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Plastic Tomorrow

BI- MONTHLY MAGAZINE, BI - LANGUAGE ENGLISH & GUJARATI PLASTIC INDUSTRY PERIODICAL.

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Controllers For Metal Cutting

CNC Milling Controller

M6X8 Series
10.4" Display
Maximum 6 Axis

M5X8 Series
8.4" Display
Maximum 6 Axis

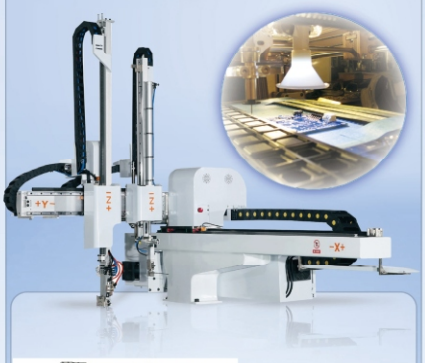
Controller For Injection Machine

Can Support Servo Valves with Closed Loop PID Control for MOOG, BOSCH, VICKERS etc.
All Electric Machines.

IN2000
It has all.
A Perfect Budget

IN6800
For Std Injection Molding Machines

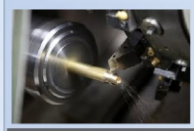
Controllers For Servo Robots



R6000
For Servo Robots
8.4" Display
Waterproof & DustProof

R6800
For 6 Axis Servo Robots.
7" Display

CNC Lathe Controller



T5X8 Series
8.4" Display
Max 6 Axis

Controller for All Electric IMM

IN7800 Series
Controller for All Electric Injection Molding

ES200-Energy Saving Servo Packs

ES200 Energy Saving Servo Pump Packs use PM Servo Motors with Internal Gear Pumps & are controlled with Servo Drives in closed loop control system to achieve energy savings of 40% ~ 70% in Injection & Blow Molding Machines.
Different Customized combinations are available from 20lpm to 300lpm depending upon the machine.

We also offer complete retrofitment solutions for any brand of machines.

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2. IMM RETROFIT & SERVO CONVERSION.
3. ROBOT RETROFIT.

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NEW PACKAGING PROVIDES INTERACTIVE EXPERIENCEFOR TE CONNECTIVITY CUSTOMERS

TE`s Industrial business unit works with Frankfurt agency SNOOK to implement new product packaging starting with the M12 connector

TE Connectivity (TE), a world leader in connectivity and sensors, introduced new product packaging and product packaging designs that help customer clearly recognize the product and vendor. The packaging redesign is part of TE's aim for stronger collaboration and brand building with its customers.

With TE, the SNOOK Frankfurt agency developed corporate packaging for various TE products starting with the M12 connector. In the past TE customers got their ordered products shipped in plain packing materials. Now with the bright, visible orange and white packages, customer will have an experience unpacking and interacting with TE products similar to the consumer experience of unpacking mobile phones.

The task for SNOOK Frankfurt was to develop a new packaging concept that is innovative, interactive and visually appealing for TE's key customers and trade show visitors. The additional challenge was to design the packaging to be scalable for any future TE products that require the same B2B display.

”SNOOK is proud that our close work with TE's Industrial product marketing team for the M12 connector allowed us to successfully launch the new packaging concept in just 3 months – including production and shipping of the first 1,000 packages for the M12 connector,” said Vanessa Naseem-Ahmed, M12 project team, SNOOK Frankfurt.

ABOUT TE CONNECTIVITY

TE Connectivity Ltd. is a $13 billion global technology and manufacturing leader creating a safer, sustainable, productive, and connected future. For more than 75 years, our connectivity and sensor solutions, proven in the harshest environments, have enabled advancements in transportation, industrial applications, medical technology, energy, data communications, and the home. With 78,000 employees, including more than 7,000 engineers, working alongside customers in nearly 150 countries, TE ensures that EVERY CONNECTION COUNTS.

Learn more at
www.te.com and on LinkedIn,
Facebook, WeChat and Twitter.

ABOUT SNOOK

SNOOK Frankfurt GmbH is an owner-managed, full-service agency that combines the analytical, strategic expertise of a consultancy firm with the conceptual, goal-oriented creativity of a marketing agency and the profound know-how of international automotive and retail professionals. With 15 employees SNOOK Frankfurt offers real 360° solutions to every client's request, including offline strategies and online/social media strategies equally

Learn more at
www.snookfrankfurt.com and on Facebook and Instagram

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CONTENTS

ECONCORE PARTNERS WITH MEAF IN DEVELOPMENT OF LAB EXTRUDER FOR CONTINUOUS THERMOPLASTIC HONEYCOMB PRODUCTION

EconCore is making strong progress in development of new all-thermoplastics continuous honeycomb cores. The advances come in the wake of the installation of a fully-functional laboratory-scale extrusion and forming line at the company's recently-refurbished R&D facilities in Leuven, Belgium.

