Ford's C-Max compact car that combined a hard polypropylene (PP) structure with a soft thermoplastic elastomer (TPE) seal into one part. The TPE portion, which creates a tight seal for the hood when closed, making for a quieter ride and reducing flutter, includes a channel running down its length with uniform wall thickness all around. The part took home the top prize in the body exterior category.

The processor recently shared results of another project which involved injection molding of a cowl grill / engine cover bulb seal, molded in a one-shot process, with parts exiting the mold ready for shipment to the customer. The two-component process saves about 30% weight and 10% costs compared to the previously used assembly of the two components, while also lowering the rate of quality problems. "The two-component PIT-cowl grill eliminates assembly and quality costs. Instead of higher parts costs the bottom line shows savings of 10%," says Matteo Piazzi, product manager at Röchling Automotive. "Material and weight savings of 30% come on top. Rising raw material costs thus improve our competitiveness further." In this case, EPDM was the sealant material, not TPE, with the carrier again molded from polypropylene.

According to Röchling, its PIT process is faster than gas injection, and can form parts with lower weight. Versus water injection, says Röchling, PIT creates parts with a better surface structure (fewer voids or pits). The P in PIT is a winged polyamide projectile shot through a partially filled cavity, propelled by inert gas at pressures ranging from 200-300 Bar so that a hollow part (such as a seal) with uniform walls is created. The projectile is not recovered but Röchling has created a system to recapture the melt that is forced through the cavity, and feeds this melt into a future shot.

On the new cowl grill / engine cover project, the molded carrier and the hollow elastomer seal had been made separately, with the PP carrier injection molded and the EPDM seal extruded, and then assembled together in a separate process. The seal can be manufactured in lengths of up to 1.5 m with constant wall thickness and complex 3D shapes, says Röchling. The wall thickness can be varied to suit different sealing or force requirements along the length of the seal; this has advantages for pedestrian protection and hood flutter avoidance.

The molded seal can follow tighter radii than an extruded seal, claims the processor. The seal compensates for vehicle tolerances of up to 10mm in line with closing pressure. The seal can be made longer, shorter or equal to the length of the carrier. It can also comprise T- or V-shaped junctions.

After the hard component of the cowl grille (the carrier) is molded, a slider in the mold opens to allow the seal cavity to be filled with elastomer material. The projectile then forces the majority of the still-liquid EPDM out. The ejected material is recycled for use in the next cycle, and the warm carrier chemically bonds with the seal.

Business booming

Last month the Röchling Group released financial figures for its first quarter of this year and its outlook for the rest of 2011. "We are in the midst of a growth spurt," said Georg Duffner, CEO, explaining the good start to 2011. "The Röchling Group is benefiting from strong demand, particularly in China and other newly industrializing countries. In order to continue to benefit from opportunities, the topic of international expansion has highest priority." This year the Group opened its fifth plant in China, and its seventh manufacturing facility in the U.S. (our report here). The Röchling Group is

currently building an additional facility in Pitesti, Romania. "Whereas the Röchling Group still generated 67% of its sales in Germany ten years ago, we expect to derive two-thirds of our sales from other countries in 2014," commented Duffner.

The company increased sales in the first quarter by 22.8% to a total of €293.9 million (same period 2010: € 239.4 million). It also posted a 22.2% growth in incoming orders to €313.8 million (€256.7 million in Q1 2010). In the Automotive Plastics division, sales improved from the previous year's quarter by 14.6%, and in the High-Performance Plastics division they rose by about 30.9%. It's High-Performance Plastics division markets semi-finished products such as sheets, rods, profiles from thermoplastics and composite materials, and also molded and CNC machined finished components.

Roll N Blow molding alternative makes debut at Interpack

DÜSSELDORF, GERMANY (Aug. 9, 12:15 p.m. ET) -- A world exclusive process from SAS Agami, a company set up in Vitré, France, in 2009, debuted at Interpack 2011 in Düsseldorf in May.

