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PLASTICS INDIA

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- Carry Bags
- Moulded Goods
- PP/PE Pipes

PLASTICS INDIA

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Editorial

Dear Members,

With every passing edition we either discuss about the industrial sector or the environmental condition of our country, today I would like to throw light upon the most talked about event the **2010 FIFA World Cup.**

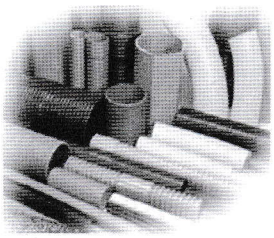
The **2010 FIFA World Cup** was the 19th FIFA World Cup, the world championship for international association football teams held every four years. Africa was chosen as the host for the 2010 World Cup as part of a short-lived policy, abandoned in 2007, to rotate the event among football confederations. The total prize money on offer for the tournament was confirmed by FIFA as $420 million (including payments of $40m to domestic clubs), a 60 percent increase on the 2006 tournament .Before the tournament, each of the 32 entrants receive $1 million for preparation costs. The official mascot for the 2010 World Cup was *Zakumi*, an anthropomorphised leopard with green hair, presented on 22 September 2008. The 2010 finals had amplified international public awareness of the vuvuzela, a long horn blown by fans throughout matches. Many World Cup competitors had criticised and complained about the noise caused by the vuvuzela horns, including France's Patrice Evra, who blamed the horns for the team's poor performance. Other critics included Lionel Messi, who had complained that the sound of the vuvuzelas hampered communication among players on the pitch, and broadcasting companies, which complained that commentators' voices were being drowned out by the sound.

Paul (hatched January 2008) was a common octopus living in a tank at a Sea Life Centre in Oberhausen, Germany, who was an animal oracle and now retired predictor of football matches, usually international matches in which Germany was playing. He came to worldwide attention with his 100% accurate predictions in the 2010 World Cup.

During a divination, Paul was presented with two boxes containing food in the form of a mussel, each marked with the flag of a national football team in an upcoming match. He chose the box with the flag of the winning team in four of Germany's six Euro 2008 matches, and in all seven of their matches in the 2010 World Cup. He correctly predicted a win for Spain against the Netherlands in the World Cup final on 11 July by eating the mussel in the box with the Spanish flag on it. His predictions were 100% (8/8) correct for the 2010 World Cup and 86% (12/14) correct overall. Paul was retired after the 2010 FIFA World Cup.

I think during last one month everybody from industry was engrossed for World Cup 2010. Since no new developments have been occured during this period.

Pradip Nayyar
Editor



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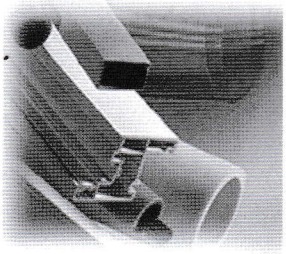
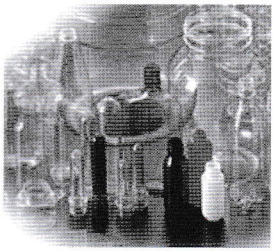




PRESIDENTIAL ADDRESS

Dear Members,

This is my seventh message to you after taking over as President.

In this issue, I wish to continue to share some of my views on Polyethylene Bags.

Bags made from Polyethylene are found to be **less damaging** in the **environment terms** when compared to **bags** based on **biodegradable polymers** currently in the market in the European region. This is an interesting finding by **Germany's Institute for Energy & Environment Research (IFEU)** during a **detailed life cycle analysis of plastics waste bags.** The study shows that, when all environmental factors are considered, **the least environmentally damaging option for plastics waste bags is to use recycled PE,** followed by virgin PE. The current biodegradable options, including **both petrochemical and renewably-sourced plastics, performed the worst in this analysis.** Oxo-degradable bags/products have not been considered.

In a separate study, the **European Plastics Recyclers Association** warned that **oxo-degradable polymers** have the potential to do **more harm to the environment than good.** Oxo-degradable plastics are made to degrade in the presence of oxygen and sunlight. If these bags get buried in a landfill, they probably won't degrade at all because there is no light or oxygen.

Studies of one brand in the US, commissioned by the Biodegradable Products Institute, found that breakdown is very dependent on temperature and humidity. It goes slow in cold weather, while high humidity virtually stops the process.

Oxo-biodegradable plastics are traditional plastics that incorporate additives which affect their chemical stability. Thus, they are identified and classified according to their chemical structure and finish together with the other plastic waste in the recycling streams. In this way, they bring their degration additives to the recyclate feedstock. As a consequence the recyclates may be destabilized, which will hinder acceptance and lead to reduced value.

Studies have shown that these degraded plastics can accumulate toxic chemicals such as PCB, DDE and others from the environment and act as transport medium in marine environments. Such persistent organic pollutants in the marine environment were found to have negative effects on marine resources.

The United Nations Environment Programme (UNEP) stresses that littering is a behavioural problem and must be resolved by raising environmental awareness and by the establishment of appropriate waste management systems. "Oxo-biodegradable" plastics are not specified as a solution by UNEP. Long standing efforts for the prevention of littering could actually be damaging by giving users of plastic items the impression that those Bio-degradable Plastic items might vanish harmlessly if discarded in the environment.

Hence, may I reiterate that...

Don't say "NO to PLASTICS"...

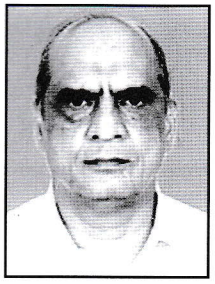
Simply say "TO KNOW PLASTICS"...

Warm Regards,

Sourabh Khemani
President

From the Desk of

The Hony. Secretary



Dear Members,

On the recommendation made by various associations and pipe manufacturers the Ministry of Micro, Small and Medium Enterprises, Government of India has initiated a discussion to de-reserve PVC pipes including conduits up to 110 mm dia (product code 30391201) and Fittings for PVC pipes including conduits up to 110 mm dia (product code 30393501) in view of our growing economy. Our Federation has also conveyed our view points.

The constitution of IPF was prepared 50 years back. Under the changed circumstances the constitution requires to be amended in accordance with the present scenario. Therefore, a 'Constitution Amendment' Sub-Committee has been formed. Members of the Federation are requested to also send their recommendations, if any, to the IPF Secretariat.

The Federation has prepared a **CD** named **'A STEP FORWARD'** in English, Hindi and Bengali for **comprehensive Solid Waste Management** which has been **praised by the Government, semi-government and other plastic associations**. The Federation has decided to send the Bengali version of this CD to all municipalities in West Bengal for developing awareness amongst them. The Movie has been uploaded on the ICPE Website and the link is **http://www.icpeenvis.nic.in/ipfe.html**. Members interested in Solid Waste Management may also get a copy of the same from IPF Secretariat.

With best wishes,

Ramawatar Poddar
Hony. Secretary

Role of Auxiliary Equipments in Injection Moulding Machine

Jayesh G. Mehta
Regional Manager, Sales & Marketing,
Prasad Group of Companies.

Auxiliary equipments plays major role in each & every stage of Injection Moulding process. It starts from plastics raw material entry to our factory in 25 Kegs bag or jumbo bag, conveyed to either storage silo or day bin via pressure conveying system, from there it goes to offline or online raw materials dryers & to offline or online dosing system via vacuum conveying system to Moulding machine. During Moulding process heating & cooling achieved in mould via MTC and chillier & some times mould dehumidification if require with the help of Mould sweat protector. At the end of moulding cycle finished or semi finished products handled by either Robot or conveyor belts may be with counting/sorting arrangements & finally scrap recovery by online granulator or offline central grinder.

Depends on application & product requirements many times use of auxiliary equipments becomes mandatory like clean room application for Pharma & health care products or critical product handling in many applications such as white goods product & automotive products.

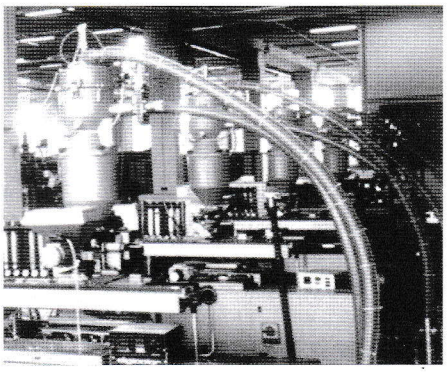
It gives value for money invested & good ROI along with neat & clean systematic Injection Moulding shop which is today's requirement as per many international standards. We will see in details in various slides one by one how it works.

WHY AUXILIARY EQUIPMENTS REQUIRED ?

In the world of extreme competition, bottom line is 'COST PER PIECE', which can come down only by Increasing the productivity & enhancing the efficiency of the main machinery and that is possible only through the Right Selection of Plastics Auxiliary Equipment.

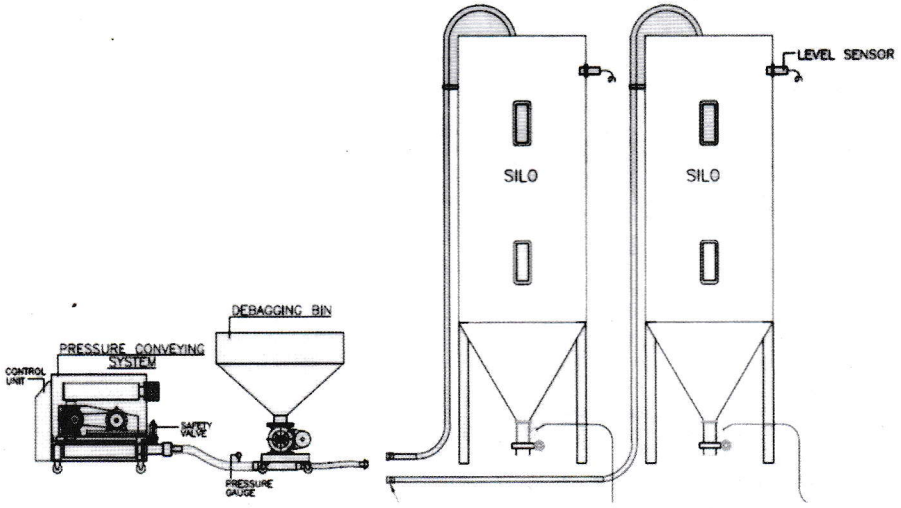
Auxiliary equipments helps to stabilies and balance on

- QUALITY
- PRODUCTIVITY
- REDUCE MATERIAL WASTAGE
- SAVING IN LABOUR AND ENERGY



Storage silo

This is typical lay out of raw material storage silo & silo feeding system. Here we can use vertical space in our factory out side open area instead of horizontal constructed space within factory. The silo can be of complete Stainless steel or Carbon steel i.e. MS with FRP liner inside. We can store more material & utilise constructed space for other productive work rather than storage. Material is loaded to silo with positive pressure via pressure conveying sys-



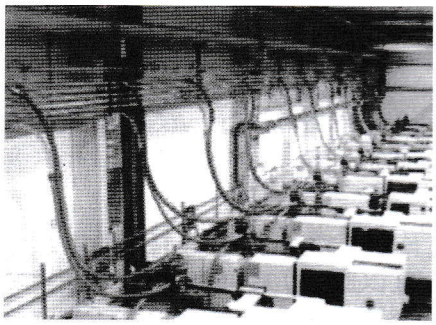
Benefits Over Conventional Method

• Silo and Silo Feeding System	Ease of Material Handling and Automation
• Hopper Loader	Reduce Wastage By spillage
• Centralised Conveying System	Reduce Labour and eliminate human errors.
• Dosing Mixing System	Consistency in Quality
• Chilling Plant	Reduction in Cycle time and improve Surface finish.
• Mould Dehumidifier	To prevent mould sweating
• Hot Air Dryer / Dehumidified Air Dryer	Improve Physical and Optical Properties
• Granulator	Reduction in wastage of finished product
• Mould Temperature Controller	Dimension Stability, Control Shrinkage
• Conveyor Belt & Robots	Increase Productivity

tem & max rate can be of 10 Tons/hr. One pressure conveying system is enough to fill no. of silos one by one with quick coupling arrangement of piping. Silos are with level sensors for automatic operation. Also same can be equipped with load cell for exact quantity monitoring & continues inventory level control.

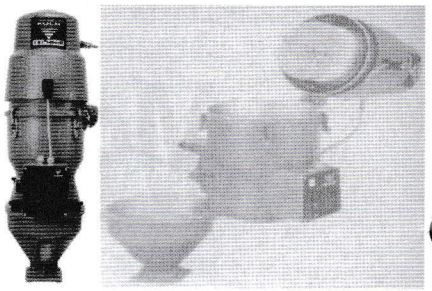
This can have indication for reorder stage to purchase dept also. One can also have advantage of international pricing of raw material when available at cheap rate & store material for future. The entire system can integrate by SCADA on demand.

One of the installations of complete Raw material handling project in India for 40 Injection Moulding machines & using 16 different raw materials. Out of which 4 main high consumption materials are stored in 20 MT silo & rest all materials are in 1 ton day bins in RM area. Material is conveyed to each moulding machine by central vacuum conveying system via SS pipeline & flexibility of any material any machine is achieved through manual coupling station.



HOPPER LOADER / RATIO LOADER

It is vacuum based system. Vacuum blower creates vacuum inside the body thus material conveying takes place. Hopper Loader can be selected based on processing capacity of the machine per hour. (Output in kg/hr. calculated based on shot weight and cycle time)



TOTAL SOLUTION CENTRAL CONVEYING SYSTEM

Schematic lay out of Injection Moulding shop for automotive application with 6 no of10 Ton silos along with offline dehumidified air dryers & offline multi dosing mixing system. Finally material is conveyed to each moulding machine by vacuum conveying system of central vacuum blower & central control. No problem with flexibility of any material any machine is through manual coupling station.

DOSING MIXING CONVEYING SYSTEM

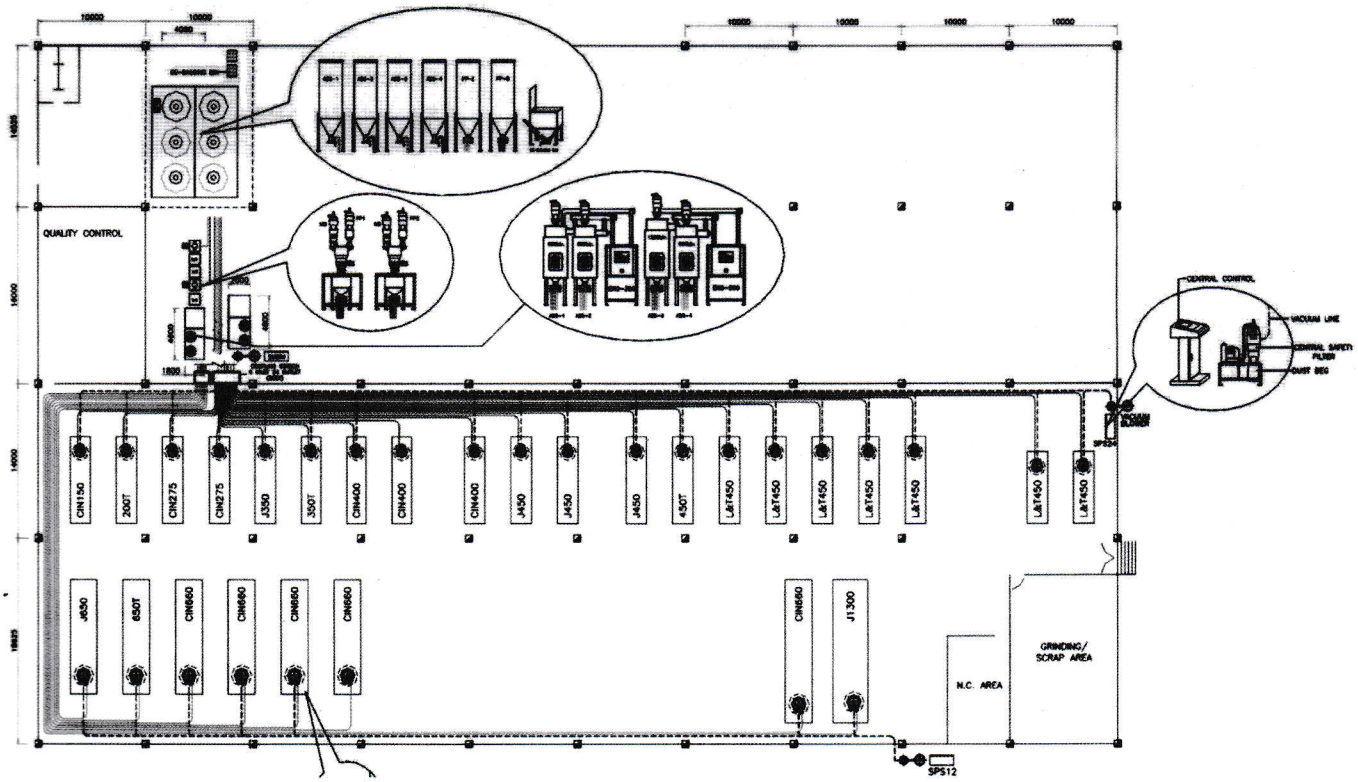
Various options of dosing system. Direct colouring units without mixers mainly use with MB dosing with free flow main virgin material. Another is with online mixer of stainless steel agitator for virgin &regrinds free flow with control dosing of MB. Last one is multi component dosing with central mixer where you can have control of feeding of each & every component like main material, Regrind, MB & additive if any. This can be of Volumetric or Gravimetric system.