At the heart of the line is a purpose-built 50-mm extruder, built by MEAF in Yerseke, The Netherlands, and equipped with a special 500-mm sheet die built by flat-die specialist EMO Extrusion Molding in Micheldorf, Austria.

EconCore honeycomb structures are produced from a single continuous thermoplastic sheet using the company's patented ThermHex technology. This involves a sequence of thermoforming, folding and bonding operations. Cell size, density and thickness of the honeycombs can be altered with simple hardware and/or process parameter adjustments. The process allows for inline bonding of solid skins to one or both sides of the honeycomb, to create an extremely cost-effective finished composite panel.

Prior to the installation of the new purpose-built extruder, EconCore was carrying out its honeycomb developments using sheet unwound from a roll. "Now that we can produce our own sheet in-line, we have more flexibility in our operations and it is obviously much easier to make changes to the material formulations," says Wouter Winant, the company's Technical Manager.

EconCore and MEAF collaborated closely on the design of the laboratory extruder, which is equally capable of processing polyolefins, bioplastics and high-performance thermoplastics such as polycarbonates, polyamides, and polyphenylene sulphide. "This is a non-typical set-up, but it is very important for our development work," says Winant. "EconCore already has licensees around the world producing continuous honeycombs and honeycomb-cored laminates in polyolefins – predominantly polypropylene – and we intend to continue refining the process technology for these materials. The new line is partly intended for this purpose.

"At the same time though, we are extending the potential of ThermHex technology by enabling it to be used with thermoplastics with superior mechanical and thermal performance – what we call HPTs. Normally this would require the use of a second extruder, since the processing characteristics of polyolefins are quite different from those of HPTs. But with this purpose-designed extruder, we have so far managed to obtain excellent results on around 10 different kinds of polymers."

The MEAF extruder has a 50-mm barrel holding a screw with an L:D of 34:1, which is typical for polyolefins. However, it also has a superior heating capability, with each of its five zones rated at 5.8 kW. Despite this high power rating, the extruder is highly energy-efficient, in line with MEAF's philosophy of creating extrusion systems with low carbon footprints. A 600-L dryer for hygroscopic materials is fully integrated into the production system. Maximum output from the extruder is around 150 kg/h.

"We have been cooperating with MEAF for several years now, on various projects, and the results have always been very encouraging," says Tomasz Czarnecki, Chief Operating Officer at EconCore. "Both our companies are small/medium-sized, with a flexible approach to getting things done, and a strong thirst for success, so we work together well."

"Licensees of our ThermHex process have no obligation to use MEAF extruders, but it quite often happens that they decide to choose this option, as they are encouraged seeing the results that this equipment delivers." – Czarnecki adds – "The call for innovative, light-weighting material solutions is very loud while the cost-efficient processing within the integrated production process combined with cost savings linked to the product's weight reduction and production energy-efficiency is at high demand. This generates the fuel for our developments. After successful commercial evolutions within the current, globally distributed network of our licensees in the sectors of industrial packaging, building, automotive as well as wider transportation and others, and with the new, exciting license projects in the pipeline, we intend to continue our cooperation to take ThermHex technology to the next level, amongst others with HPTs."

EconCore, based in Leuven, Belgium, provides technology for the continuous production of honeycomb sandwich materials. The unique ability to produce rigid but lightweight panels within a cost-efficient, integrated high-volume production process is licensed by several companies over the world. The fast, versatile, continuous thermoplastic honeycomb production process allows users to produce sandwich materials for various applications including automotive, transportation, building and construction, industrial packaging/graphical displays, furniture and many others at minimal cost, weight and environmental impact.

For more information, please visit
www.EconCore.com / LinkedIn / Twitter.