The Roll N Blow bottle thermoforming process was presented by French filling and capping machinery producer Serac, a 10 percent shareholder in Agami. Serac says the companies "work in a tight partnership." In the Roll N Blow tubular thermoforming process, extruded plastic sheet is cut into strips that are rolled around a vertical pipe to form tubular shaped strips. These are then welded longitudinally. Bottles are formed by heating the tubes and blowing them into a mold at pressure below 6 bar and temperature below 150° C.

Agami says its process is suitable for single or multilayer bottles in plastics such as polystyrene, polypropylene, PLA and PET.

The 4-track machine shown at Interpack offers production speeds of up to 7,000 bottles per hour, but equipment can be designed for speeds of 5,000 to 20,000 bottles per hour.

The 100-500 ml Roll N Blow bottles can be used for water, desserts, fruit juice and fresh dairy product contents. Yogurt bottles offer particularly high potential. There are hygiene control benefits due to the small footprint of the Roll N Blow process equipment and its thermoforming temperature of 150°C.

This process offers cost savings of between 30 and 50 percent for 100 ml bottles compared with conventional extrusion blow molding and preform-based injection stretch blow molding.

The lower weight also results in reduced material cost, and transport, storage and handling logistics costs are reduced. Agami says one truckload of plastic sheet reels for the Roll N Blow process is equivalent to 25 trucks needed to supply empty bottles or five trucks to supply preforms. The company adds that electricity consumption is two to three times lower than with preform-based injection stretch blow molding.

Having worked previously at packaging producer Tetra Pak and form-fill-seal line producer Arcil, Agami CEO Stylianos Eleftheriou started the Roll N Blow project in 2007.

The equipment uses Rockwell Automation components for motion and automation. Six-axis motion is used to cut, form and create the bottles. Allen-Bradley servomotors are coupled with Kinetix servo drives and controlled by a CompactLogix PAC (programmable automation controller). Operator interaction and machine control takes place via an Allen-Bradley PanelView Plus 1250 HMI control panel.

Other companies with similar ambitions to Agami include Austrian packaging technology company Hol-Pack. In 2010 it started looking for technology partners for its thermoforming technique for larger bottles - up to 1.25 liters. Hol-Pack did not respond to enquiries from European Plastics News about the current status of these technology partnerships.

The Hol-Pack process involves thermoforming two sheet halves, joined so that the parting line forms

a flange-shaped undercut within the bottle. The flanges are welded together at the end of the bottle forming process. The parting line can be arranged along or across the bottle vertical axis. The lengthwise version allows production of multi-chamber bottles. Sleeves and labels can be used to conceal the weld line, which is visually unappealing but adds stiffness to finished bottles.

Small yogurt cups, juice and isotonic drink bottles and cups are the focus of the BF70 Bottleformer system introduced by Illig at K2007. Illig showed its BF70 Bottleformer at Interpack 2011 but it was not able to confirm that any customers have started using the BF70 system.

Illig has stated that its BF70 Bottleformer process has output capability of up to 27,000 cups/ bottles/h and that it can cut weight of typical polystyrene yoghurt, juice and isotonic drink bottles to around 4g, 50 percent lighter than blow molded equivalents.

At Interpack 2011, Illig placed great emphasis on the BF70's ability to produce bottles with large undercuts, flat tops for easy lid application and high load-bearing properties. Products made in the Illig BF70 system do not show a middle seam that is a typical characteristic of blow molded bottle.

Reddi Solutions Utilizes Axion's Recycled Structural Composite to Design a Beachfront Boardwalk in Trinidad

Axion International one of the leading producers of industrial building products and railroad ties made from 100% recycled plastic, announced it has received a purchase order from Reddi Solutions Company, Ltd. for Axions innovative Recycled Structural Composite (RSC) material, which will be used in the first phase of a two-mile long beachfront boardwalk in Trinidad.