ADVANTAGES OF ON-LINE DOSING SYSTEM OVER CONVENTIONAL PROCESS

Mixing Ratio can be adjusted and change during production.

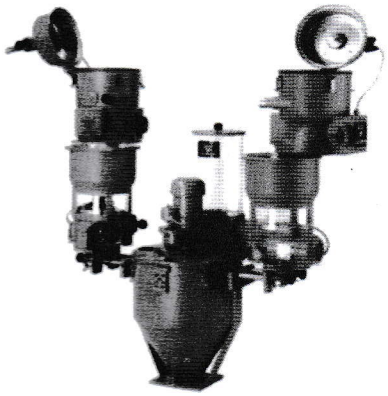
- Instant setting can be achieved by

(MACHINE DEPENDING SYSTEM FOR TOTAL 28 M/C)



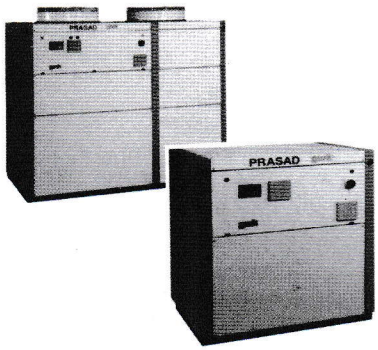
changing on-line mixing ratio.

- Avoids manual errors and saves time & material.
- Saving in quantity of master batch or pigment.
- Colour consistency in product.



What we need to have ease of operation in Chiller?

- Compact in size to accommodate in lesser space in moulding shop.
- Instant start and minimum time to achieve desire temperature when you take first shot.
- All type of fault indication on very user friendly microprocessor when any fault arise.
- Faster and Efficient Cooling.
- Most Important : Energy Saving.



MOULD DEHUMIDIFIER

Purpose:

To prevent mold sweating while circulating lower temperaturewater in the mold.

Requirement of Process:

To have dry air at lower temperature than the ambient temperature at desire flow to prevent mold sweating on mold surface.

Most molded products, whether injection molded, blow molded or vacuum formed (thermoformed) products are cooled by chilled water in mold cavities.

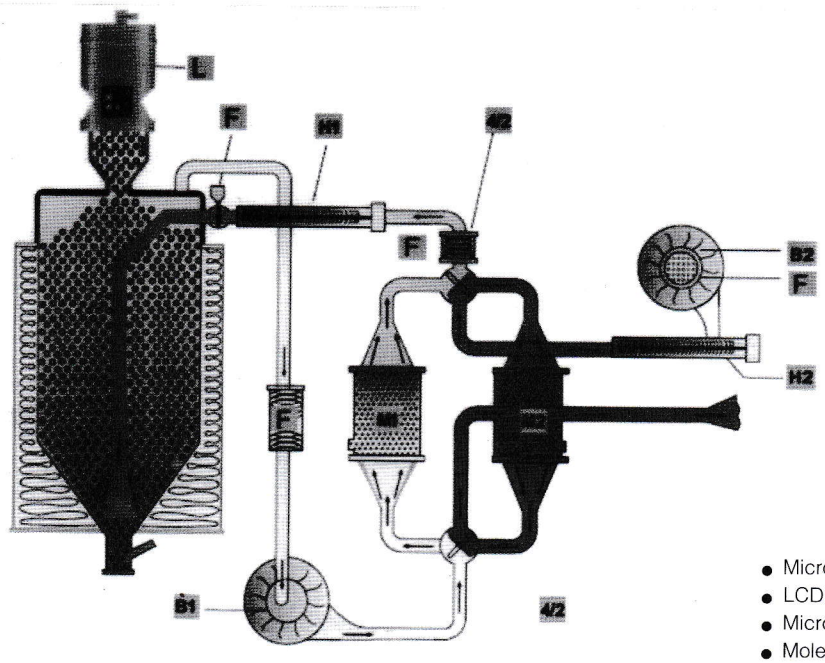
The cooling time, which normally is the longest part of the total cycle time and the molding process, is an expensive and an important part of the manufacturing process. Lowering the chilled water temperature in the mold leads to a shorter cycle time. It can be selected based on mould size, output of the machine and airflow requirement.

DRYING SYSTEM

Why drying of plastic materials is required before processing ?

Hygroscopic Materials

- POLYCARBONATE -PC
- POLYAMIDE - PA



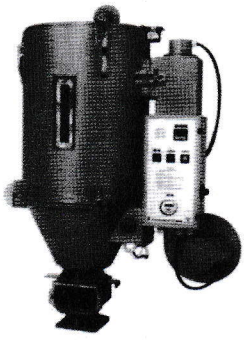
Functional Diagram

F	- Micro-filter
M1/M2	- Molecular Sieve Container
H1	- Drying Heater
H2	- Regeneration heater
4/2	- Divertor valve
B1	- Drying Blower
B2	- Regeneration blower
F	- Flow controller
L	- Hopper Loader

- Micro processor based intelligent control.
- LCD displays on line process monitoring.
- Micro - Filters are designed for clean room condition.
- Molecular sieve with higher moisture extraction capacity and lower regeneration energy consumption.
- Can be integrated with SCADA or ERP system.

- PETP
- PBTP
- ABS
- POM

and soon...



Normally all plastic materials have tendency to absorb moisture from the atmosphere. The moisture is required to be removed from the granules before processing. Otherwise, it affects on physical and optical properties of the end products.

HOT AIR DRYER

Energy Efficient Hot Air Dryer with PID Temperature Controller.

- Insulated side walls, prevent heat loss and protect workers from hot surface.
- Mass material flow. Even air / heat distribution.
- Separate block for magnet below the Hot Air Dryer.
- Variable thermostat.

Typical installation of offline energy efficient dehumidified air dryers with multibins. Widely used in custom moulding with various engineering plastics & frequent material change requirement along with central conveying system.

The smart energy efficient dehumidified air dryers having following features.

1) Smart touch PLC panel with touch screen control.

2) 5.7" Colour Graphic display with animation & mimic.

3) 3 point energy lock at drying bin, blower & heater level.

Drying Bin Size Selection

$$\text{in Liters} = \frac{\text{Out put in Kg/Hr x Drying Time in hrs.}}{\text{Bulk Density in Kg/dm3}}$$

For example
Output - 20 Kg/Hr.
Material to Process : Nylon 6
(Drying Time 4 hours, Bulk Density 0.6 Kg/dm3)

$$\text{Drying Bin Size in Liters} = \frac{20 \times 4}{0.6} \sim 133 \text{ Ltrs.,}$$

Dehumidified Air Dryer - Selection

Air Flow M3/Hr. = Dry Air Volume M3/Kg x Output in Kg/Hr.
Example
Output : 20 Kg/Hr.
Material to Process : Nylon 6
Dry Air Volume : 1.6M3/Kg

= 1.6 x 20Kg/Hr
= 32 M3/Hr.

4) Total material management system including material drying history, temperature profile & drying time.
5) 1 GB memory card to store Alarms & fault History up to 1000 no.
6) 2 USB port connection & 1 Ethernet port connection for SCADA.
7) Monitor all the operator material data, their changes in temperature, flow & setting & can be printed via USB printer.
8) Maintence & trouble shooting online with colour display & help.

Important parameters to achieve efficient drying.

Air temperature:

Drying air temperature is measured at the inlet to the dryer and this should not exceed to the set temperature with accuracy of 1°C.

Air dew point:

This should preferably be at –30°C or lower measured at the air inlet to the dryer.

Air flow:

Adequate airflow must be maintained across the bed. Although raw material suppliers suggest airflow rates.

OIL/WATER BASED MOULD TEMPERATURE CONTROLLER

The temperature of the mould influences the quality and economy of operation of the production process. Improves surface quality of the finish moulded parts by proper melt flow in the cavity.

- Controls warping and distortion behavior of the products.

- Inadequate heating and cooling can also lead to the formation of stress cracks and breakage of moulded parts.

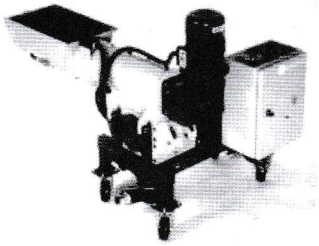
AUXILIARY EQUIPMENTS

List of Auxiliary Equipments : After Moulding Process

- Granulator
- Conveyor Belt
- Robots

We live in the world dominated by high speed. But there are times when being slow is key to result.

In plastics processing industry, engineering plastics is becoming increasingly important. The cost of these type of material is so high that re-use of sprues & rejected parts become essential for economy.



Disadvantages of High Speed Grinding Process

High noisy operation
Regularmaintenance of blades & cutter

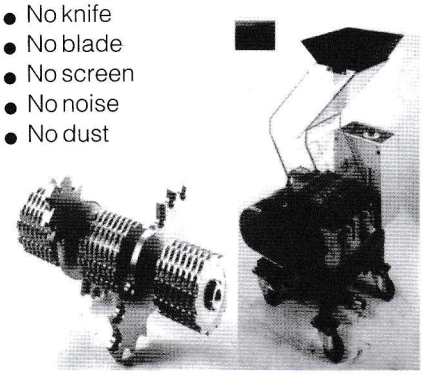
- Uneven size of grinding granules
- High power consumption
- Dust in regrind material
- More rejects due to dust in regrind.
- Degradation of some properties of materials.
- Limitation of using regrind material.

GRANULATOR

This technology works on very slow speed - Just 1 revolution in 2 seconds... Successful technology & proven design.

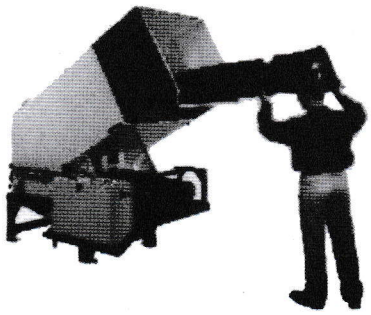
Slow Speed Granulator

- No knife
- No blade
- No screen
- No noise
- No dust

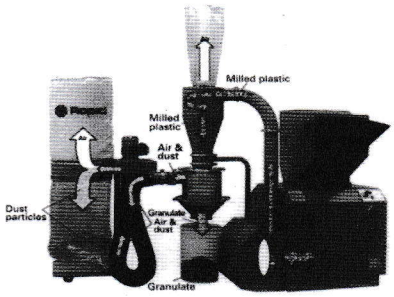


Advantages of Slow Speed Granulator

- Low dust generation.
- No shearing action.
- No screen blockage.
- Silent
- Minimum maintenance on rotor pre-cutter.
- Do not destroy the molecular structure of plastic materials.
- Small footprint.
- Low power consumption.
- Easy to clean.
- Suitable for glass filled material.



Granulator with Material Transport and Dust Separation



CONVEYOR BELT

Intelligent Conveyor integrated with other Ancillary can greatly affect quality of your production system.

- Saving of Labour
- Clean Room condition - untouched by human.
- Integrated with Robots - Semi automatic assembly line.
- Automatic counting of parts & filling into Box.
- Separation of Sprue & Parts automatically.
- Go under the mould and convey sprue to online granulator.
- Can be integrated with any existing line
- High quality and consistency in Production

Innovative ideas make Trenchless Piping Systems Possible in India, Now!

Santhanam Krishnaswamy
Hultec Asia Pacific India,
Craig Fisher
S & B Technical Products, USA

Background

HDD (Horizontal Directional Drilling) Technology originated in the oil fields of the western Unlimited States in the 1970's. HDD technology was developed by merging the know-how of a water utility with that of a water well drilling company. Now HDD is a Common installation method in the USA, Europe and other developed countries. HDD has revolutionized the way piping systems are installed in congested urban environmentns. It allows the pipe to be installed with minimum surface disruption, in less time and at lower cost. However, this technology is not static. The industry is constantly improving the equipment, the drilling mud and the piping systems. One such improvement is a patented, internally restrained, push-together PVC pipe system. The new product allows the HDD contractor to assemble the pipe string more quickly and with less effort.

The new high-strngth restrained joint has proven to be ideal for the demanding HDD environment.

This paper explains the benefits of this system and how this pipe technology could be implemented in our country.

Introduction

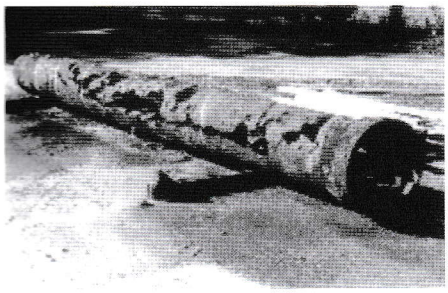
India is a country with a large population and as a result, a country where delivering clean water safely is a top priority. while sourcing and treating drinking water is no small task, delivering it safely to the customer is also a challenge.

While the reliability of water systems in developed countries has improved dramatically, India has not kept up the pace. We still see too many symptoms of an unreliable water system and lots of dug-up roads, numerous traffic diversions and damage to otherwise well- laid roads.

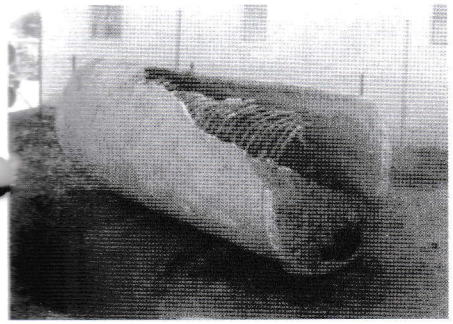
Let us consider the DI (Ductile Iron) and concrete pipes used for our drinking water conveyance systems. These pipe materials have inherent problems. First, they are heavy, They need plenty of manpower to lay the pipes and large equipment to handle the pipe & moving them around. In the process of handling and laying the pipes, good roads are damaged. If these heavy pipes are not well supported when they are laid, they will settle and crate uneven (and uncomfortable) road surfaces. This is a normal scene in every developed city in our country. The consequences of using this heavy pipe is that it takes enormous amounts of time to finish the work, traffic is disrupted while the work is going on, and the delays cost everyone time and money.

Existing system & related issues

Another issue with these heavy pipes is durability. The DI pipes have corrosion problems. (DI pipe used for drinking water pipe suffers external corrosion from the soil environment. DI pipe used for waste water systems suffers from both external corrosion and internal corrosion from sewage it transports.) The durability issue with concrete pipes is structural. The pipe breaks and then leaks.



Corroded steel pipe



THE CAUSE: *Residents of Govind Singh Street in Pulianthope with containers of discoloured drinking water on Friday.*

Contaminated drinking water in a metro city (Courtesy : The Hindu)

Ultimately the quality of drinking water taken through these damaged pipes is questionable. Water is wasted and does not reach the needy.

The heavy pipe poses a challenge to contractors and the contractors do their best to lay the pipe well. Newer and innovative technologies make lighter weight and durable pipe materials available to the contractors. These lighter weight pipe products are easier to lay properly.