Courtesy

GET AHEAD OF THE FLOW AND GO PRO-ENVIRONMENTAL TODAY

- **Switching from mineral oils to polyol ester (POE) base oils for synthetic lubricant formulations is already a safer and better environmental (biodegradable) choice. This is something that both OEMs and synthetic lubricant producers can easily do today if they want to improve their sustainability profile**
- **Perstorp is launching a new range of high-performance renewable and part renewable polyols for base oils that make the switch to polyol ester oils even more compelling from a sustainability perspective**

Switching from mineral oils to polyol ester base oils using a new generation of Pro-Environment Polyols can significantly reduce the cradle-to-grave environmental impact of synthetic lubricants. Perstorp's renewable Penta, marketed as Voxtar™, for example, reduce the carbon footprint by up to 80%.

Recently launched the new Perstorp range of Pro-Environment Polyols (PEP) includes renewable and part-renewable grades of Penta, TMP and NEO under the product brands Voxtar, Evyron™ and Neeture™. As drop-in solutions, they can directly make a positive environmental impact on polyol ester base oils.

Products that use synthetic lubricants, such as cars, planes, transformers and refrigerators must already comply with stiff environmental and safety regulations. However, the new Perstorp Pro-Environment Polyols represent a major opportunity for lubricant formulators and OEMs to get ahead of the pack and considerably sharpen their sustainability profile.

Growing consumer maturity and demand for pro-environmental solutions

Growing consumer advocacy and demand for greater sustainability is a growing global trend. With a watchful public, it is more important than ever that companies make and take the right environmental choices whenever viable opportunities arise. Perstorp's new Pro-Environment Polyols represent a clear environmental opportunity with no commercial downside. OEMs and producers opting for synthetic lubricant formulations using the new generation of Pro-Environment Polyols will also gain a fast and sustainable marketing advantage. Taking up that option is good for brands, consumers and the planet.

Dual efficiency: no compromise between performance and environment

Primarily, performance efficiency is the key driver for machinery and motors in the selection of synthetic lubricants, but now you can have your cake and eat it. By switching to Pro-Environment Polyols lubricants can be formulated to give uncompromising and precise technical performance with the benefit of a much lower carbon footprint.

"Polyol esters are already a great choice for synthetic lubricants as they not only come with high-performance efficiency, but they are also safe and biodegradable." Says Andreas Nilsson, Market Segment Manager for Synthetic Lubricants at Perstorp. He continues: "Now that choice has become even better. By using our new Pro-Environment Polyols, you can shrink your carbon footprint and ensure engines continue to contribute to a lower environmental impact throughout their operational life."

Easy to switch to and customers get priority

There is little effort required in switching from fossil-based polyols to renewable polyols as they are identical molecules. Customers who "sign-up" will get supply priority, as Perstorp is keen to help customers to go pro-environmental. Perstorp's renewable and part renewable polyols are all ISCC (International Sustainability & Carbon Certification) certified under the Mass Balance concept, which confirms sustainable sourcing and the contribution towards CO_2reduction of the certified molecules.

Perstorp extending their pro-environment polyol advantage

As the leading supplier of base polyols to the lubricant market, Perstorp is extending its environmental lead with the introduction of Pro-Environment Polyols too. The company currently devotes 80% of its R&D resources to finding innovative sustainable solutions, and all its Swedish plants are running solely only renewable electricity.

Andreas Nilsson concludes: "Perstorp is keen to ensure the responsible sourcing of renewable raw materials, using only renewable electricity in processing and that our products contribute to greater sustainability. We're committed to helping our customers in the lubricant value chain to reach their environmental goals wherever we can, and we believe our new Pro-Environment Polyols are another important step to helping them achieve those goals."

For information on switching to Pro-Environment Polyols, visit http://www.perstorp.com/proenvironmentpolyols.

A global leader in high growth niches

The Perstorp Group, a trusted world industrial leader, places focused and market-driven innovation at your fingertips. Our culture of performance builds on 130 years of experience and represents a complete chain of solutions in organic chemistry, process technology and application development. As the global leader in high growth niches, such as powder and UV cured coatings, plasticizers, synthetic lubricants and grain preservation, we are committed to develop products providing essential properties to enhance the quality, performance and profitability of our customers' products and processes. As we look to the future, we strive for the development of smarter and safer products and sustainable processes that reduce environmental impact and create real value in end-products. Perstorp has approximately 1,600 employees and manufacturing units in Asia, Europe and North America. Sales in 2016 amounted to more than SEK 11,3 billion. Discover your winning formula at **www.perstorp.com.**

Courtesy

SONGWON UNDERLINES COMMITMENT TO PACKAGING INDUSTRY AND PRESENTS NEW INK BINDERS AND ADHESIVES AT PROPAK

SONGWON Industrial Group is exhibiting its expanding range of ink binders and adhesives at ProPak, Asia's number one show for food, drink & pharmaceutical processing and packaging. A leading specialist in polyurethane ink binder technology for gravure and flexography printing inks and polyurethane laminating adhesives used in flexible packaging laminates, SONGWON will showcase its latest high-performance products and solutions.