The first phase of the project will be 1,200 linear feet of 12 wide, low profile boardwalk, which will replace a concrete path. The client was faced with some challenges in choosing an appropriate material for investing into this new boardwalk project. The salty tropical climate is well known for its harsh conditions for concrete and steel building materials. Pressure-treated wood fares no better and was not considered for this project. The new boardwalk will include additional deck areas, bench seating, and a lifeguard tower. The plans for the second phase of the project have not been completely finalized, but it is expected to be significantly larger than phase-one. Both phases of the beachfront boardwalk are being managed by the Chaguaramas Development Authority (CDA) and will be located in the tourist area of the Chaguaramas peninsula, which is situated in the northwest of the island nation of Trinidad.

Steve Silverman, Axions President and CEO, commented, We have been working hard in the Caribbean to educate various organizations about our material and the benefits of our technology, so we are very pleased with this breakthrough order and the opportunity to have our building materials selected for this project in Trinidad. Reddi Solutions and the CDA chose our products due to the fact that our products are impervious to water, bugs, and are chemical-free. Additionally our products will not deteriorate or corrode and require no maintenance, thus presenting a cost effective solution. Axion products are perfect for this part of the world and we look forward to closing additional opportunities located in the Caribbean that are in our active pipeline.

The CDA in Trinidad was established by an Act of Parliament in 1972 to administer and coordinate the development of the northwestern peninsula, known as the Chaguaramas peninsula, a 14,572 acre region that includes several offshore islands. The topography of the Chaguaramas peninsula is characterized by 3,000 acres of relatively flat lands with scenic beachfront areas, dominated by an intricate mountain system with sheltered harbors and coves. Chaguaramas offers a unique opportunity for the development of tourism, leisure and marine related industries due to its five scenic beachfront areas all ideally suited for restaurants, shops, leisure and recreational facilities.

Axions proprietary Recycled Structural Composite (RSC) material is inert and contains no toxic materials. It is impervious to insect infestation, will never leach toxic chemicals nor warp. Because it is lighter than traditional materials, transporting RSC is less expensive and reduces energy costs. In addition, Axions products are completely recyclable at the end of their functional life.

NEWS - INDIAN PLASTICS INDUSTRY

POLYMER INDUSTRY

RIL Receives Environmental Nod for Plants at Dahej Petrochemical Unit

The relevant authority in the Gujarat government has granted environmental clearance to Reliance Industries Ltd. (RIL) for petrochemicals production at its existing petrochemical unit at Dahej in Gujarat. With the approval, RIL will be able to start physical activities pertaining to its projects for setting up capacities for ethylene oxide derivatives (200-ktpa), purified terephthalic acid (3-mtpa), polyethylene terephthalate (1.8-mtpa), acrylic acid and esters (160-ktpa) and phenol (150-ktpa).

The authority has restricted RIL from using ground water in the operations of the plants, post commissioning. The authority has also directed the company to restrict its daily fresh water requirement, after the plants go on-stream, within 115, 420-klpd (kilolitres per day), which has to be sourced from the Narmada river by means of jackwells.

RIL Drops Dumping Probe into Polypropylene Import

The Designated Authority in the Commerce Ministry has terminated the anti-dumping probe into imported polypropylene from South Korea, Taiwan and the US, following a plea by the petitioner Reliance Industries Ltd for termination of the investigation.

In a recent termination notification, the Authority has said earlier it received a written petition from Reliance Industries Ltd for initiation of anti-dumping investigation into the import of polypropylene (that is, homo-polymers and co-polymers of propylene).

Accordingly, it had served notice to the subject countries under probe to provide details through a notification on February 10, 2010.

Meanwhile, the Authority said that the dominant domestic manufacturer of the subject goods sought the termination of the investigation.

Consequently, it has terminated the investigation into import of the subject goods from these countries according to the Anti-Dumping Rules enshrined in the Act.

Supreme Petrochem Reports Net Profit of Rs. 87.69 Crores for the Year

India's largest polystyrene manufacturer – Supreme Petrochem Ltd. (SPL) has reported a Net profit of Rs. 87.69 crores for the year ended June 30, 2011, as compared to Rs.60.47 crores for 2010. Net revenues for the year 2010-11 stood at Rs. 1943.49 crores as compared to Rs. 1611.84 crores in the preceding year. The Board of Directors have recommended a Dividend of Rs. 2.80 per equity share of Rs. 10 each for the year 2010-11. Capex of Rs. 84 crores is planned in 2011-12.