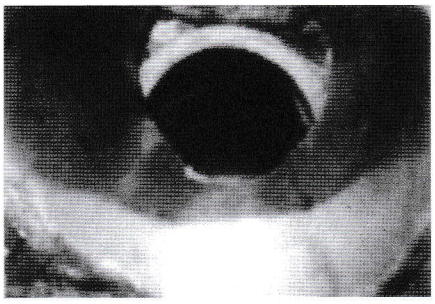
Other important issues

The problem wastewater utility owners had with clay pipe was not corrosion; it was system integrity. Systems like the ones shown below are much more costly to operate. Besides the obvious maintenance issues, the proximity of fragile sewage pipes to alternate pathways for the sewage to flow, inevitable creates overflow problems. Once the fragile sewage pipe is broken, groundwater and rainwater make it likely that much of the sewage does not reach the wastewater treatment plant. If the broken sewage pipe lies below the groundwater table, the groundwater leak into the sewage pipe and causes back-ups and overflows due to inadequate capacity. If the broken sewage pipe lies above the groundwater table, the same back-ups and overflows can occur when it rains. In either case, much of the sewage does not reach the treatment plant and finds its way into local waterways.

Another contamination risk is a leaking sanitary system polluting the groundwater table. Because of these issues, in the USA and other developed countries, wastewater utilities turned to plastic pipe to solve their system integrity problems. Plastic pipe offered a high quality joint and the ability to flex without breaking when soils and settle.

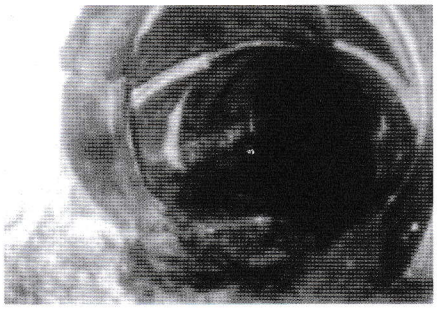
Metro water pipe broken in Ambattur, Chennai, India (Courtesy : Dinamalar)

Example of the Destructive Power of the Infiltration / Inflow Virus.

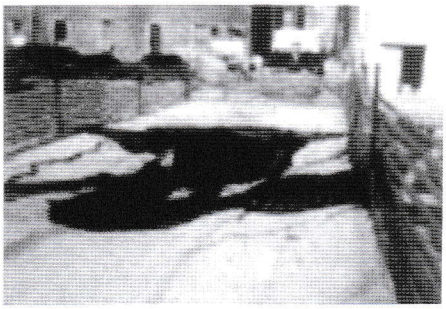


Arterial Shearing

Arterial Clogging



Arterial Shattering



Arterial Collapse

The Solution

Developed countries have switched over to PVC pipe with a "Rieber" gasketed jont. (The Rieber gasket is a metal reinforced rubber gasket.) PVC, being a plastic, solved the corrosion problem. The Rieber jointing system was a key element in the system integrity solution. Rieber provides a reliable joint that is easy to assemble. the other part of the system integrity solution is a result of PVC's flexibility. PVC flexes when soils move and settle rather than breaking.

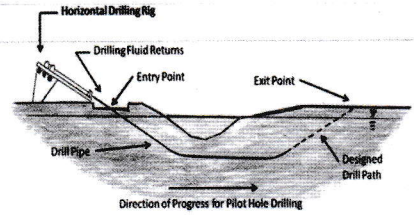
PVC pipe with Rieber technology offers a lighter pipe that is more cost effective. Its lighter weight means it is less costly to transport and easier to handle on the job site. Rieber joints are more reliable because the metal reinforcement prevents the gasket from being dislodged during the assembly process. (Dislodged gasket result in leaky joints.) This piping systems has a long track record of reliable performance; it has been in use in the USA for over three decades.

The longevity and durability of PVC is the main reason that utilities continue to install the product. One method by which this material's longevity has been documented is through research projects that locate old PVC pipe, arrange for it to be exhumed and then that pipe to the performance standards for new pipe. This has been done in the USA and elsewhere on both the water side (Eckstein, 1998); (Gons, 1995); (Hulsmann, 2004); (Seargeant, 2007) and the sanitary sewer side (Alferink, 1995); (Bauer, 1990); (Whittle, 2004) In these studies, the old pipe tests out like new. The most impressive of these research projects was the one conducted in Germany on 1930s vintage PVC – some of the earliest PVC pipe manufactured. (Hulsmann, 2004)

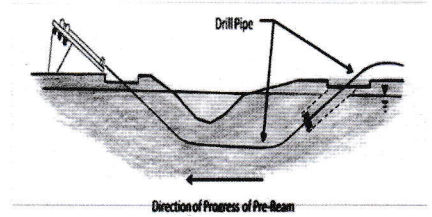
Recent Innovations

The same company that developed the Rieber jointing system has invented a simple method for restraining a gasketed PVC pipe joint. By providing a restrained joint, the product is now available for installation by HDD (Horizontal Directional Drilling). HDD is a revolutionary installation method that was first developed for river crossings. The basic steps in an HDD installation are:

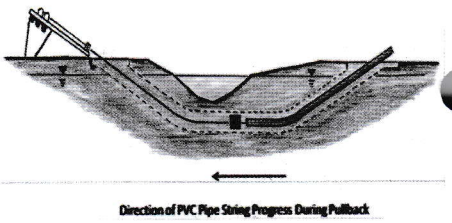
One : Drill a pilot hole along the drill path. The drill head is tracked and its course is continuously corrected (remotely) to keep it on the design path.



Two : Ream the pilot hole to the diameter needed for the pipeline. While the hole is reamed, drilling mud is pumped into the hole to keep it open and stable.



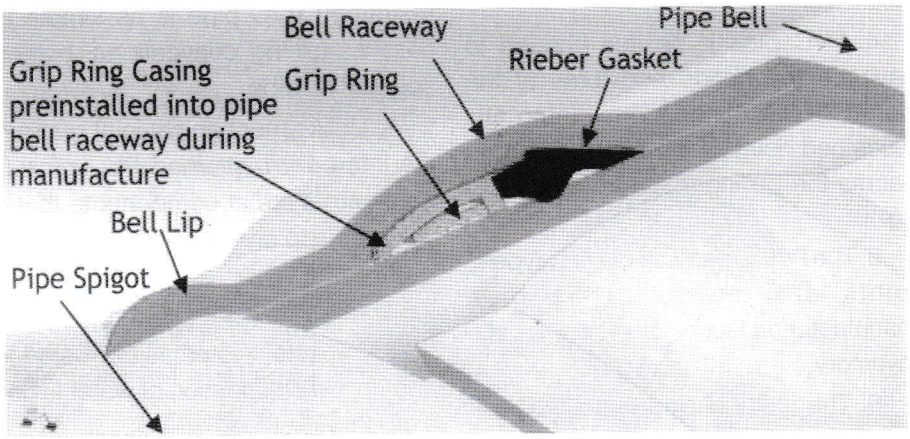
Three : Pull the pipeline into the bored hole. This is called the pullback operation.



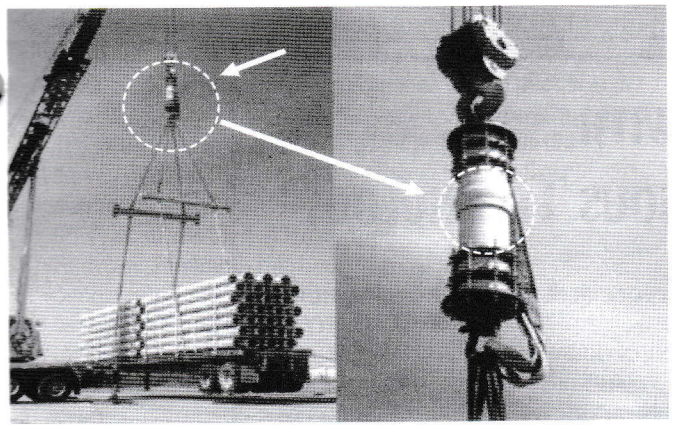
HDD technology was developed by merging water well drilling technology with modern utility installation methods. Pipe materials installed by HDD must be flexible enough to navigate the tight bends of the typical drill path, but they must also be strong enough to withstand the pull loads from the HDD rig during the pullback operation. The Bulldog Restraint System™ offers the necessary

combination of strength and flexibility. The metal components in the bell of a Bulldog joint provide the restraint and prevent the joint from separating when pulled by the HDD rig. (The metal components are protected from corrosion with a special coating.)

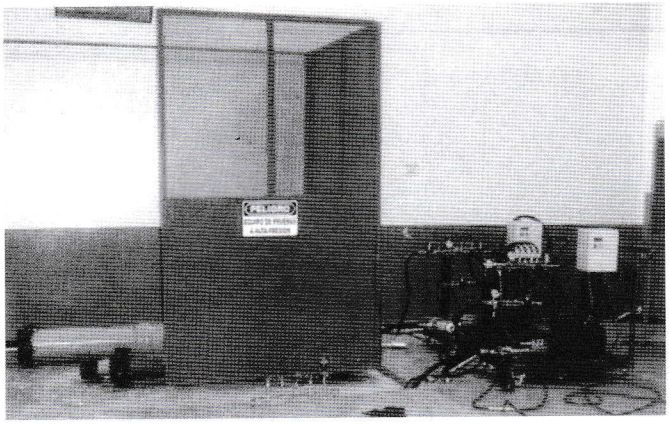
The strength of the Bulldog joint has been proven though University testing. However, field demonstrations such as those shown here make the point more dramatically.



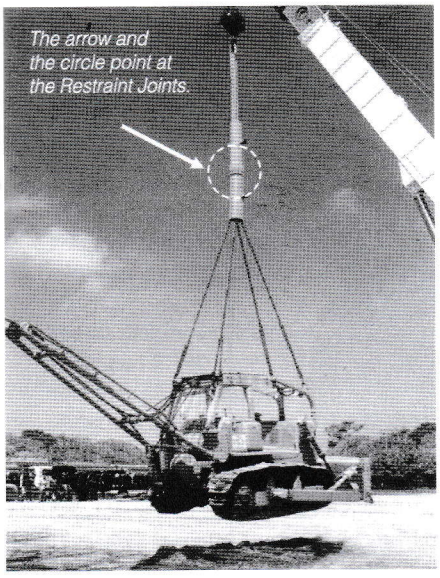
Cross section of installed Bulldog™ Joint



Just to witness the joint strength, please look at these pictures.



Restrained pipe specimen undergoing Million-Cycle Surge testing, besides each joint being tested in production line for leaks.



Strong enough to lift this 54,000-pound D7 Dozer !!!

Both flexibility and strength are needed for a pipe material being installed by HDD. To illustrate the flexibility of PVC, the long-term strains in a demanding environment are compared to PVC's strain capacity. Mining activities create a very challenging environment for buried structures. When the soil settles as a result of the mining, it induces axial strains in the pipe as the system moves with the setting soils. Strains of up 0.7% are not uncommon in these subsidence areas. Are these strains within PVC's capabilities? Will the PVC pipe break? No. As large as these strains are, they are well within PVC's capabilities. (Vinidex, 1996)

Long-Term Performance

In the USA, utilities often require this type of product to have passed the performance requirements of ASTM F1674. (ASTM, 2005) The standard requires three tests : a quick-burst test, a 1,000 hour pressure test, and a million-cycle surge test. Of the three, the million-cycle is the most difficult one to pass. It also is the that best guarantees long-term performance in a demanding environment.

Summary

The combination of these two innovative technologies, the HDD and internally restrained PVC pipe have the following advantages :

1. Installing pipe by HDD takes much less time than traditional open trench method.

2. There are no traffic stoppages and diversions when pipe is installed by HDD because the tunnel is bored under the road instead of trenching through the road.

3. HDD requires less labour for pipe installation.

4. PVC pipe is flexible enough to navigate the bends and turns of the bored HDD tunnel, the internally restrained joint is strong enough to handle the pulling loads from an HDD rig.

5. The PVC pipes with the new type of joints are tested at the pipe manufacturing facility before it goes into inventory.

6. The metal casing that sits inside the joint comes with a special rust-proof coating.

7. The joining of the internally restrained PVC pipe is as simple and easy as joining conventional bell-and-spigot PVC pipe.

8. Unlike mechanical joint restraints, the internally restrained PVC pipe has no external metal components that are vulnerable to corrosion and no nuts and bolts that are difficult and time consuming to install.

9. The total system is corrosion-free and hence chlorination of water is never a problem.

10. The joint restraint meets the performance requirements of the international standard ASTM F1674.

The gasket in the joint complies with ANSI/NSF-61, and the assembled joint has passed the performance requirements of ASTM D3139.

India must use its limited resources more intelligently to make clean water available to more of its thirsty citizens. Innovations such as these are vital for accomplishing this essential work.

PERCEPTION SURVEY

Where plastics waste ends up?

The group with highest awareness that plastics are fully recyclable is women: perhaps because it is they who generally sort household waste. The most "unaware" are, unfortunately, students at just 51%. Meanwhile pensioners, blue and white collar workers and professionals fall within a limbo where it is unclear whether ignorance or laziness prevails. However students surpass housewives in their knowledge of the uses of recycled plastics: homemakers do not have a very clear picture of where their "ecological efforts" end up, while students are instead well aware that recycled plastics can be used to reproduce a quantity of manufactured objects.

These are some of the findings of a survey entitled "Do you know where plastic ends up?" conducted in Italy by IPPR (Institute for the Promotion of Recycled Plastics), interviewing 1,000 people (men and women) aged between 16 and 60.

In answer to the question "Do you know that recycled plastics can be even 100% reused?" 82% of housewives answered yes. Compared to the national average of 75%, women also proved to be more active in recycling, and better informed about post-recycling.

The objects most frequently cited as being made from recycled plastics are bottles, chairs and garden toys, accounting for around 70%. Textile uses are instead known to just 40% of respondents - a surprising figure considering that a large part of PET from sorted collection is employed in the fibres sector.

* * *

The picture which emerges from this study - according to the Plastic Rubber Federation - is therefore somewhat confused. Whereas glass bottles are reborn as glass bottles, and cardboard is reborn as more cardboard, what is reborn from plastics seems more difficult to grasp.

This very vague level of public awareness is surprising given the notable investments in communication of the past few years.

The perception surrounding recycled plastics has always been one of doubt, giving the feeling that such products are regarded with mistrust, as some kind of ploy for "green washing" a material that is not very environmentally friendly.

This is to some extent borne out by the results of this survey. Previous efforts at communication have not been rewarded, so that certain recycled plastics are now just as widely used as they are little known. PET bottles, the most collected and recycled product, are still also the most questioned.

The Federation has promoted and supported IPPR with the conviction that

Awarded recycle

Early in 2009 EPRO (European association of plastics recycling and recovery organisations) sent an invitation to the plastics industry calling for examples of products containing recycled plastics.

The plastics industry embraced the competition, and EPRO received entries from 13 countries all over Europe.

At the end of the year a jury from across Europe judged the entries and selected the winners. The top 3 places were shared by 4 companies and at least 6 countries:

1) car seat for children, produced by Team-Tex (France)

2) bottle-to-pen, produced by Pilot (France)

3) Nobody Chair, designed in Denmark, produced in Sweden and raw materials delivered by Wellman International

3) Rfresh PET trays for food, produced by Linpac in Germany and the UK.

Hundreds of thousands tons of recycled plastics are used as material for new products. Sometimes the material is cheaper and sometimes the recycled material is just superior to an alternative. The competition therefore focused on several criteria: the entries had to contain at least 50% recycled plastics. They also had to be made out of recycled used plastics packaging.

Through this competition EPRO want to raise the awareness of the consumers, who spend time on a regular basis sorting their used packaging. These products will be the evidence that shows that recycling is worth the effort, and highlights the range of options and applications for recycled plastics packaging.

www.epro-plasticsrecycling.org

promoting recycled plastics helps promote all plastic materials, and the objects made from them. If plastics are considered "invasive" because of their ubiquitous presence (in every corner of the home, office, neighbourhood, city), we have to make it clear that they can also be invasive in their recycled incarnation.