"Our presence at ProPak demonstrates SONGWON's commitment to the packaging industry," emphasizes Kyuyeol Lee, Leader Business Unit TPP. "We are innovating continuously in the packaging field, leveraging our many years of industry knowledge and manufacturing experience to develop, produce and market a broad range of high-performance polyurethane ink binders and laminating adhesives. Our customized solutions for flexible packaging are designed to give manufacturers of plastic film for packaging competitive edge and help them meet their end-use requirements."

Highlights at the show will include several recently launched products. HI-THANE™ A-9135T and HI-THANE™ A-9107T are aliphatic, solvent-based polyurethane ink binders suitable for both gravure and flexographic printing inks. "They confer excellent bonding strength to various plastic films and their high heat resistance makes them particularly suitable for retort applications such as retort pouches, which are typically made from a laminate of flexible plastic and metal foil and suitable for instant curry meals and field rations, for example," says Hyeonsik Bae, Technical Service TPP. "With their strong anti-blocking properties, they are formulated to prevent film layers from sticking to one another. This can ultimately boost productivity."

HI-THANE™ A-7332 is a solvent-free polyurethane laminating adhesive with high bonding strength on various plastic films. "This general performance adhesive has exceptionally good wetting properties, which play a key role in helping film laminate manufacturers to reduce coating weights and film lamination costs," explains Hyeonsik Bae.

For more information please go to **www.songwon.com**.

About SONGWON Industrial Co., Ltd.

SONGWON, which was founded in 1965 and is headquartered in Ulsan, South Korea, is a leader in the development, production and supply of specialty chemicals. The second largest manufacturer of polymer stabilizers worldwide, SONGWON Industrial Group operates companies all over the world, offering the combined benefits of a global framework and readily accessible local organizations. Dedicated experts work closely together with customers to develop tailor-made solutions that meet individual requirements.

For further information, please go to:
www.songwon.com.

Courtesy

SELF-EXTINGUISHING MATERIAL FOR COMPONENTS WITH WALL THICKNESSES STARTING FROM 1.5 MM

KRAIBURG TPE offers a broad portfolio of halogen-free thermoplastic elastomers that comply with the UL94 Vo standard.

KRAIBURG TPE is responding to the increasing demand for flame-retardant thermoplastic elastomers by providing a diversified portfolio of THERMOLAST® K types to meet the highest fire protection requirements. Elmia Polymer, held in Sweden in May 2018, and Plast 2018, held in Italy, are among the trade fairs at which the manufacturer presented its wide portfolio.

If even only a few kilograms of a thermoplastic material catch fire, the spreading flames can easily cause tremendous damage. Flame retardants (FR) containing halogens were therefore frequently used in the past – but if a fire breaks out, these can have serious negative effects on people, furniture and equipment, and the building involved. The effects are primarily due to thick billows of smoke that make people lose orientation on the escape routes, as well as toxic fumes and corrosive conflagration gases, which are detrimental to health and can be dangerous to the fabric of a building. The halogens' corrosiveness is also considered to be a problem for maintaining a material's properties during recycling of waste materials such as old vehicles.

KRAIBURG TPE is therefore continually working on consistently expanding its range of self-extinguishing thermoplastic elastomers (TPEs) that provide halogen-free flame-retardant properties (HFFR). The materials meet the requirements of the UL94 V0 standard, i.e. they extinguish themselves in case of fire and don't form into burning drops. The certification applies to all degrees of hardness available and all color variations produced at KRAIBURG TPE.

Being free of halogen in accordance with IEC 61249-2-21 also means that the material contributes to a significant reduction of harmful fire gases. KRAIBURG TPE's flame-retardant compounds thus meet the highest fire protection requirements, including those of the European Construction Products Regulation (EU-CPR) and the EN 45545 standard regulation for fire protection on rail vehicles.