The Specialty Polystyrene compounding capacity has been increased to 30000 tpa. Trial runs have commenced for Expandable Polystyrene (EPS) project including Cup Grade EPS with total capacity of 44400 TPA at the existing plant site in Amdoshi, Maharashtra.

Indian Oil Aims for Growth in Polymers Markets

Indian Oil Corp. is seeking to boost polymers markets – domestic and global (via exports). Operational and market challenges abound but the company has plans for expansion to establish a larger presence. India's petrochemical market holds a lot of promise but tapping its potential can be challenging for companies. The Indian government's battle to control inflation has led to hike in interest rate by 11 percent in the past 15 months, which has impacted industrial activity. The government is confident of achieving Gross Domestic Product (GDP) growth of 8 per cent in 2011-12. Against this background, Indian Oil is ramping up production of a new cracker complex at Panipat, Haryana. Derivatives produced at the complex, which was brought on- stream in March-April 2010, includes Polyethylene (PE), Polypropylene (PP) and Monoethylene Glycol (MEG).

Adani Group Plans Plastic Processing Park at Mundra

The Adani Group's Mundra Port and Special Economic Zone Ltd. (MPSEZ) is planning a 200-acre plastic processing park that will seek to attract investment of about Rs.4,000 crore. The park will house injection moulding, blow moulding, extrusion and other units to manufacture plastic furniture, Polyvinyl Chloride (PVC) pipes and packaging material among other plastic products.

Baumuller Group Opens Tech Centre in Pune

Germany-based Baumuller Group, a leading manufacturer of innovative automation and electric drive systems, has opened a new centre in Pune. This centre will offer Baumuller's automation solutions and services like installations, fitting and relocation for the mechanical engineering industry. "In the past two years, Baumuller India has demonstrated successfully the superior performance and cost benefits in industries like plastics, packaging, printing, textiles, etc. by commissioning automation drives, motors and system equipment. To offer services across the country and reduce response time in emergencies, Baumuller India is working closely with selected channel partners."

Advanced Nanotechnology Lab to be set up in Bangalore

The Central Manufacturing Technology Institute (CMTI) is constructing a Rs. 120-crore Advanced Nano Technology Laboratory (NMTC) in Bangalore. CMTI will also set up a Rs. 20-crore Academy of Excellence for Advanced Manufacturing Technology (AEAMT) to build human resources for advanced manufacturing technologies. The foundation for both the buildings was laid by the Union Minister for Commerce and Industry, Mr. Anand Sharma, at CMTI premises. The NMTC lab and AEAMT are funded under the 11th Five Year Plan by the Union Government's Department of Industrial Policy and Promotion (DIPP) under the Ministry of Commerce and Industry.

NEW PLANTS / EXPANSIONS

Samson Controls sets up New Plant in Pune

India's surging plastics industry has attracted Germany-based ancillary equipment manufacturer Samson Controls Pvt. Ltd. to set up a plant at Ranjangaon in Pune. It will manufacture products such as globe control valves, conventional positioners, self-operated pressure and temperature regulators. The company has invested ₹225 crore to expand its business in India.

Major users of Samson equipment include industries like plastics, chemicals, pharmaceuticals, food, petroleum products and paper.

Eco Clearance Delays Work on MRPL's Polypropylene Plant

Mangalore Refinery and Petrochemicals Ltd. (MRPL) is yet to start the civil works for its project of setting up a polypropylene (PP) unit at site of its Mangalore Refinery. The delay has been caused due to the company having to re-apply for environmental clearance from the Ministry of Environment and Forests (MoEF). The company had originally planned to set up the unit at the Mangalore Special Economic Zone, but due to certain hindrances like non-availability of iand caused by delay in evacuating the project affected families, the company decided to relocate the unit to the site of its refinery at Mangalore. Due to the relocation, the MoEF decided to consider the case as a fresh one, and, hence, asked the company to re-apply for environmental clearance afresh. Accordingly, the company did so, and, subsequently, the MoEF dictated the Terms of Reference (ToR) for the relevant company authorities to prepare an Environmental Impact Assessment (EIA) report for obtaining environmental clearance from the Ministry. The company has prepared the EIA report and submitted to the Ministry in April 2011.