* * *

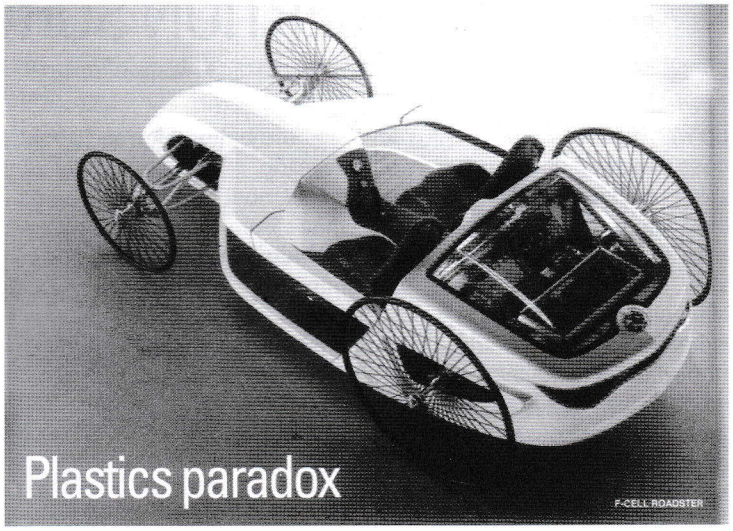
Plastic materials can be used to make, and to re-make, anything. The opinion taking hold is that they are limited in their reuse, that they are "niche" products, something transitory and ephemeral, which changes as do fashions. But we know this is not true. Behind recycled plastic materials there is an impressive amount of work: that of the companies which make the products and equipment, of the regulation and certification bodies, of the universities and research centres. The industrial system has not contented itself with ephemeral applications because it is not such uses that can place one and a half million tons of recycled material per year on the national market.

What is needed, at the risk of repeating the message, is to communicate the possibility of recycling, always and across the board, starting from the mechanical recycling of plastic materials. Without false modesty: secondary materials have been studied just as fully as primary ones, we understand their many potentialities as well as their few limitations. They have been studied and tested under the aegis of institutions and ministries, and their use is not down to any form of expediency, but rather represents a considerable segment of industry.

This is the direction in which we must work. Not only because recycled plastics give plastic a "soul", but also because the market demands them with ever greater conviction.

We do not know whether this conviction is also driven by shrewd marketing operations, but in the face of increasingly ambitious recycling targets, we need to open up to new applications. Otherwise, we risk being overwhelmed by controversy about the true recyclability of our materials which, as we have seen, the general public does not yet fully understand.

www.ippr.it



Plastics paradox

The preliminary conclusions of a study on the environmental impact of plastics and their applications were presented by PlasticsEurope during the Copenhagen Business Day, an event integrated into the city's COP15 activities, organised by the ICC and World Business Council of Sustainable Development.

The study provides the clearest picture yet of the CO_2 emissions of plastics and their role in fighting climate change. Its findings offered a valuable input from the industry ahead of the UN's Climate Change talks about future CO_2 reduction targets.

Undertaken by independent Austrian sustainable development consultancy Denkstatt, the study challenges some of the more negative perceptions around the material's environmental credentials. Among other conclusions, it reveals that plastics represent only 1.3% of the average European's carbon footprint (compared with 9% clothing, 13% food, 18% recreation and leisure, for example).

Substitution of plastics where it is feasible with traditional materials would generate 3.7 times more mass (impacting waste management), result in 50% more GHG (120 million tons per year) and lead to 46% more energy being consumed.

Greenhouse gas emissions savings resulting from the use of plastics currently represent 38% of the original EU15's Kyoto CO_2 reduction target (or relate 15% to EU27's 2020 target of 780 million tons). The absence of plastics from the materials spectrum would effectively impair the EU's ability to meet its Kyoto GHG reduction targets. Energy savings resulting from the use of plastics: 2,300 million GJ less energy consumed per year, 50 million tons less of crude oil per year.

* * *

Plastics represent a small proportion of the average European carbon footprint (1.3%). The carbon balance (the ratio of the carbon intensity of production in relation to the savings and benefits across the life cycle) is presently in the range of 5-9. This carbon ratio is set to improve to between 9-15 by 2020; indicating that the benefits in use in the future are far higher than the additional emissions from the growth of plastics.

Plastics materials play a key role in the generation of renewable energy. Plastics are an enabler of new technologies which significantly reduce resource use (e.g. de-materialisation in memory cards or MP3 players). Plastics used for thermal insulation, for food packaging or to produce renewable energy enable extraordinary use-benefits.

On balance, plastics save 5-9 times more CO_2 during the use and recovery stages of their lifecycle, compared with the CO_2 emitted during their production (carbon balance). This ratio is set to improve to savings of 9-15 times by 2020 through advancements in production and the increasing efficiency of plastic products.

According to PlasticsEurope, this study clearly shows the "plastics paradox": the more we use, the more we save. Sustainable consumption plays a key role in CO_2 emissions and we need to count on a material which can save us oil equivalent to 194 very large crude carriers per year. For these reasons consumers, politicians and business leaders have to recognise the role of plastics in achieving the targets which came out of Copenhagen.

www.plasticseurope.org

IMPACT OF BIO-BASED ALTERNATIVES

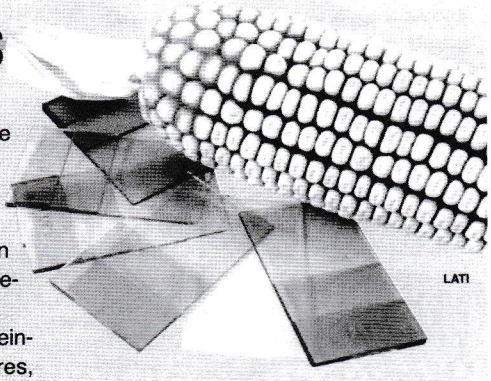
The answer of Petcore to a study on biopolymers

The study on bio-based plastics that has been published jointly by the associations European Bioplastics and EPNOE (European Polysaccharide Network Of Excellence) forecasts the capacity developments and technical substitution potential of bio-based plastics. The authors from Utrecht University estimated a substitution potential of up to 90% of the total consumption of plastics by bio-based polymers to be technically possible. A press release has been produced by Petcore (PET Containers Recycling Europe) in response to the above study with the aim of eliminating confusion caused in the markets and to avoid misinterpretations due to lack of clarity on this delicate topic.

* * *

The manufacture of some bioplastics may appear to involve the use of less energy in substrate production and conversion (forming), compared to oil-based conventional alternatives. The whole energy utilisation chain from planting, via harvest to plastic manufacture is less well documented and work to comprehend this should be carried out by bioplastics producers. Additionally the socio-economic effects of land use must also be included in the overall analysis. According to work carried out in the US by Business Development Associates, bioplastics are not cost-competitive for the manufacture of single-use disposable packaging; nor are they likely to become so, unless there is a drastic increase in the cost of oil-based polymers. This will be independent of any impact of such oil cost increases on bio-plastics. Nonetheless, it is likely that the use of bioplastics will expand in niche market applications driven by non-economic benefits such as "sustainability". It is expected that initial growth will come in selected applications where bioplastics are the least non-cost competitive. PLA, the only water-clear packaging biopolymer, appears to be the most nearly cost competitive. It has substituted very small volumes of PET, particularly in situations where its lower thermal stability, greater moisture vapour transmission rate (MVTR) and increased brittleness are acceptable. If the use of bioplastics affects the product shelf life (ie reduces it) or

Biocompounds



Latigea is the brand name of the newborn family of bioresin-based compounds developed by Lati, featuring PLA among the matrixes chosen for a range of injection mouldable thermoplastics, still under development but very promising yet.

The new family features compounds reinforced with natural and traditional fibres, blends with PC and polyesters etc. R&D focused just on some specific grades of PLA, whose formulation ought to feature only ingredients ensuring a very low or no impact at all on the environment. For this reason, the new compounds include an outstanding flame retardant grade: Latigea B01-V0HF. This material is engineered in order to feature no substance that may harm human health or the environment.

The compound is fully Rohs-compliant and halogen, red phosphorous, antimony and zinc free. No other resin besides the sustainable and decomposable PLA matrix is introduced in the formulation. This aspect increases actual chances for the material to be considered as eco-friendly as possible, although compostability is still under evaluation.

Flame behaviour is very interesting and results concerning flammability, ignition temperature and current tracking index are exciting. As evident, FR properties boost B01-V0HF behaviour close to halogenated FR compounds obtained by non-renewable resins as PP, PBT and PA. These characteristics turn out to be a real asset, above all for the electrical and electronic industry, where the new grade can be adopted as moulding material for boxes, housings, covers etc.

Mouldability is excellent, not requiring dedicated tools or peculiar procedures. The material can be coloured too, as the natural shade of the compound is white. Thermal performances are still under development but applications up to 60°C can already be engineered.

www.lati.com

necessitates additional temperature-controlled storage or distribution conditions, this may reduce the environmental benefits being sought.

* * *

Bioplastics appear to have caused a great deal of confusion amongst consumers. In particular there is a low level of understanding of the terms "biodegradable" or "compostable" and their implications. It is the responsibility of companies introducing new materials to ensure that they are fully understood by consumers and other stakeholders. Options for recycling, composting and disposal of bioplastics need to be clear and easily managed to ensure that bioplastics do not disrupt existing recycling infrastructures. It is possible that bioplastics can be separated from conventional plastics using near infrared and laser fluorescence technologies but this would necessitate significant extra investment by re-processors and waste management companies. Without separation bioplastics can contaminate the recycling stream even at very low levels (less than 0.1%).

Most bioplastics are designed to compost under specific environmental conditions. This is normally in a commercial composting facility which can achieve temperatures of above 60°C. Currently no local authority will accept bioplastics packaging in organic waste collection due to the risk of contamination with conventional plastics.

Very few of the available bioplastics are suitable for the lower temperatures achieved in home composting. It is vital when supplying these materials to end consumers that this distinction is made. Disposal of bioplastics to landfill will increase the generation and release of methane gas and this is directly counter to the fulfilment of the obligations under the EU Landfill Directive.

There needs to be significant research - according to Petcore - carried out to understand the impact of bioplastics on the environment, food production, manufacturing and recycling. In short a lot more clear, unambiguous, peer-reviewed information is required.

www.petcore.org

Eco-carpet

At the Bella Center in Copenhagen, where the UN global conference on climate change was held last December, every one of the 15,000 dignitaries stood, walked, and rested their feet on the Eco2punch carpet manufactured by the French company Sommer Needlepunch with a synthetic fibre from renewable resources.

The 20,000-sqm carpet is enough to cover nearly five soccer fields. By using the fibre made with Ingeo biopolymer supplied by NatureWorks, greenhouse gas emissions were reduced by 60% compared to the fibres made from fossil-based polypropylene and energy consumption was decreased by 50%. This reduction of greenhouse gas emissions in creating a carpet of this size is equivalent to eliminating 110,834 driving km in an average automobile.

The Eco2punch family of carpets is not only a response to the increasing demand from customers for less greenhouse gas emissions and energy usage in the products they buy, but it also represents a long-term, significant commitment to perform research and development into more sustainable products and processes. In a first-of-its-kind collaboration around a new low carbon paradigm for materials recycling, Belgium-based company Galactic - one of the largest lactic acid producers in the world - collected the carpet following the close of the COP-15 conference. The company will now use its Loopla process to convert the carpet back to virgin lactic acid.

www.natureworkslic.com

Green technology

Energy saving and environmental protection are the future trends in the plastics and rubber industries with the uprising global awareness of environment protection. There are increasing demands for innovative energy-saving technologies, renewable and recyclable materials for production enhancement and products' competitiveness.

In the light of the growing attention to green plastics, the organizers of Chinaplas 2010 (April 19-22, Shanghai) will host a number of concurrent activities under the theme of "Green Plastics-Our Goal-Our Future" in ties with the event. The fair will be an ideal platform for the discussion on green plastics and how 3Rs (Reduce, Reuse, Recycle) be adopted to current and future plastics and rubber industries, and to highlight the importance and influence of "going green" in achieving sustainable development for the industry.

Only two weeks ahead of the Shanghai World Expo, Chinaplas will echo to their theme of "Better City, Better Life", by demonstrating green plastics and rubber technologies as key elements to green our city and to make a better life for future. As one of the aims of the event to nurture the green development in the industries, green messages will be conveyed at the fairground. Green Corners will be set up to share green tips and display exhibitors' latest green technology on plastics and rubber products. In addition, a 3-day industrial forum on green technology will be staged from April 19-21 to examine the development of green plastics industry in different parts of the world as well as the applications of green plastics in various user industries. Through the industrial forum, participants will gain a deeper understanding of plastics being a eco-friendly material contributing to a better living environment. Real case sharing about applications of green plastics in different industries such as automobile, building & construction, packaging, E&E, IT and telecommunications will be held.

Technological developments driven by demand for flexibility and energy efficiency

FILM EXTRUSION

Production flexibility and energy efficiency. These are the main characteristics that film producers are requiring of the extrusion lines. Today, flexibility is considered one - and possibly the most important - route to overcoming the current economic crisis, by allowing further penetration to exploit the profitability of niche markets, while efficiency is of the essence in the face of increasingly limited resources and ever more pressing environmental concerns.
All this has repercussions on equipment manufacturers, who must in their turn also confront the difficult economic situation, leading them to develop ever more affordable solutions without compromising technological standards. Below is an overview of new developments offered by Italian manufacturers specialising in the production of machinery and equipment for film extrusion, to answer these and other needs.

* * *

Dual ring

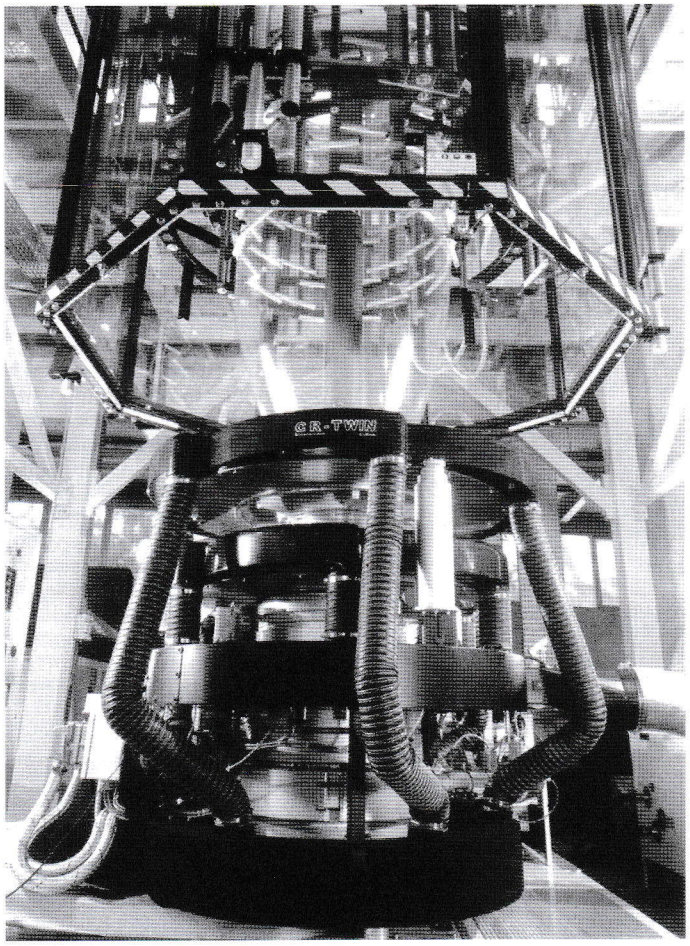
After the success of the CR Max cooling ring, made of carbon fibre reinforced material, the dual ring CR Twin version introduced by Macchi improves the thickness control and the plant yield in blown film extrusion, first of all with a reduced blow-up ratio.
The composite material used for this device improves its thermal efficiency with respect to the metal versions and makes useless any further jacket to prevent the moisture of the working environment from condensing on its surface. To avoid this expensive phenomenon in terms of time and money, in conventional cooling rings the thermal insulation has to be tailored to every specific requirements. Moreover, the low weight of the system facilitates the assembling and disassembling at any production changeover.
The CR Twin model, which represents the third generation of dual-ring cooling systems developed by the company, ensures a die factor - i.e. the ratio between hourly output (kg) and die diameter (mm) - of 2.2 when LLDPE is processed. Production increases are also possible using metallocene resins, normally difficult to process.
Although the new cooling ring is proposed to improve the yield in any situation, it would perform particularly well in the extrusion of film for FFS (Form-Fill-Seal) applications in which cooling is a crucial aspect due precisely to the reduced blow-up ratio. It is also available for dies having a diameter up to 350 mm.
The device has a lower ring with single lip air dispenser which provides a gradual cooling to stabilize the extrusion and increase the melt strength. The height of the intermediate zone between the lower and upper ring can be adjusted moving the upper ring which features a classical dual lip design.
Thanks again to the composite materials the internal geometry of both rings has been optimised to improve the air flow around the bubble while keeping the same external size of the metal devices. Previously the dual ring devices allowed for an 80% production increase but at the expense of film thickness profile control.
With this model, excellent profile control can be carried out even with no automatic measurement system. A single cooling ring typically allows a 7% thickness variation along the circumference. By means of the dual ring the same control level can be reached but at higher production rates. During the tests, films from 100% post-consumer bottles have been obtained attaining a hourly production of 320 kg with a 250-mm die. Start-up times also have been reduced during the tests.