The following series are the highlights of THERMOLAST K's HFFR types:

- **FR1 compound series**: injection molding and extrusion compounds providing good adhesion to polypropylene and with UL94 V0 classification, starting from wall thicknesses of 3 mm
- **FR2 compound series**: specially developed for thin-walled components providing UL94 V0 classification, starting from wall thicknesses of 1.5 mm, and with good adhesion to polypropylene

In addition, KRAIBURG TPE offers a series of special HFFR compounds that is targeted towards direct adhesion to polar thermoplastics such as ABS, PC and selected types of polyamides.

"Our halogen-free flame-retardant TPEs provide plenty of possible applications for flame-retardant multi-component parts with attractive tactile properties such as soft touch and a good grip," emphasizes Dirk Butschkau, Product Marketing Manager EMEA at KRAIBURG TPE.

Typical applications are in the fields of electrical engineering and electronics, such as connectors, switch boxes and flush-mounted sockets. The materials are also ideal for use in manufacturing cable coatings, cable bushings and cable clips, as well as for furniture components and door and window gaskets. The natural-colored compounds can easily be colored and provide excellent color stability. All products are manufactured at all KRAIBURG TPE sites in the USA, Germany and Malaysia and are available worldwide.

"The diversified portfolio of our halogen-free flame-retardant TPEs demonstrates our market-driven and customer-oriented competence in developing materials, which is targeted to implementing innovative product ideas of the highest quality," says Franz Hinterecker, CEO of KRAIBURG TPE. "One excellent example of these is the trendsetting cable bushing system from our customer CONTA-CLIP."

www.kraiburg-tpe.com

About KRAIBURG TPE

KRAIBURG TPE is a global manufacturer of thermoplastic elastomers. From its beginning in 2001 as subsidiary of the historical KRAIBURG Group founded in 1947, KRAIBURG TPE has pioneered in TPE compounds, today being the competence leader in this industry. With production sites in Germany, the US, and Malaysia the company offers a broad range of compounds for applications in the automotive, industrial, consumer, and for the strictly regulated medical sectors. The established THERMOLAST®, COPEC®, HIPEX®, and For Tec E® product lines are processed by injection molding or extrusion and provide numerous processing and product design advantages to manufacturers. KRAIBURG TPE features innovative capabilities as well as true global customer orientation, customized product solutions and reliable service. The company is certified to ISO 50001 at its headquarters in Germany and holds ISO 9001 and ISO 14001 certifications at all global sites. In 2017, KRAIBURG TPE, with over 620 worldwide employees, generated sales of 178 million euros.

For More Information Visti :
www.kraiburg-tpe.com

Courtesy

Plastic Road, the municipality of Zwolle and the province of Overijssel (NL)

World premiere in Overijssel: The first PlasticRoad bike path comes in Zwolle

The PlasticRoad, a road made of recycled plastic, becomes a reality. The municipality of Zwolle and the province of Overijssel have committed to the first PlasticRoad pilot project. In September the first PlasticRoad will be constructed in Zwolle and in another location in the province a few months later. The PlasticRoad concept was launched in 2015 by market leader in road construction KWS (a subsidiary of Royal VolkerWessels). In 2016, KWS entered into a partnership with Wavin and Total for further development of the PlasticRoad.

The first PlasticRoad in the world comes in Zwolle. The province of Overijssel and the municipality of Zwolle see great potential in the PlasticRoad as a solution for the challenges of the future as it pertains to a circular economy. Both parties are stimulating innovation to give entrepreneurs with sustainable ideas an opportunity for practical realization. By being the first client of these innovative entrepreneurs a new product can be tested for technical and economic feasibility.

The road to the PlasticRoad

The first two pilot projects will be realized in the form of 30 meter long bicycle paths made of hollow prefabricated elements enabling water drainage and laying down of cables and pipes, with the exact final locations still to be decided. The PlasticRoad partners KWS, Wavin and Total have worked extensively on the development and testing of the concept to validate and optimize performance such as the load bearing capacity of the modular elements, the appropriate blends of recycled plastic and the three dimensional design of the road itself. In addition, research focused on the reduced environmental impact has been carried out. The positive results achieved to date support moving forward to make the first pilot projects reality. These pilots mark an important step towards the developing process and success of the PlasticRoad.

Anne Koudstaal and Simon Jorritsma, the inventors of the PlasticRoad and KWS employees explain: "After an extensive period of design, testing and development, we are delighted that the PlasticRoad is becoming a reality. Together with the municipality of Zwolle and the province of Overijssel, we as PlasticRoad partners are taking steps towards a more sustainable world with this first PlasticRoad bike path."