NEW PRODUCTS

BASF Establishes Lightweight Composites Team for Automotive Industry

To show its commitment to the growing importance of lightweight design in the automotive industry, BASF has established a lightweight composites team. The team will focus on the development of materials and technologies suitable for manufacturing high-performance fiber reinforced plastic (FRP) parts for automotive applications.

BASF has a broad product portfolio and it is able to offer three different plastic matrix systems. It intends to develop tailor-made formulations in close cooperation with customers.

RTM

In the new resin transfer moulding (RTM) laboratory in Ludwigshafen, Germany, and polyurethane research facility in Lemförde, Germany, BASF is working on the chemical and technical challenges posed by the new matrix solutions.

In addition to the mechanical performance of the finished composite part, good flow characteristics and a short curing time of the resin components are the primary challenges with all three material systems.

BASF offers epoxy and polyurethane systems under the brand names Baxxodur® and Elastolit® R, respectively, and BASF epoxy resin systems used in the rotor blades of wind turbines. These products employ novel curing mechanisms, and thanks to their low initial viscosity, they impregnate the fiber structures very well and then cure within only a few minutes. They can be processed on high- as well as low-pressure equipment.

New polyamide systems currently under development can be welded easily and recycled.

New Technology Doubles Production Output of Caps and Closures

New stack mould technology has been developed by hot runner specialist Mold Hot Runner Solutions. The process allows plastic cap and closure manufacturers to produce twice as many valve gated parts without having to run additional or larger injection moulding machines. The technology exploits the untapped potential of smaller, more efficient injection moulding machines by adding a second parting line to the closure mould. The patented internal valve gate design of the new Rheo-Pro iVG hot runner system is what allows MHS to build back-to-back "short stacks", compact enough to fit into these smaller 180-300 ton machines. For example, a 48+48 mould in a small 200 ton machine can make 96 light weight bottle closures every 3 seconds or almost 3 million parts per day.

In order to lower the production cost of injection moulded caps and closures, moulders must increase productivity. Without investing in additional equipment, production output can only be achieved by reducing cycle times. However, it is impossible to cut cycle times in half on a single face mould, given the high degree of efficiency already in place. Doubling the number of parts produced by implementing a stack mould solution now makes it possible.

Stack moulds that inject parts in both directions using two parting lines are not new and are already being used by many moulders to increase production output, so there are no unknown processing factors. The group claims that what makes Rheo-Pro iVG hot runner systems so unique is that they don't require the same large machines because they are extremely compact. They are also maintenance free by doing away with wear items such as seals and lubricants. Moulds can run millions of cycles and parts continuously, without interruption. Compared to hot tip or thermal gate systems, valve gating not only significantly increases mould uptime, it also delivers far superior part quality and consistency. This is particularly important when moulding high viscosity polyolefins for stronger parts with thinner walls.

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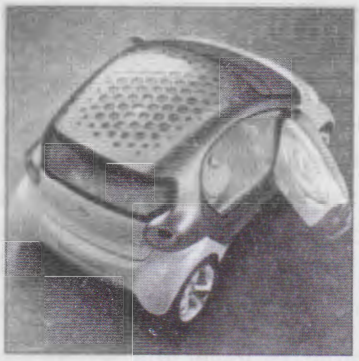
View Company's Locator Entry
Category : Processing Equipment & Ancillaries > Screws, Barrels, Nozzles, etc

New Smart Car Looks Towards the Future of Electric Mobility



The smart automotive company has always been a pioneer in matters of urban mobility and with the smart for two electric drive the company is showing the direction of development in cities around the world. Together with BASF, the largest automotive supplier in the chemical industry, smart is demonstrating its leading role in the use of forward-looking technologies above and beyond the drive system. The joint concept vehicle smart forvision presented at the 2011 International Motor Show in Frankfurt combines a futuristic design with technologies relating to energy efficiency, lightweight design and temperature management.