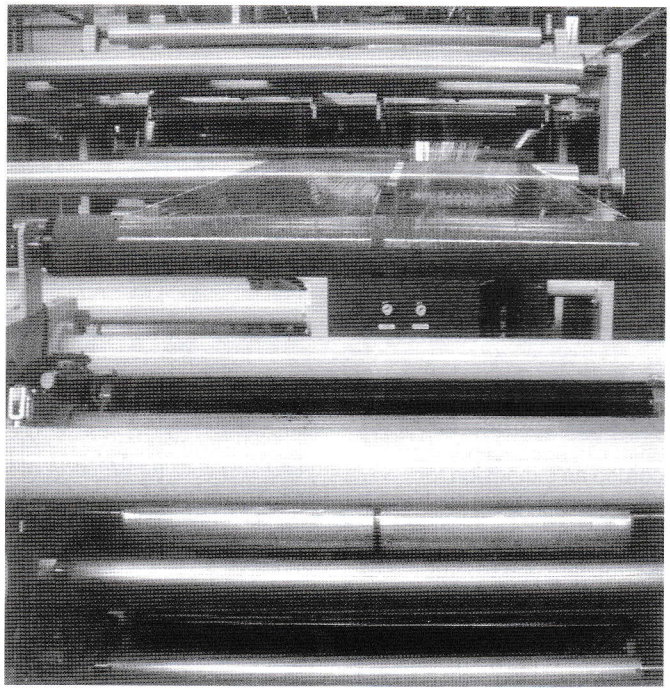
www.macchi.it

Coreless stretch film

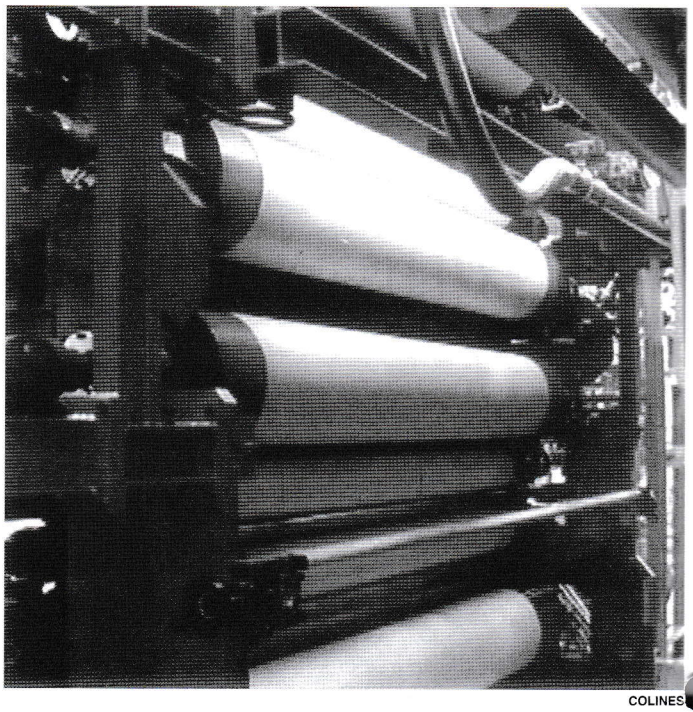
The European market for stretch film has recently recorded an expansion for some niche products such as those with reduced thickness (less than 15 microns), pre-stretched and wound around coreless reels.
The latter product in particular, although the volumes do not exceed 3% of the total volume of stretch films entering the market, have recorded an annual increase of 12-15%.
Until not long ago stretch film coreless reels were produced only by off-line rewinders. Nowadays Dolci Extrusion can supply a quick automatic winder for the production of reels for automatic or hand uses that, replacing the standard expansible shafts (to obtain reels with core of 2 or 3 inches at a speed over 500 m/min) with the special "collapsible" ones, permits coreless reels also to be produced at a speed over 350 m/min.
To carry out the first tests of industrial scale production with the new Rotowind 2000 Twin turret winder, a line with a hourly output over 1,300 kg was used to produce 5-layer stretch cast film with a width of 2,000 mm. The line also featured a jumbo chill-roll with a diameter of 1,500 mm and a special suction

MACCHI





DOLCI EXTRUSION



COLINES

blade with 3 independent sections. The four 500-mm film strips are separated by 4 pairs of diverging rolls, whilst the changeover time is less than 20 sec.

www.dolciextrusion.it

Breathable and green

One of the latest solutions developed by Colines is a line for PP and PE breathable film equipped with a dual mono-orienting in-line unit (MDO) able to reach a 600% (2 x 300%) stretching .
The plant produces film with 2,200-mm useful width and is equipped with post-stretch embossing unit, thickness control system before and after the stretching fitted with automatic adjustment, recovery and direct grinding of the trims, and winder for multiple in-line cuts.
Particularly important is the Fast AdJust system for micrometric adjustment of the stretching parameters.
To develop lines for "green" barrier films, research focused on the extrusion of biodegradable and compostable resins coming from renewable sources. In this direction, lines for both cast and blown film up to 7 layers and thickness from 50 to 90 microns have been tested with PLA and PVOH.
Some modifications were required to ensure the same performances as standard resins without compromising production capacity, thus obtaining products with excellent optical properties and printability.
The combination of PLA and PVOH creates a barrier structure to gases which makes the film particularly suitable for food applications.
Finally the Handrollex 1000 plant has been improved to increase its application flexibility.
Thanks to the possibility to wind "midi" (4 x 250 mm) and "mini" (8 x 125 mm) reels on a 2-inch core (5.08 cm) directly in line, now 5 production options are offered: in addition to the two mentioned, automatic reels (2 x 500 mm) on a 3-inch core (7.62 cm) and manual reels (2 x 500 mm and 2 x 450 mm) on a 2-inch core.
Considering that the Jumbo size is obtained only to be converted in smaller sizes and that the demand for midi and mini reels is growing, this is a solution which, with a limited investment, allows processors to approach all the stretch film markets, including the most profitable ones.

www.colines.it

Energy efficiency

The latest technological development from Ghioldi is a plant for 3-layer blown film with width of 2,000 mm featuring two 65-mm and one 80-mm extruders, all driven by energy saving torque motors. The latter aspect, together with scrap reduction, is considered a major parameter to evaluate the plant performance.
These motors, compared with AC types, can decrease power consumption up to 30% and water cooling reduces noise, vibrations and further energy absorptions thanks to the absence of fans and reduction gears.
Material flow inside the extrusion die, with IBC and automatic cooling ring, has been improved to speed up production changeover. The cold section features a cage with "no-marking" rollers surrounded by a protection mounted on rails which creates a protective micro-environment around the blown film.
Finally the gravimetric dosing system has also been conceived for energy and production efficiency. It sucks only the material required for preset production, leaving the hoppers empty at the end of production, whilst the system for trim recovery performs scrap grinding introducing it in the production cycle through the central extruder.

www.ghioldi.it

Single, dual, and triple

Specialized in the development of extrusion lines for multilayer products, GAP can provide different technical solutions for bioriented shrink film with water-cooled single bubble, and dual and triple bubble.
The single-bubble solution uses a technology where the film is extruded downwards and the material is cooled by water instead of air.
In this way a highly transparent film can be obtained for different uses which, according to the thickness, include thermoforming (thickness from 100 to 230 microns to obtain a deep draw up to 100 mm), easy peel covers for trays (40-100 micron) and cheese bags (60-150 microns).
Instant cooling by water gives to the product high transparency and permits the use of cheaper materials for thermoforming applications or the sub stitution of polyamide with polypropylene for the outer layer.
In comparison with traditional blown films, product transparency represents an immediate advantage, whilst in comparison with cast films transverse orientation and the elimination of non-recyclable trims can be obtained.
After having supplied a 5-layer line, the company is now developing a plant with a new 7-layer head with sequential distribution system.
Dual-bubble lines for films from 1 to 5-7 layers have a high technological content, though they are targeted at a niche market.
In the dual-bubble process, a primary tubular, after being extruded, is heated and longitudinally and transversally oriented. In this kind of plant the control systems are essential for the adjustment of thickness,

temperature etc.
In dual-bubble plants with simultaneous no-contact bi-orientation for shrink films based on polyolefin and barrier materials (triple bubble) orientation is constantly monitored by the EOS (Easy Orientation System) device which, thanks to a number of active sensors, allows the working conditions of the line to be changed automatically. Thickness is controlled by TBZ (Thermal Brush System) which constantly reads values in real time and activates differentiated film heating before orientation, thus improving tolerances.

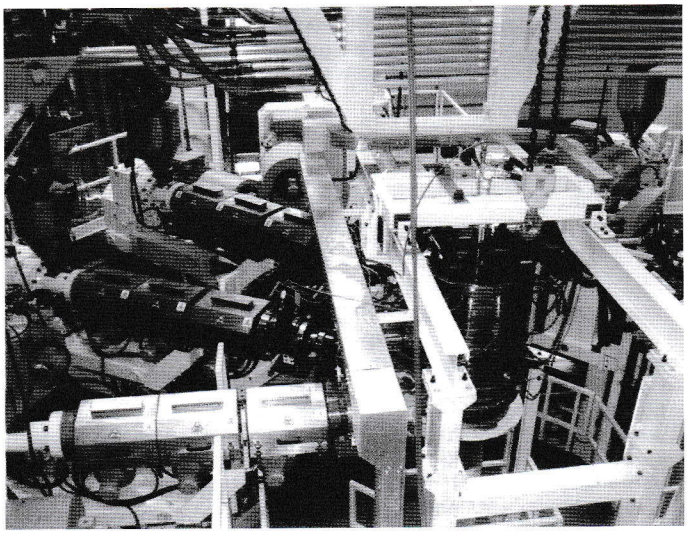
www.gapitaly.com

Finished reels

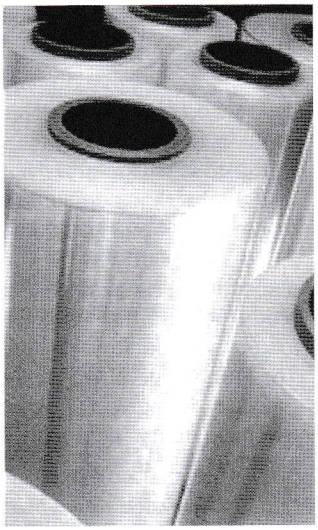
Specialized in the production of coextrusion plants for air bubble films, Torninova decided to add compact and easy-to-use cast lines for coextruded PE stretch films.
These latter include the new Compact Stretch with width of 1,000 mm and A-B-A structure for in-line production of automatic and manual reels. Such a plant, which has an output of 500 kg/h and a speed up to 500 m/min, produces 2 reels of 500 mm with thicknesses from 15 to 40 microns, for a hourly production up to 400 manual reels, due in part to a winder with quick reel changeover.
The system for trim recovery, equipped with a special forcing device, permits the use of all the material sucked and chopped by a shredder, feeding the main extruder and minimizing the pressure variations also with frequent thickness changeover. All this results in production flexibility which, for the first time in this kind of lines, is combined with low energy consumption and minimum scrap and production losses.
The major retailers/dealers of stretch film reels nowadays have to buy big jumbo reels, and unwind and rewind them to the required size. This involves off-line operations, i.e. the addition of equipment and labour.
The new Compact Stretch line, starting from PE pellets, can produce a finished reel, packed and ready to be sold to end users.

www.torninova.com

GAP



TORNINOVA

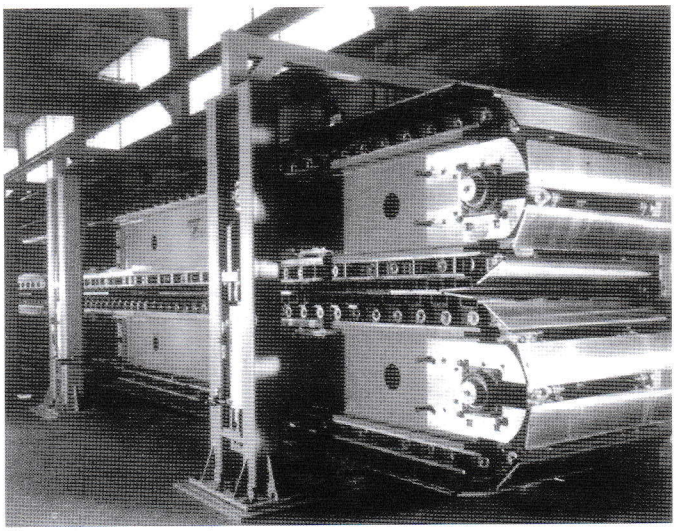


Energy saving

The topic of energy saving and emerging technologies presently available for the production of insulating panels, was emphasized on the occasion of NPE 2009 in Chicago by OMS Group.
The company supplies different models of high pressure foaming and dispensing machines to produce continuous and discontinuous insulation sandwich panels made of PUR/PIR foam, phenolic resin, preformed core materials such as EPS and mineral fibre lamellas.
The list of installed systems includes plants for continuous production of panels with flexible substrate for roofing, cavity wall insulation and ducts for air conditioning systems and metal faced composites for cold storage, industrial roof and wall construction applications. Demand for insulation with improved thermal and fire properties has recorded tremendous growth in the number of continuous panel plants over the last few years. This year, in recognition of this increasing demand, OMS Automation has been launched, an engineering division dedicated to developing material handling equipment for panel production.
Rising energy costs and government incentives focused on energy conservation likely will keep demand high in the future. Some early entrants into panel manufacturing also are looking for ways to reduce costs with newer technology. Until now some panel manufacturers and many commercial refrigeration manufacturers have been using "froth" foam, which does not require the use of high or low-pressure metering machinery. Their initial equipment costs were low, but inaccurate process control resulted in poor foam quality and high chemical costs because of waste. So now these processors are starting to look at high-pressure metering systems and two-component traditional foam.
The Y2K 10 straight, high-pressure mixing head introduced during NPE 2009 is ideal for continuous and discontinuous panel production. The compact head is designed to accurately control chemical temperature, pressure and mixing for superior chemical usage and foam density control. The head instantly dispenses mixed chemicals as soon as a pour cycle is actuated and instantly stops the same cycle eliminating chemical waste.

www.omsgroup.it

OMS GROUP



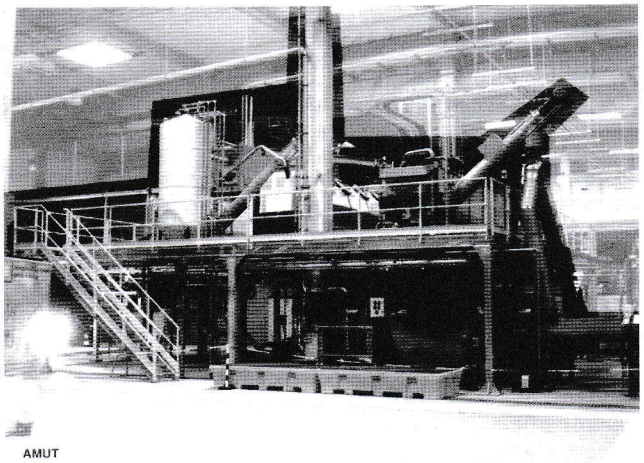
RECOVERY & RECYCLING TECHNOLOGIES

Competitive equipment for a sustainable development

The criteria of sustainable development are increasingly driving converters of plastics and rubber to use materials derived from the recovery and recycling of scrap and waste, which otherwise might have undesirable effects on the environment, requiring the adoption of appropriate disposal processes.
In this virtuous cycle, the suppliers of recovery and recycling technologies obviously play a primary role by offering solutions that enable companies operating in this industry to be competitive while precisely supporting sustainable development, first perhaps, and by saving energy, making the workplace safe and healthy etc.
The following article, including information from some specialised manufacturers, illustrate a few developments related to machinery and equipment for plastics recovery and recycling that can support these efforts.