For more information on the PlasticRoad, visit www.plasticroad.eu.
www.polymers.total.com

About Total

Total is a global integrated energy producer and provider, a leading international oil and gas company, a major player in low-carbon energies. Our 98,000 employees are committed to better energy that is safer, cleaner, more efficient, more innovative and accessible to as many people as possible. As a responsible corporate citizen, we focus on ensuring that our operations in more than 130 countries worldwide consistently deliver economic, social and environmental benefits.

www.total.com

About KWS

Roads and public spaces. Over land and water. Above and below the ground. Royal VolkerWessels company KWS designs, builds, maintains, manages and operates infrastructure. With eight local branches and several subsidiaries, participations and own equipment, KWS offers a range of disciplines close to the customer. From advice to asphalt production. From specialisms such as earthwork, sewerage and hydraulic engineering to small-scale work for municipalities and private individuals. As a market leader in road construction and asphalt production the company also works on extensive multidisciplinary projects in which they realize the complete infrastructure. Sustainable innovations such as PlasticRoad, the HERA system for recycled asphalt and luminous lines FloWithDGlow comes from the KWS sleeve. For more information,

visit www.kws.nl

About Wavin

Wavin is a leading supplier of plastic pipe systems and solutions. As one of the longest established names in the market, Wavin built its reputation on over 60 years of high quality and innovation. Wavin connects customers to better solutions for above and below ground projects in the following application areas: water management, heating and cooling, water and gas distribution, waste water drainage and datacom. Wavin headquarters are located in Zwolle, the Netherlands and has presence in more than 25 countries and about 30 manufacturing sites, mostly located in Europe. Wavin employs approximately 5000 people.

www.wavin.com

Wavin is a subsidiary of Mexichem: a global leader in plastic piping and one of the world's largest chemical and petrochemical companies. Mexichem contributes through the Fluor, Vinyl and Fluent Business Groups to global development by delivering an extended portfolio of products to high growth sectors such as infrastructure, housing, datacom and water management, among others. Wavin is part of Mexichem's Fluent Business Group, one of the biggest producers of plastic pipes and connections worldwide.

. www.mexichem.com

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Courtesy

ELIX POLYMERS ANNOUNCES A NEW INVESTMENT IN ITS TARRAGONA PLANT

The leading company will strengthen its position in the ABS specialities market and bolster its expansion plans with this new investment

The company ELIX Polymers, a thermoplastics manufacturer located in Tarragona's Polígono Sur industrial complex, has announced a new investment amounting to 4 million euros, whose objective is to optimize its ABS powder production facilities.

The company expects to begin executing this new project in 2018, which it will continue to develop and consolidate throughout this year and 2019.

ABS powder is used as an intermediate product for producing ABS compounds and as an impact modifier in other thermoplastic compounds. With this new investment plan, ELIX Polymers assures access to this intermediate product for its own production of ABS and ABS compounds, and the company shores up its position in the European market as a supplier of ABS powder.

This investment is framed within the company's Strategic Plan, which after several years of growth will consolidate ELIX Polymers as a benchmark manufacturer of ABS and ABS compounds in more highly specialised applications and segments.

David Castañeda, Director of Operations and New Business Development at ELIX Polymers, affirmed: "Within the company's strategic plan, we are seeking to accompany customers as they grow, strengthen our position in key markets and increase our international presence by accessing new market niches and specialities in the NAFTA region and Asia. This investment will also allow us to both optimize our operations and make them more flexible, with the objective of continuing to be a benchmark in the market due to our reliability and custom solutions".

This investment project will provide ELIX Polymers with the best technology in the market. To implement and develop the project, the company is collaborating with the top suppliers of the selected equipment. It will also incorporate equipment that will allow the integration of industry 4.0 in facilities operations. Over the last two years and following its Strategic Growth Plan, ELIX Polymers has made considerable investments in its facilities and its IT and management systems for the purpose of expanding, positioning itself in the market, and differentiating itself from its competitors by offering a service based on the key factors of flexibility, proximity to customers, proactiveness, global perspective, and custom service solutions.

This new investment in facilities, together with those made over the last two years, demonstrates ELIX Polymers' commitment to its production centre in Tarragona.

ELIX Polymers - ELIX Polymers is a leading manufacturer of ABS (Acrylonitrile-Butadiene-Styrene) resins and derivatives in Europe.

Operating from its head office in Tarragona, Spain, and with Sales support teams in all key markets, the company is a specialist provider of tailor-made solutions for high quality thermoplastics applications. With a 40-year track record, ELIX Polymers is an expert in ABS polymers, and it has the resources, the expertise and the experience to create value for its customers through highly individual solutions.