"With the forvision smart is doing justice to its role as Daimler's think tank for urban mobility. We are presenting numerous world premieres that make uncompromising electric mobility possible. With the clear objective of greatly increasing the zero-emission range we concerned ourselves with all factors that influence this on the vehicle. This resulted in completely new concepts and materials in the areas of insulation, reflection, lightweight design and energy management. In addition to transparent organic solar cells, transparent and energy-saving light-emitting diodes and infrared-reflective films and coatings, high-performance foams are used for insulation against cold and heat. smart is also setting new standards of lightweight design with the use of the first all-plastic wheels," says Dr. Annette Winkler, Head of smart. "In conjunction with smart's revolutionary DNA, we have designed a vehicle that is so unique that we can't wait to take it out of the research laboratory and onto the roads!"

"Cars of the future need materials and technologies which reduce energy consumption whilst also increasing the range and level of comfort. Our innovations make a decisive contribution to this", says Dr. Christian Fischer, Head of BASF Polymer Research. "We are proud to have developed a holistic concept for sustainable urban mobility in cooperation with smart. Together we are presenting a pioneering vehicle which is without parallel."

Thanks to the combination of smart's automotive expertise and BASF's material and system competence a vehicle has been created which showcases technologies for sustainable and holistic electric mobility of the future. The researchers and designers intentionally realised a mixture of visionary materials and technologies in the concept vehicle - some of these are still at a laboratory stage while others have a realistic chance of entering series production.

BASF
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View Company's Locator Entry
Category : Materials Suppliers

Coca-Cola Introduces Innovative Plantbottle Packaging to Great Britain

Coca-Cola Great Britain is today rolling out its innovative PlantBottle packaging, taking the next step on its journey seeking to develop a truly sustainable plastic bottle. The move will help decrease the company's reliance on fossil fuels for its plastic and strengthen its contribution to greater use of renewable and recycled materials.

Now in Great Britain, all Coca-Cola, Coke Zero and diet Coke in 500ml bottles will be sold in PlantBottle packaging: PET (polyethylene terephthalate) plastic bottles made partially from plants.

More than 200 million PlantBottle packages will hit the shelves in the UK this year, part of a rollout of genuine scale: globally this year more than 5 billion PlantBottle range packs will be on the market in 20 countries.

The company's vision is that all its plastic bottles will be made from a combination of plant-based materials and recycled PET plastic by 2020.

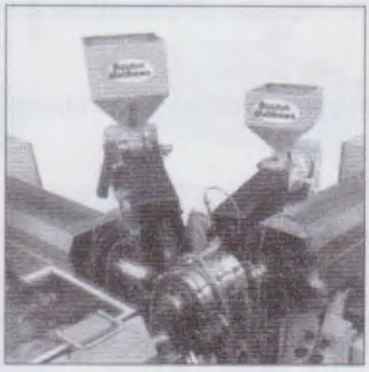
The packaging has a lower reliance on non-renewable resources compared to traditional PET plastic bottles and is fully recyclable. With exactly the same visual appearance as 'regular' plastic bottles, consumers will be able to identify the new bottles through on-pack messaging and a new logo.

Just over half of all The Coca-Cola Company drinks globally are sold in PET plastic bottles and these are traditionally made entirely from petroleum and other non-renewable fossil fuels. By contrast, the new PlantBottle packaging in Great Britain is made from up to 22.5% plant-based material and up to 25% recycled PET plastic. The plant-based component of the new bottle is sourced from bio-ethanol from sugarcane. The Coca-Cola Company has been working closely with WWF and the Bonsucro organisation to choose sugarcane from plantations in Brazil, sources widely recognised by thought leaders for their environmental and social performance.

Coca-Cola Great Britain is also calling on its consumers to play their part and keep recycling empty bottles. PlantBottle packaging can be recycled in exactly the same way alongside traditional PET bottles. The material in PlantBottle packaging can therefore be used, recycled and reused again and again.