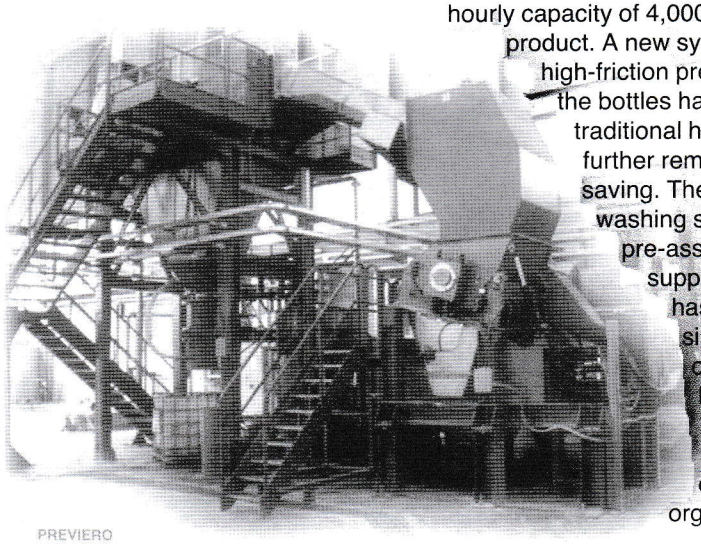
Bottle-to-bottle

In 2009, two lines designed by Amut, for hourly outputs of 3,000 and 4,000 kg respectively, have started the production of PET flakes for food-grade "bottle-to-bottle". The first, supplied to Petstar (Mexico), has given positive results in quality acceptance tests by the three largest multinational companies in the world producing mineral water and carbonated beverages, which will absorb 90% of the recycled material. Main features of the line are bottle pre-washing, which allows for a better selection of the bottles themselves by automatic detectors and reduced wear of the grinder knives, hot high-friction washing with detergents and a patented system for water treatment and distribution. The latter ensures high quality and reduces water consumption to only 1 litre per kg of material produced, thus decreasing the consumption of energy and chemicals and, therefore, operating costs.



AMUT

The second line, installed at FPR (France Plastique Recyclage), is the largest in the world of its kind and can process 40,000 tons/year of post-consumer PET bottles, i.e. a hourly capacity of 4,000 kg of finished product. A new system for cold high-friction pre-washing of the bottles has replaced the traditional hot system with further remarkable energy saving. The whole washing section, pre-assembled on a supporting structure, has become a single unit based on a continuous hot-washing machine that completely eliminates organic pollutants.



PREVIERO

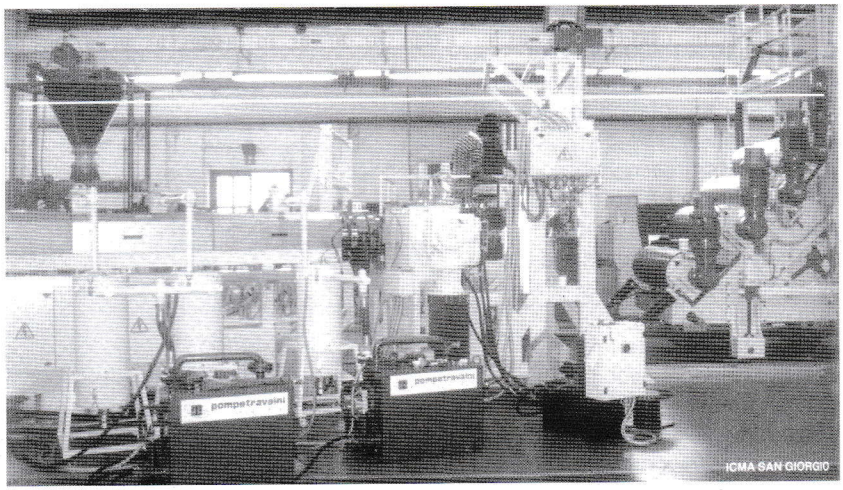
Foreign polymers and coloured bottles are separated out by a system with 4 detectors, 3 in series and 1 for waste control. To ensure the highest quality product, the flakes are further controlled by a colour detector at the process end. A re-gradation and purification system will complete the washing plant, and the reclaimed PET will be used by an important French producer of mineral water.

www.amut.it

Washing contaminated films

A washing line for treatment of contaminated films with an annual output up to 7,000 tons has been supplied by Sorema (division of Previero) to Schinplast, a new Italian company involved in the collection and sorting of a number of waste materials. The industrial plan of the company is targeted on the enhancement of post-consumer film through a process of collection, sorting, washing and extrusion to produce recycled polypropylene pellets suitable for film production.
The line has been designed to process up to 100% of stretch film while maintaining its flexibility to treat post-consumer agricultural and supermarket films containing high percentages of paper, sand, and different organic materials.
In order to satisfy these different requirements, the line, which is fully automatic and controllable by two operators only, includes a pre-washing device, placed downstream of an existing shredder, a wet grinder, and washing and drying systems.
The line is completed by a closed-loop water treatment system and a high-efficiency extruder with low energy consumption.
Operating conditions marked by economy, efficiency, and process quality have allowed Schinplast to enter the market of recycled pellets with positive results.

www.previero.it



Flexible solution

The flexibility of a recycling machine is essential to process very different materials. And according to Icma San Giorgio, the co-rotating twin screw extruder today represents the most flexible solution in terms of re-configuration and possibility to "play" with load, screw rotation speed and barrel temperature.

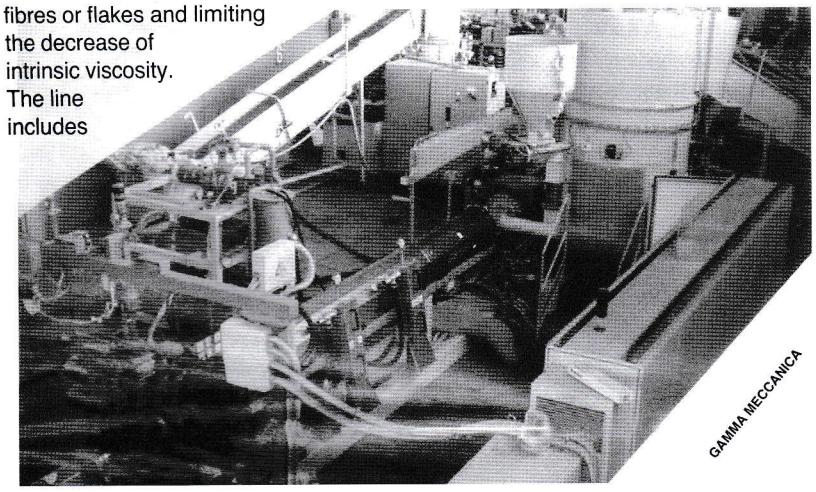
When recycling PET, the different degradations - mechanical, thermal, oxidative and hydrolytic - of the polymer cannot be overlooked. Hydrolytic degradation is the most dangerous and can quickly decrease molecular weight, viscosity and, therefore, mechanical properties of the material. PET is very hygroscopic and quickly absorbs humidity from the air. During extrusion, the stress from the screws must be limited and moisture must be extracted before hydrolytic degradation begins.

PET drying is usually carried out off-line and requires a prior crystallization to prevent the material from softening inside the dryer. Using a co-rotating twin screw extruder, dehumidification can be carried out directly inside in the barrel. In addition to the advantage of a continuous process, this solution offers an energy saving up to 50%. It also permits the feeding of flakes (a densifier is not required), reduces plant maintenance, and eliminates material losses due to formulation changeover.

www.icmasg.it

Carpets, bottles, films

The GM 125 line, designed by Gamma Meccanica for recycling PET fibres and supplied to a North American carpet manufacturer, is suitable for treating fibres or flakes and limiting the decrease of intrinsic viscosity. The line includes a conveyor belt, silos with shredder, extruder, screenchanger, and a die face cutting device modified for this kind of process.



The Compac shredder, thanks to the rotating blades, makes the material suitable to be fed into the extruder. During the shredding the material is heated to densify it and to evaporate residual moisture. The extruder (L/D = 43) is equipped with a dual degassing system and is connected to a hydraulic screenchanger with 3 plates working simultaneously.

An immersion cutting system with centrifuge suitable to pelletize materials with high flowability is installed at the line end. The cutting head is immersed in the cooling water, which generates a cold film all around the material exiting the die. The hourly production of 600-700 kg can be extended up to 1,500 kg.

The GM180 Tandem line is designed for recycling HDPE containers for detergents and films (often completely printed) used to wrap packs of beer, mineral water and soft drinks. It includes a 2-screw forced feeding system equipped with dosing devices for fillers, heavy regrind, masterbatch and additives to which an extruder with screenchanger is connected.

A degassing system is fitted between this and a second extruder to eliminate most of the printing. The liquid ring cutting device downstream of the line uses centrifugal force and water to produce homogeneous granules and can reach a hourly production of 1,500-2,000 kg.

www.gamma-meccanica.it

Triple venting

The E128/42D twin-screw extruder with triple venting is proposed by Tecnova to reclaim plastic materials, optimizing energy consumption and, consequently, production costs with a hourly yield exceeding 1,000 kg. In fact, with the same power installed on a 160-mm single-screw extruder, higher production is obtained with lower energy consumption. Moreover, consumption is one of the cost items to which processors are most sensitive and one of the main levers on which they try to act to increase profit margins and to be competitive.

This solution also meets the increasingly pressing demand from processors to process different materials, highly contaminated, wet or printed. The adoption of triple venting increases the limits imposed by the materials that can be processed. In this specific case, indeed, materials with more than 70% printed surface and 7% moisture can be reclaimed.

www.tecnova-srl.it

Grinders for miscellaneous waste

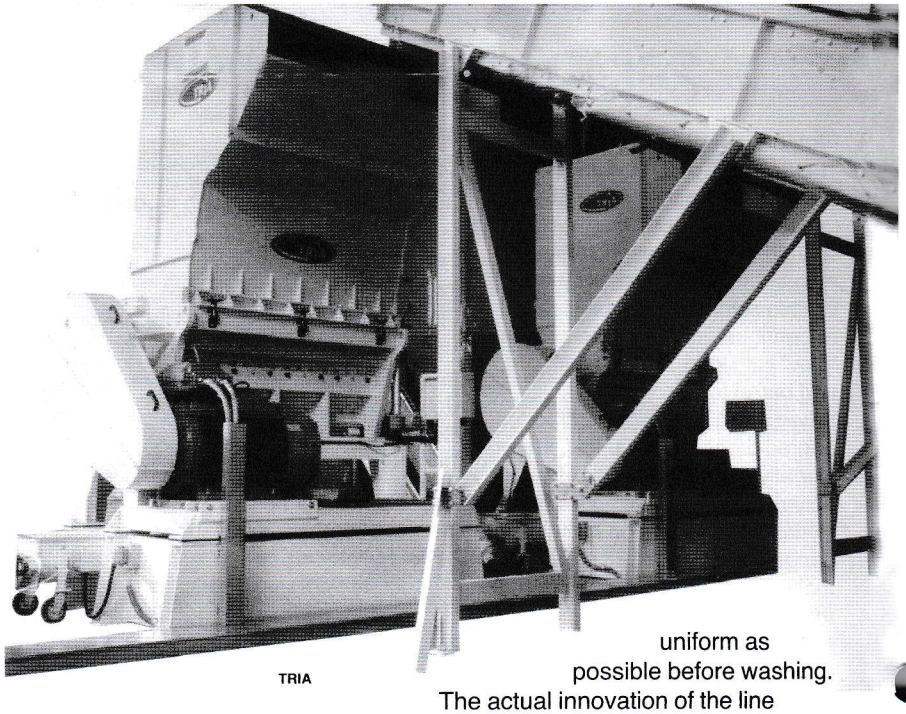
A grinding system for post-consumer densified miscellaneous plastics, recently developed by Tria, includes 3 grinders to recover heterogeneous material densified in briquettes with 60-mm diameter and 600-mm maximum length. The grinders, which ensure a hourly production between 2,800 and

3,000 kg, feature a 1,600-mm inlet throat, a rotor with a 500-mm diameter with 5 blades and a rotation sensor, with installed power of 90 kW.
The maximum temperatures at the grinder inlet can range from 40°C (outside) to 70°C (at the system heart). The first two grinders are fed by a conveyor belt, whilst they are unloaded by rigid augers or abrasive materials.
The first two grinders, with grid with 20-mm openings for the initial size reduction, are installed in parallel and followed by the third grinder (grid with 7-mm openings) for final size reduction. The material is cooled between the first and the second stage. The cooling circuits of the grinders are fed with refrigerated water coming from chillers which also cool the other machines in the production bay.

www.triaplastics.com

Recovery from car wrecking

A line for shredding, separating, washing, and grinding plastics from car wrecking has been implemented by Isve in cooperation with Manduria



TRIA

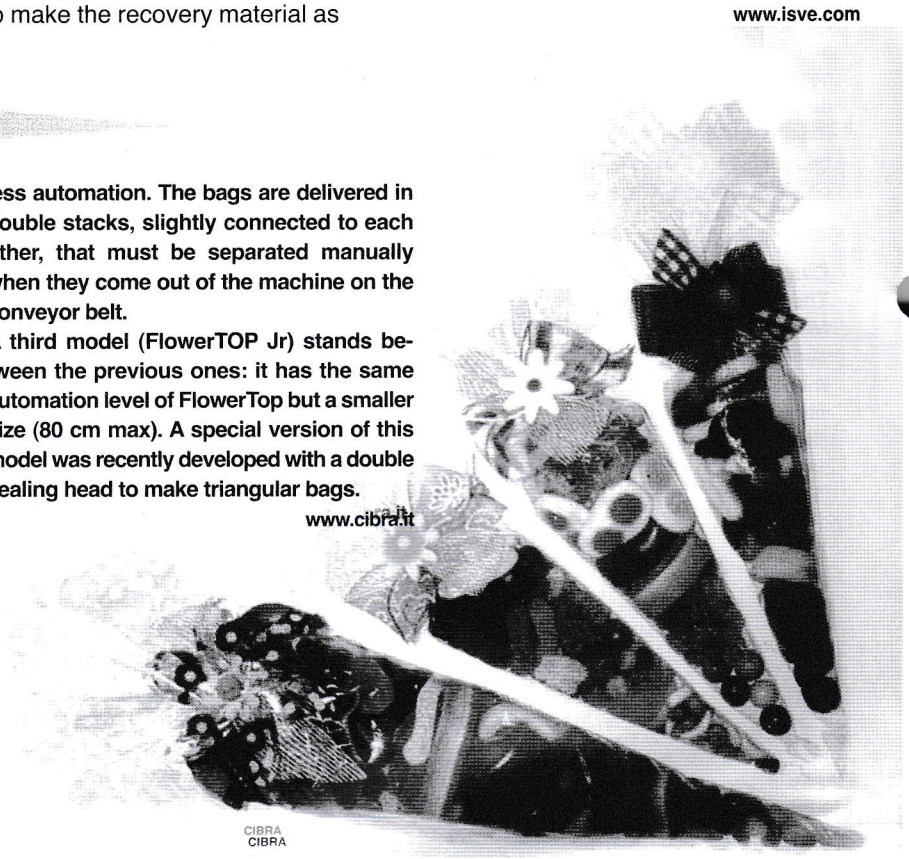
Plast, a company which operates in the field of plastics recovery in Central-Southern Italy. The line includes 2 shredders which provide for the first rough-shaping of scrap.
A belt-and-pulley system separates out all the magnetic metals. A M40100 single shaft shredder with 40-mm grid openings performs a further separation to make the recovery material as uniform as possible before washing.
The actual innovation of the line consists of a tank that allows all the non-magnetic metals to be separated from the polypropylene and heavy plastics. This step is fundamental since, with respect to the traditional floating tanks, it permits the separation of different kinds of material.