ELIX Polymers offers a broad range of material solutions for a variety of industries and applications, meeting the stringent requirements of the Healthcare, Automotive, Appliances, Electronic, Toys and other industries.

For more information please visit www.elix-polymers.com.

Courtesy

PLASTIC PROCESSOR ASSOCIATION TOOK THE INITIATIVE FOR CLEANING OF MAHI RIVER BANK ON OCCASION OF WORLD ENVIRONMENT DAY.

This Environmental Day the Plastic Processor Association took the initiative ofcleaning Mahi River Bank at Vadodara, Gujarat. The three-day cleaning drive was well supported by locals as well as the government. The programme was attended by Chief Guest Shri. BharatbhaiDangar, (Mayor, Vadodara), Guest of Honour Smt. Ranjanben Bhatt (MP, Vadodara) and special invitee Mr. R. B. Guptaji (Regional Officer, Gujarat Pollution Control Board (GPCB), Vadodara) & Shri. Nileshbhai Shukla (President, Vadodara Chamber of Commerce & Industry (VCCI). Shri. Jaykantbhai Navavati (President, Platic Processor (Guj.) Association Vadodara.

Shri. BharatbhaiDangar in his opening speech lauded Plastic Processor Association for their initiative towards environment and thank the gathering for coming out for environment in such a warm climate. He further commented that coming together is beginning, thinking together is progress and working together is success and you have done it. People should think from heart not from mind about the environment, we are thankful to our Prime Minister who started "Swatch Bharat" campaign and picked up the broom to clean. Broom is a pride not a shame, so you should not hesitate in cleaning. He ended his speech by saying maintaining cleanliness is necessary and its everyone's job people should think about it. Plastics takes lot of time to dispose so it should be Reduce Reuse and Recycled. This 3R Reduce, Reuse and Recycle should be realty not in words or books.


















Shri. Nileshbhai Shukla thanked Plastic Processor Association for the initiative and emphasized all association should worktogether for such initiative and help according to the associations capacity. Earlier we have done "Vadodara Initative" where waste was collected on regular basis from door to door. Vadodara is now developing even outsiders started praising Vadodara for their cleanliness. The people and the culture of Vadodara is great. I would thank specially to the mayor for keeping the city clean with the public support.

Mr. R. B. Guptaji, welcomed the crowd and thanked all the dignitaries on the dais he said in his speech that he is happy that the Gram Panchayat has accepted the Plastic Waste initiative. He said that plastics should not be burned with other trash as it may cause cancer, Plastics should not be dumped too it should be collected and recycled which will keep the environment clean.

Proper collection of plastic waste and proper recycling can also give you some sort of money. He further commented that Gram Panchayatshould clean the riverside after big gatherings so that it should look clean and attract the tourists.

The closing ceremony was held on 4th June 2018 with Tree Plantation at several places. The entire crowd participated in plantation and pledged for the environment and cleanliness.

President and Chairman of PPGA said that they have got good support from the locals, this has boosted our confidence we will carry such events in future also.

We thank all the dignitaries on the dais for their support.

INAUGURATION:

The event was Enlightened By the presence of the Honorable Chief Guest Mr. Mansukhbhai Mandaviya (Minister of State for Road Transport, Highway, Shipping, and Chemicals & Fertilizers -Government of India) and Mr. Rajiv Raval (Vice President of PlastIndia Foundation) and Mr. Hiten Bheda (President a AIPMA) who was our Guest of Honor.

CURTAIN RAISER CEREMONY OF PLEXPO INDIA 2019

The Event Marked it's beginning with the welcome address by Shri Alpesh Patel as the president of Gujarat State Plastic Manufacturing Association (GSPMA), he welcomed everyone on this auspicious occasion which was followed by the Lamp Lighting Ceremony, followed by Shri Navin Trambadia the chairman of Plexpo India addressing 350+representatives from plastic industry. Indian Plastic Industry has ample opportunities to grow, as India have abundant amount of raw materials and skilled laborers. A short film on Plexpo was featured during the event which showed mission and vision of 8th Plexpo event showcasing benefits for exhibitors and visitors and how it can help Indian Plastic Industry.