The Coca-Cola Company was the first to introduce a bottle containing recycled plastic (in 1991) and has invested significant resources in recycling reprocessing and infrastructure in numerous countries where it does business. These efforts are all focussed on helping to "close the loop" on packaging re-use and with the ultimate goal of providing more sustainable packaging for consumers.

3D Extrusion Technology Demonstrated



Boston Matthews demonstrated its ability to provide organisations with extrusion lines that can give them more production flexibility, improved quality, and greater control.

Designed using the latest 3D parametric computer and polymer flow simulation software, the Boston Matthews Helix Die Head Technology enables the processor to have greater flexibility to meet with the demands placed upon them by their respective industries.

This includes the ability to change colour or polymer faster, produce different tube/pipe layer configurations using the same extrusion line, simple disassembly on the extrusion line, and shorter flow passages for higher quality production.

Servo, PLC, AC and Direct-Drive technology also provide the user with a more energy efficient extrusion operation, which further reduces production costs. These developments have been fully incorporated into extrusion lines designed specifically for the production of medical, cosmetic, and automotive tubing, as well as PEX, PB and PE-RT pipe and other complex multi-layer applications.

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View Company's Locator Entry

New Keg Helps Serve up the Perfect Pint

APPE have supplied the integral tap for a new four-litre PET keg launched by international beer brands Heineken and Amstel.

The new "Tapje" keg is a small draught beer system which can be used by the consumer at home, and it features a barrier technology which includes oxygen scavengers designed to protect the integrity of the beer through keeping out oxygen whilst keeping in the carbonation.

The system, which has already been launched in the Netherlands, is designed to keep its contents fresh for 30 days, making it cost-effective and ideal for occasional drinking according to the company.

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View Company's Locator Entry
Category : Plastic Processors > Packaging Products

MONTHLY CIRCULAR OF THE FEDERATION

CIRCULAR NO. 57/2012 :

Sub: Membership of the Federation

The Federation has received the following applications for membership of the Federation :

1.	a) Name & Address of the Applicant Firm	:	**M/S. POLMANN INDIA LTD.** CP-15, Mezzanine Floor, Infinium Digispace Building Sector-V, Salt Lake Kolkata - 700091
	b) Class of membership	:	**Manufacturer Member**
	c) Proposed by	:	M/s. National Moulding Co. Ltd.
	d) Seconded by	:	M/s. Lily India Pvt. Ltd.
	e) Name of representatives	:	1) Mr. Vinod Bhimrajka 2) Mr. Rohan Bhimrajka
	f) Items of manufacture	:	Manufacturer of Master Batch & Compounds
2.	a) Name & Address of the Applicant Firm	:	**M/S. RUBCHEM INDIA PVT. LTD.** 3, Dr. Sundari Mohan Avenue Kolkata - 700014
	b) Class of membership	:	**Life Dealer Member**
	c) Proposed by	:	M/s. Plastic Engineers
	d) Seconded by	:	M/s. Ever Bright Plastic Works
	e) Name of representative	:	Mr. Rajeev Nair
	f) Items dealt in	:	Dealer of Chemicals & Industrial Raw Materials

(Circulated in terms of Article 15 of the Articles of Association of the Federation)

Ferromatik Milacron India constantly strives to offer its Plastics Injection Moulding Machine customers Innovative Solutions to keep them ahead in this competitive arena. Product development is a continuous process to assist customers in reducing their overall per piece cost of product & Energy Consumption and thereby increasing their productivity & Reliability.

MAGNA-T
Toggle Injection Moulding Machine 50 to 500 ton

OMEGA
Hydraulic Injection Moulding Machine 80 to 910 Ton

MAXIMA
Two Platen Injection Moulding Machine 500 to 3000 Ton

ELEKTRON
All Electric Machine 50 to 350 Ton

HYDRON
Hydraulic Injection Moulding Machine 100 to 450 Ton

PVC LINE
Hydraulic Injection Moulding Machine 100 to 910 Ton

CPVC LINE
Toggle Injection Moulding Machine 110 to 500 Ton

PET SERIES
...a Dedicated PETLINE Injection Moulding Machine

FERROMATIK MILACRON *India*

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