www.isve.com

Wrapped flowers

The demand for cone-shaped plastic bags is constantly increasing in quantity and quality. For these bags - which are widely used to package cut flowers, potted plants, vegetables etc. - Cibra Nova offers 3 bagmaking machines that can process PE, CPP and BOPP films, in addition to biodegradable PLA film.
Top of the range is the FlowerTop model, which delivers cone-shaped or triangular bags at high speed in pre-counted batches, performing in line all optional operations such as pre-cutting on top, bottom sealing, and hot punching the batch top for hanging. Bags can be up to 115-cm high, so that they can fit the tall plants that are in fashion today such as phalenopsis orchids. Operation is totally automatic, and the bags are delivered ready-to-use on two conveyor belts.
To those wishing to enter this market with a limited investment, the FlowerSmall model is available for bags up to 80 cm and with less automation. The bags are delivered in double stacks, slightly connected to each other, that must be separated manually when they come out of the machine on the conveyor belt.
A third model (FlowerTOP Jr) stands between the previous ones: it has the same automation level of FlowerTop but a smaller size (80 cm max). A special version of this model was recently developed with a double sealing head to make triangular bags.

www.cibra.it



CIBRA
CIBRA

ADDITIVES & FILLERS

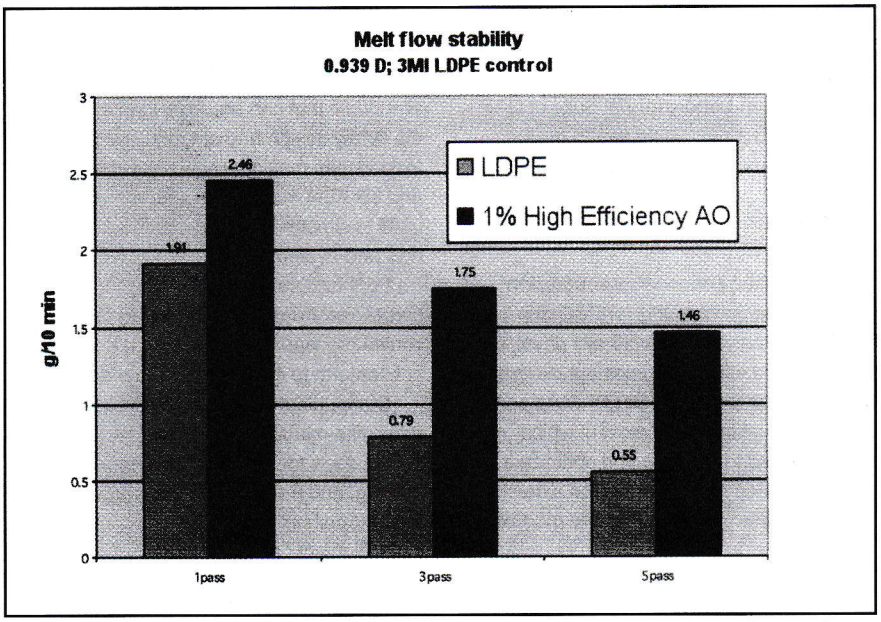
With this masterbatch, more recyclate doesn't mean more gels

A new antioxidant masterbatch is offered that protects reprocessed or recycled polyolefins from degradation during processing, allowing blown and cast film processors to use more recyclate without detrimental effects, such as gels, impairing their film's aesthetic or physical properties.

That's the bold claim the supplier, Ampacet, is making for its new product, which the company says is now available globally. The new masterbatch is seen as particularly beneficial in applications such as clear packaging films, whose processors know all too well the cost-savings pressure they face, pressure pushing them to use more recyclate, but the simultaneous demand that quality remain top-notch.

Ampacet's masterbatch boosts the thermo-oxidative stability of recycled material. Because the antioxidant protects against degradation, gel formation, and yellowing, processors can downgauge and/or use higher recycled content while maintaining film properties. Beyond film and sheet processing, the masterbatch also could see use in repelletizing operations; restoring thermo-oxidative stability to recycled material causes it to perform more like virgin resin.

In answer to questions from MPW, Ampacet officials say the product is available commercially and claims made of its efficacy stem from both lab experiments and customer-reported successes. The supplier reports one customer this year told it that with the new masterbatch, at a 1% loading, the processor was able to double the amount of reprocessed resin it could incorporate back into its process, leading to about a 5% reduction in virgin resin consumption.



New masterbatch from Ampacet helps processors use more recyclate in their film and sheet recipes.

According to Shawn Lucas, development manager at Ampacet, "In blown film processing of a clarity application, 0.5% [loading level] of the masterbatch reduced gels and allowed reuse of edge trim and scrap of up to 10% without any detrimental effects on physical or optical properties. . . . In another case, adding 1% of the masterbatch during repelletizing allowed a cast film processor to increase the addition of repelletized material from less than 5% to greater than 15% in a critical application." The masterbatch is approved for food-contact applications.

Ampacet, Tarrytown, NY, USA
www.ampacet.com

Resin consumption slashed through foaming technology

Small particles of gas-generating additives infused into the polymer melt during processing can reduce resin requirement by up to 50% and carbon footprint by up to 45%, according to the supplier, Polyfil Corp. The additives create a microcellular structure (cells less than 100 µm in size) via a chemical reaction that releases a small volume of gas, producing a cellular structure at a size the supplier claims is unachievable with current chemical foaming agents. This will expand the polymer by up to twice its volume.

Ecocell can be used with low- and high-density polyethylene, copolymer polyethylenes, polypropylene homopolymers and copolymers, crystal and impact polystyrene, PVDF, TPOs, and TPEs. It is intended for use in applications and processes such as thermoforming, sheet, structural foam molded parts, oriented polypropylene films, foamed label stock, blowmolding, injection molding, extruded profiles, and plastic lumber.

Polyfil Corp., Rockaway, NJ, USA,
www.polyfilcorp.com

RESINS & COMPOUNDS

With Artificial Muscle, Bayer strengthens its E/E offerings

Research on electro-activated polymers that began at Stanford University, and was further developed at a company called Artificial Muscle Inc., has now

been acquired by Bayer MaterialScience. The acquisition of the company, its patents, and its patent applications is the latest purchase by the massive plastics and chemicals supplier to focus on plastic film's surface haptics and appearance.

Artificial Muscle Inc. (AMI; Sunnyvale, CA) has developed polymers for use in the development, design, and manufacture of actuators and sensing components. Electroactive polymers are plastics that can change shape—flexing, like a muscle—when an electric charge is applied to them. One potential application considered to have a big future is in touch screens to give users of the screens tactile feedback, just like a conventional keyboard does. Smart phones, gaming controllers, and touch pads are all potential application fields for these materials. Typically the plastic film is fitted between two compliant electrodes. When a charge is applied, the electrodes attract each other, causing the film to expand its area as it contracts its thickness.

Bayer also is taking on all of AMI's employees. The price paid for the acquisition was not revealed.

In late 2008 Bayer announced it would work with Canadian firm Ultimate Holographic Reproductions Inc. (UHR) on joint development of high-quality, true-color holographic images on films. Then in mid-2009 the supplier signed a license agreement on polymeric organic light-emitting diodes (P-OLED) with Add-Vision, a Scotts Valley, CA-based company specializing in the development of flexible P-OLED display technology for low-resolution displays and specialty lighting applications.

Bayer MaterialScience, Leverkusen, Germany, www.bayermaterialscience.com

V-0, transparent, and so very thin

A new flame-retardant polycarbonate grade for sheet extrusion and injection molding was introduced by Teijin Chemicals Ltd. to address applications in a variety of expanding markets.

The company has developed a transparent, flame-retardant polycarbonate (PC) resin capable of producing extruded sheet as thin as just 1.5 mm, making this the "thinnest-ever" transparent sheet of its kind, says the supplier.

The PC is both bromine- and phosphorous-free, and its flame resistance level is equivalent to UL94 V-0. Despite being capable of extruding sheet so thin, the new resin has all of the inherent characteristics of other PC grades, including transparency, moldability, dimensional stability, and other properties.

Teijin plans to supply two grades, one for injection molding and the other for sheet extrusion. The former can serve as a substitute for glass components in LED lighting fixtures and similar applications, while the latter is expected to find uses in sheets mainly for LED lighting covers, predicts Teijin.

Flame-retardant PC is widely used in electrical and electronic products and office equipment. The demand for thinner grades has risen in line with the development of increasingly smaller and thinner products in a variety of fields.

Teijin Chemicals Ltd., Tokyo, Japan, www.teijinkasei.co.jp/english

Aggressive fuels, AdBlue no threat to these resins

Plastics supplier Ticona used the ITB Automotive Energy Storage Systems and 11th Annual Automotive Fuel Systems 2010 Conference in March to highlight its most recent developments in materials for fuel-contact applications. At the event, Ticona announced the availability of Fortron 6162XF, a mineral/glass-reinforced polyphenylene sulfide (PPS) marketed to OEMs and processors developing applications for use in aggressive fuels, such as those containing methanol and ethanol.

This new fuel-resistant Fortron PPS grade has reduced weight gain by more than 45% compared to Fortron 6165A6, which has been used successfully in fuel systems. "In 1000-hour exposure tests in CM15A fuel conducted at 194°F (90°C), Fortron 6162XF exhibited superior fuel resistance, with a weight change of less than 1%," said Ralf Langhammer, Ticona fuel systems market development engineer. Moisture absorption typically is less than or equal to 0.02%. Typical applications could include impellers, outlet covers, and fuel injector components.

The supplier also discussed the results of storage tests, which confirm that Fortron PPS, Celstran long-fiber-reinforced thermoplastics (LFRT, with a polypropylene or polyamide matrix), and Hostaform acetal copolymer (POM) all offer the chemical resistance necessary for their use in exhaust treatment systems of diesel vehicles that use AdBlue technology. These materials can be used in components with direct exposure to AdBlue such as pumps, valves, sensors, and control timing cases.

Without a high level of chemical resistance, direct contact with the highly pure aqueous urea solution in AdBlue can wash out the stabilizers or process additives in plastics, which can lead to contamination of the AdBlue and possible damage to the catalytic converter.

Ticona, Florence, KY, USA and Kelsterbach, Germany, www.ticona.com

Eastman expands Tritan into rigid medical packaging

One year after launching the line at the same event, Eastman Chemical Co.'s medical polymers unit has expanded its Tritan copolyester with the introduction of the MP100 grade for rigid packaging. Intended to supplement Eastar copolyester 6763, which has been offered to the medical market for the past 20 years, Eastman launched Tritan MP100 at MD&M West (Feb. 9-11; Anaheim, CA), saying it provides chemical resistance, clarity, and toughness through higher heat resistance and strong post-sterilization clarity compared with other polymers.

Addressing customers and the trade press at a launch event, Greg Nelson, senior VP and chief technology officer at Eastman, said this latest offering builds on the strong receptiveness the market has had for the material. "We're seeing the medical industry move faster on Tritan than they have on any previous new offering from us," Nelson said. The two Tritan grades launched last year already see use in IV system components as well as respiratory and blood therapy devices.

MP100 is intended for sheet extrusion and thermoforming and would be used to

encase surgical kits and other medical systems, which need a long shelf life and the ability to resist impact so sterilization is not lost. In addition, the company feels that the material will help reduce the cost of ethylene oxide (EtO) sterilization by sustaining higher sterilization chamber temperatures and allowing faster EtO cycle times with a reduced risk of warping and sticking.

The company says copolyester's properties will allow package redesign, including lightweighting and downgauging. In extrusion, the company says MP100 has properties similar to Eastar, but that it can be thermoformed with less wasted material and time since it doesn't stress-whiten or increase particulate or angel hair compared to sheet made from acrylic, acrilonitrile, or polyvinyl chloride.

At the same event, Eastman and medical-focused design firm DD Studio announced a collaboration to advance Tritan innovations for the medical market.

Eastman Chemical Co., Kingsport, TN, USA, www.eastman.com/tritan

DuPont expands healthcare offerings at MD&M

DuPont launched 10 new engineering polymers targeting the healthcare products and equipment market at the MD&M West exposition (Anaheim, CA; Feb. 8-11). DuPont reports that its healthcare offerings comply with food agency (FDA and EMSA), USP Class VI, and ISO 10993-5 and -11 regulations. Specialty healthcare products all are available globally. Sixteen of the products are available as "special control" grades that meet the standards of manufacturing consistency required of many non-implantable medical products, with 12 grades available in even more stringent "premium control" versions.

In particular, the company is promoting its Hytrel thermoplastic polyester elastomer as an alternative over other flexible materials, including plasticized PVC, conventional rubbers, and other TPEs. Potential uses include soft-touch/grip surfaces, valves, seals, springs, shock absorbers, and tubing and noise management parts. Unlike flexible PVC, it has no plasticizers, some of which are generating concern. In addition, the company says Hytrel has higher resistance to disinfectants and other aggressive chemicals, as well as higher elevated temperatures, than some alternative TPEs. Fully colorable, it is also well suited for sterilization processes.

DuPont, Wilmington, DE, USA, www.healthcare.dupont.com

PolyOne signs distribution deal with BASF for Ultrason

PolyOne Distribution will now carry BASF's advanced polymers for the healthcare industry, adding to a string of recent distribution additions for the company, including products from DuPont, Arkema, and Bayer MaterialScience. Announced at MD&M West, the move means that PolyOne, which also has a custom compounding business, will now distribute BASF's polysulfone and polyethersulfone Ultrason product line. These high-temperature polymers see use in equipment requiring strength, chemical resistance, and repeated sterilization. Current Ultrason applications include respiratory therapy devices and food containers in compliance with U.S. Food & Drug Administration (FDA) and European Union regulations.

In addition to broadening its complete distribution portfolio, in recent months PolyOne has announced several new agreements specific to the healthcare industry, including the arrangement with DuPont and the acquisition of specialty healthcare compounder NEU Specialty Engineered Materials LLC.

PolyOne, Avon Lake, OH, USA, www.polyone.com

PRINTING & DECORATION

Pressure-sensitive adhesives tackle broad usage range

Three new pressure-sensitive adhesives have been added to the range offered by this supplier, offering converters solutions to a broad array of package labeling.

All of the new PSAs are supplied by Omnova Solutions, which develops and markets emulsion polymers, specialty chemicals, and decorative and functional surfaces. These PSAs are branded NovaCryl and are marketed to processors and converters of polyvinyl chloride (PVC) film, tape, and labels.

NovaCryl PS-P 180, NovaCryl PS-V 700, and NovaCryl PS-R 50 adhesives cover varying levels of adhesion, from permanent to "ultra-removable," and each is free of alkylphenol ethoxylate (APE)-type surfactants. APEs have grabbed some negative attention as two alkyphenols, nonylphenol and octylphenol, are suspected hormone disruptors.

NovaCryl removable PSAs can be used in protective films for consumer electronic display applications.

The three new NovaCryl PSAs are available as a base polymer or a coater-ready formulation. NovaCryl PS-P 180 water-based acrylic base polymer is designed for permanent PSA applications, such as clear film labels on transparent bottles for shampoo, household cleaners, and other toiletries, as well as over-laminates and protective films.

NovaCryl PS-V 700 water-based acrylic PSA base polymer for permanent PVC film applications brings with it plasticizer resistance, good UV stability, and clarity. This PSA builds adhesion over time but remains cleanly removable from most surfaces, so that it is marketed for use as vinyl graphics, labels, wall decals and stickers, indoor and outdoor advertisements, over-laminates, and clear vinyl protective films.

The third material, NovaCryl PS-R 50, is a water-based adhesive that maintains adhesion of less than half a pound. Such easy-to-remove characteristics are useful in, for example, glass protective films, temporary indoor promotional posters and decals, and protective films for automotive and consumer electronic display applications.

Omnova Solutions, Fairlawn, OH, USA, www.omnova.com

Mexico City may encourage recycling instead of bag ban

Plastics industry leaders, hoping to head off a law that would ban non-degradable plastic bags in all Mexico City stores later this year, say they have convinced authorities to adopt a less draconian attitude. The city's environment minister has agreed to propose amendments to the law, passed by the capital's Legislative Assembly in March, said Guillermo Salas, president of Mexico's National Plastics Industry Association (Anipac).

The law also ordains that, within a year, all plastic packaging, not just polyethylene bags, should contain bio-degradable agents. The Assembly is likely to debate the matter again in late March, according to Alfredo López Machorro, Anipac's managing director. Salas said Environment Minister Martha Delgado is sympathetic to Anipac's argument that a better course of action would be for the government to introduce more stringent garbage separation and recycling measures. Anipac also is proposing that plastic waste unfit for recycling be used to fuel electricity-generating plants.

"We would have to install 160 [electricity-generating] plants across the country," Salas said in a Jan. 27 email, explaining that each facility would have a capacity for processing 450 tons of plastic waste per day. "The supplier of recycling equipment that converts garbage into energy has offered us financing of up to 85 percent if, and only if, we obtain a concession from municipal governments to use the rubbish and arrange for the CFE (Federal Electricity Commission) to take the energy we generate." According to Salas, some of Anipac's ideas come from recommendations by the Society of the Plastics Industry Inc. and similar organizations.

He discussed the issue with SPI President and CEO Bill Carteaux and others at the NPE show last year in Chicago, he said. Salas, who described the law as it stands as "perverse," believes that it is impossible to comply with in a large country like Mexico. Others have said that it could be catastrophic for Mexico's recyclers, which Salas said employ 20,000 full-time workers and another 100,000 indirectly.

Mexico comprises 31 states and the Federal District of Mexico City. The Mexico City metropolitan area has about 20 million inhabitants, who represent about a fifth of the country's total population. Environment Minister Delgado was not immediately available for comment. But Susana Trujillo, a spokeswoman for the Government of the Federal District, indicated she was aware of the possibility of changes to the bag ban legislation.

Kraft exceeds packaging reduction goal

Kraft Foods Inc. has eliminated 150 million pounds of packaging from its supply chain since 2005, reaching that reduction goal two years ahead of schedule.

Some of the plastics-related reductions included:

- In Australia, Kraft-brand salad dressing bottles were redesigned to eliminate more than 100,000 pounds of plastic per year. The company said the patented design differentiates the Kraft brand from competitors and allows more bottles to ship per truckload, taking trucks off the road.
- In the United Kingdom, Kraft Foods recently began selling Kenco-brand coffee in refill bags to complement glass jars. The refill bags use 97 percent less packaging material by weight than a new jar, and less energy in the packaging conversion process.

"Our global team of employees is doing a phenomenal job creating opportunities to reduce packaging material while assuring convenience and safety," said Jean Spence, executive vice president of research, development and quality. "And we're finding smarter source materials, reducing our footprint and thinking differently about packaging end of life." Kraft, based in Northfield, Ill., said the "greatest opportunity to influence the environmental impact based on a package's size is early in the design phase."

Britain could call time on the glass pint

Two prototype beer glasses designed to reduce the injuries caused by nearly 87,000 glass attacks each year have been unveiled at the Design Council by British Home Secretary Alan Johnson. The pint glasses, which both use plastics in their construction so as to ensure they do not shatter into loose and dangerous shards, have been produced under the Design out Crime program, an initiative from the Home Office's Design & Technology Alliance against Crime and the Design Council.

The prototypes, which will now undergo a range of intensive tests, are:

* Glass Plus, which looks just like a regular pint glass but has a thin transparent coating of bio-resin on the inside. This makes it stronger and if the glass is broken it binds together dangerous shards, drastically reducing the likelihood of injury to customers and staff.

* Twin Wall, which is made by bonding two ultra-thin

layers of glass together in a concept similar to laminated car windscreens. It makes the pint glass extremely difficult to break, but in the event that it does smash, any dangerous shards would be safely held together by a layer of plastic.

Home Secretary Alan Johnson said: "Glassing causes horrific injuries and has a lasting and devastating impact on victims and their families. I hope these designs will help bring an end to such attacks. While this is never going to be the only answer to preventing such violence, it is an important step forward which could also provide retailers and drinkers with a preferable alternative to plastic glasses.

"Tackling crime is not just about police action. Innovation and design also have a huge impact. Technologies such as car immobilisers have helped cut vehicle crime by 57 percent since 1997," he continued. "I wish the Design and Technology Alliance and all our partners every success during the testing, and look forward to seeing the results." Although alcohol-related violence has fallen by 33 percent since 1997 there remain 87,000 violent incidents involving glass each year, which in addition to the impact on victims, their families and communities, costs the NHS an estimated £2.7 billion annually.

Aussie bag ban see KFC pick compostable alternative

KFC is using compostable bags in Australia Kentucky Fried Chicken has selected compostable bags manufactured by Cardia Bioplastics to replace plastic bags, which have been banned by the South Australian government.

"The world is looking at ways to reduce its carbon foot print and place less reliance on the use of oil where it can. Also, governments around the world are becoming more conscious, along with consumers and the public, in respect to the environmental impact plastic bags have had," said Cardia's managing director Dr Frank Glatz.

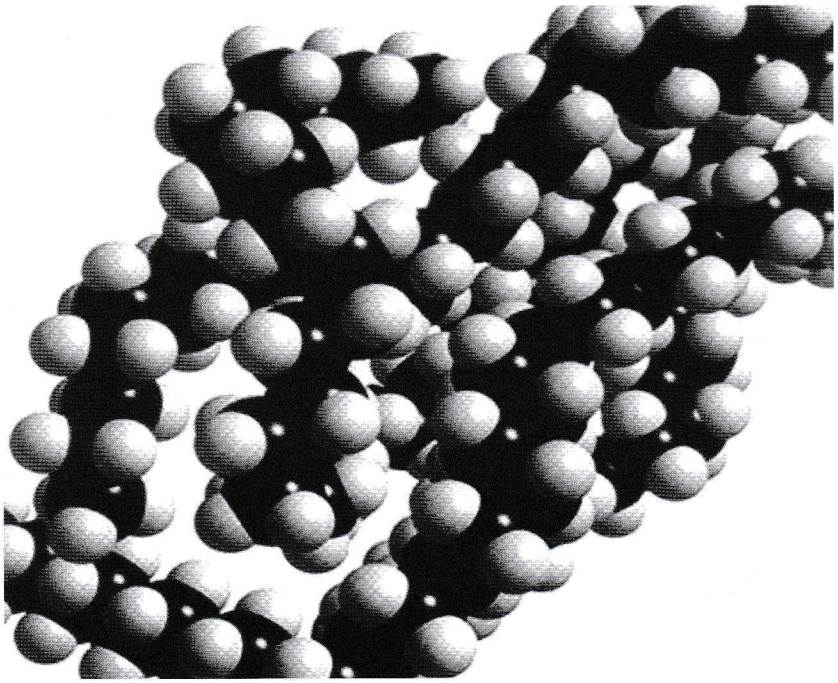
"The product development process with KFC was collaborative. The KFC team had well-researched requirements. The bags were hot food tested extensively at the Cardia Bioplastics Global Applications Development Centre in Melbourne and in KFC stores," he added.

PE capacity growth shifts to Asia and Middle East

While Europe and North America will not see major growth in polyethylene production capacity over the next five years, enormous demand in countries such as China and the feedstock cost advantages of the Middle East mean the Asia-Pacific and Middle East regions will account for more than 80% of planned PE capacity additions to 2015, according to a newly published study of the sector.

The Future of the Polyethylene Industry to 2015 - available from Global Markets Direct - estimates the Asia Pacific region accounted for 43% of global capacity and 44% of global demand in 2008. It predicts the region will add 12m tonnes of additional polyethylene production capacity over the 2008-2015 period, 8m tonnes of which will be in China and India.

HDPE dominates Asia Pacific polyethylene capacity, with 48% of installed capacity and 43% of the planned capacity additions. LLDPE is currently second place in the capacity ranking with 28% of current installed capacity. LLDPE accounts for 51% of planned capacity additions in the region. By 2015, HDPE will account for 47% of the installed regional capacity of 42m tonnes, LLDPE 34% and LDPE 19%. The Middle East will also see major polyethylene capacity growth,



adding 11.5m tonnes of capacity to 2015.

"Feedstock cost advantages and the need to diversify the region's export basket from crude oil and natural gas are the main drivers of large capacity additions in the region," says the report. Iran and Saudi Arabia are the major polyethylene markets in the region and are also where the major capacity additions will take place.

Saudi Arabia will add more than 4m tonnes of capacity by 2015, while Iran will add in excess of 5m tonnes. Qatar will add 2m tonnes of new capacity. By contrast, in Europe - where local demand is expected to remain stagnant and there is considerable overcapacity - there will be few major PE capacity additions in the major producing countries. The report defines these major producers as Germany, France, Belgium and the Netherlands.

The only exception in the European region is Russia, where an additional 1m tonnes of polyethylene capacity is expected by 2015. "Russia is one of the largest exporters of crude oil and natural gas in the world," says the report. "Also, the high crude oil prices in the last five years have led to rapid growth of the Russian economy, resulting in growing demand for polyethylene in the country, while the abundance of crude oil and natural gas favours the economics of building capacity."

HDPE accounted for 45% of European polyethylene capacity in 2008 and will see 1m tonnes of new capacity additions up to 2015. LDPE, which accounted for 37% of European capacity in 2008, will see no new capacity additions. LLDPE, which makes up 18% of the 2008 production capacity, will see only an additional 0.7 million tonnes come available. By 2015, HDPE will account for 46% of the European PE production capacity of 20.8m tonnes, LDPE 34% and LLDPE 20%, says the report.

The US accounted for more than 83% of the installed polyethylene capacity of North America in 2008. The study says the US will see 0.5m tonne capacity reduction to 2015 as a result of demand stagnation and declining export markets. However, Canada's natural gas pricing advantage will see the country add an additional 1.5 million tonnes of PE capacity.

The North American region will see 0.3m tonnes of new HDPE capacity added to 2015, 0.2m tonnes of LDPE and 0.2m tonnes of LLDPE. By 2015, HDPE will account for 44% of the total North American capacity of 20.8m tonnes, LDPE 18% and LLDPE 38%. In South and Central America, PE capacity additions will be driven by Brazil and Venezuela. Brazil is the largest polyethylene market in the region, accounting for 52% of PE demand and 69% of capacity in 2008. Brazil, together with Venezuela, Mexico and Argentina, shows the greatest potential for growth - the remaining countries in South and Central America lack significant industrial capacity.

HDPE accounted for 43% of South and Central American polyethylene capacity in 2008 and will see more than 3.2m tonnes of new capacity 2015. LDPE accounted for 24% of 2008 capacity and will see capacity additions of 1m tonnes. LLDPE accounted for 33% of 2008 capacity and will see close to 3m tonnes of new capacity. By 2015, HDPE will account for 44% of installed PE capacity of 14.6m tonnes in South and Central America. LDPE will account for 20% and LLDPE 36%.

New thermoplastics springs

The UK company Lee Spring Limited, a leading spring manufacturer, has developed innovative thermoplastic-based springs to meet the growing demand of its customers for springs that combine the strength of metal together with the special attributes of high performing engineered thermoplastics. After years of research, Lee Spring has designed a new range of springs made from distinctive formulations of polyetherimide (PEI) i.e. Ultem™ materials supplied by Sabic Innovative Plastics. The new springs, available under the trade name Lee Plastic Composite Springs, are stocked in a variety of standard sizes, each available in six different strengths formulated from different Ultem™ grades and that are easily identifiable by their different colors.

Clear, Dishwasher-safe Baby Bowl Made with BPA-free Eastman Tritan™ Copolyester

Eastman Chemical Company announced that Baby Dipper, LLC, a manufacturer of innovative, easy-to-use baby products, has introduced the Baby Dipper® bowl made with Eastman Tritan™ copolyester. Tritan is a new-generation copolyester that provides a balance of properties to help the infant care market respond to consumer demand for products that offer superior clarity, dishwasher durability and toughness, and are manufactured without bisphenol-A (BPA). The Baby Dipper bowl is a 4-ounce triangular bowl with a non-slip base to prevent movement and spills. The bowl's contoured interior helps guide food to a lower corner for collection, enabling use with one hand. The bowl's unique design helps parents easily feed infants, as well as teach toddlers to feed themselves.

"Being a mother of two sets of young twins, I understand why parents want safe and smart infant care products," said Barbara Schantz, president and CEO of Baby Dipper, LLC. "By using Eastman Tritan™ copolyester for the development of the Baby Dipper bowl, we can offer parents a high-quality, user-friendly feeding product that fits into their everyday lives." Baby Dipper chose Eastman Tritan™ copolyester because it provided a clear, tough and BPA-free material choice. Baby Dipper tested NAS for the manufacture of the bowl when initially looking for a plastic alternative to polycarbonate (PC). However, Tritan offered higher impact and heat resistance, as well as dishwasher durability. Tritan also offers odor, taste and stain resistance, which are important for infant care feeding products that demand cleanliness and safety.

"The design flexibility and ease of processing of Eastman Tritan™ copolyester also has allowed us to create the thick-to-thin wall design, and meet our cost and production goals," Schantz said. The Baby Dipper bowl comes in a three-piece set with a matching spoon and fork made of polypropylene, which also is BPA-free. The patented Baby Dipper bowl is available at select online and retail stores. Eastman Tritan™ copolyester is used for the development of a variety of infant care products, including reusable bottles, pacifiers, breast pumps, bottle sterilizer lids, plastic cutlery and dishes, and more.

Award-winning Flexi-Jacket Set to be a Hit with Backpackers

BACKPACKERS, hikers and mountain climbers often carry extra bags to fit items such as tents, sleeping bags and safety kits. This may be a thing of the past as researchers from the Department of Design Technology, Faculty of Applied and Creative Arts at Universiti Malaysia Sarawak (Unimas), have come up with an innovative product that has the potential to be commercialized and be a hit in the market.

Called the "Flexi-Jacket", it is used for recreational activities. "The jacket is designed to be versatile, lightweight and easily transformable into a tent as temporary shelter," said researcher Norhayati Suleiman. She said the Flexi-Jacket key design concept allows easy set-up, and is lightweight and waterproof.

The material for the product are from shower resistant polyester micro fibre, waterproof zipper, adjustable hood, and elastic wristband to fit all sizes. "This innovative jacket comes with reflector stripes for safety so the wearer can be easily seen in vehicle headlights at night," she said. It also has a practical compartment for carrying basic gadgets such as torchlight, compass, safety kit and a map.

The product won an award at the International Exposition of Research and Invention of Institutions of Higher Learning 2009 or better known as Pecipta 2009 held earlier this year in Kuala Lumpur.

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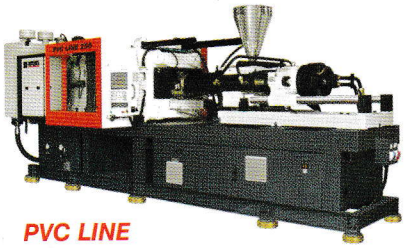

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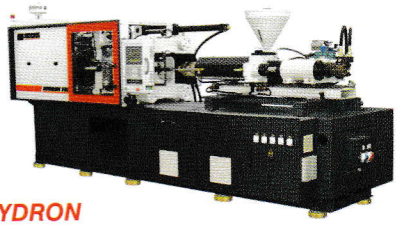

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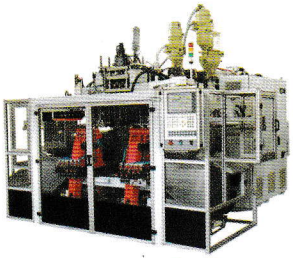

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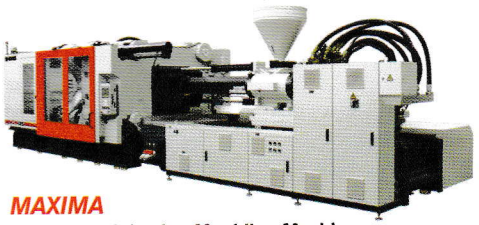

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