Shri Mansukhbhai Mandaviya launched Plexpo India's Mobile App for iOS and Android Platform. After that he concluded the ceremony with a speech where he emphasized on importance of such exhibitions as he said Plastic Industry is a booming industry for which such exhibitions are so important where industry can get a platform to showcase latest technologies, industrial solutions of today and tomorrow and a platform for networking where industry experts, government officials and regulators comes together for prosperity of the plastic industry in India.

ONE OF BEST SOLUTION FOR PLASTIC BAG WASTE

There are many ways for recycling as well as decomposing plastics. But the government doesn't want to take challenge and work on it.If they seriously think for public healththen why they still support ALCOHOL and TOBACCO manufacturers and sellers by which most of the people suffers from many types of cancers.

Suddenly plastic has been termed villain by government and banned whereas Alcohol, Tobacco and other harmful products are not.It's a common sense that on an average if you do shopping for 10-12 items you will find everything is packed in a plastic packing material. So why can't we put all the items in a plastic carry bag. It's government duty to educate people about littering and support recycling and decomposing plastics.

I give you one small example if accidents are occurring in roads should we ban Motor Cycles, Cars and large vehicles so that people can walk or either use Bullock Cart which can assure there will be no accident.

After ban of plastics in Mumbai the Municipal Corporation has started collecting plastic waste from citizens by visiting their homes, If they do this on regular basis it would be difficult to find plastic waste on the Roads.

The above proposal was given to government earlier but they rejected by saying it's not our work. There are many points on which public have to be think and they have to take wise decision for the future

Why "yes' to plastic & 'NO' to paper

It's a very wrong notion that plastic is hazardous, and we should not use plastic. Plastic has made our lives convenient with any food item like Vegetable, water, medicines, garments, stationary, jewelry, toothpaste, shampoo, washing powder, food grains, vegetable oils, milk, fruit & many more available items,anytime anywhere. It has given employment & livelihood to lakhs of people which always is a concern for any government. Plastic has replaced paper and thus SAVED a lot of trees from being cut,which is very much essential to stop global warming.

Plastic waste of course is a concern only when it is not collected and recycled/reused. All plastic MUST be recycled and reused. It is our responsibility to throw this plastic or any wastage in correctly earmarked Dustbin, so it can be sent for recycling. We need to change OUR DAILY habits and not ban plastic. We can also generate electricity from any plastic waste with hardly 1% residue where as **thousands of trees & lakhs of liters of water is used to manufacture paper.** This contaminated water is then disposed off in rivers & seas thus polluting the marine environment.

Plastic is made out of a byproduct left after processing of crude oil which is extracted from the sea. So why 'NO' to plastic? Iron ore used for making metal is depleting our land. **Paper is taking away our trees & pushing us towards global warming.**

So when we say BAN Plastic …. Are we talking of actually saving our environment?? Whom should we blame? A civilian who doesn't throw the tharsh in the earmarked Dustbin? Or the municipal Corporation who has not developed an efficient system to collect & recycle plastic waste & pass their inability & failure to plastic users?

Yes,reduce plastic and control big rich companies but you cannot and should not completely ban plastic.Shouldn't these politicians stop playing with the common man's life and get UNNECESSARY political mileage?

The Mobile phone has made our lives easy but at the same time it is taking away our mental peace. Whilst it keeps us all connected (more than we need to be sometimes) it has made for distance in so many relationships. It is also generating tone of E-waste which is not recyclable. Should we ban use & sale of mobiles?? Cars,bikes,truck sall emit a lot of CO2. So should we ban cars and stop manufacturing all vehicles? Air –conditioners emit lots of hot air, so should we ban air-conditioners? Lots of hazardous chemical are used for agriculture which causes cancer. Can't we ban them and go for organic farming immediately? I can give you many such examples which we should ban immediately.

So should we Ban Plastic ?? do we want to revert back to the 18th century ??**Should we not correct our slovenly habits rather than banning all products & gadgets??** can't we make rational use of all our resources, so we make our next generation life better by being RESPONSIBLE & CONSIDERATE being 1st?

Now can you think of replacing plastic with paper??

ENERGY CONSERVATION OPPORTUNITIES IN PLASTICS PROCESSING INDUSTRIES

Energy management is potentially one of the most cost-effective actions that a company can take to reduce both carbon emissions and costs. Energy costs are rising and there is no reason to believe that they will decrease in the future. The returns from energy management are much better than the returns from increasing sales. Energy management requires both measurements and an understanding of the process.

This section presents the most common recommendations of electrical energy conservations that can be applied in a typical plastic facility.

Improvement of the Electrical Power Factor of the Facility:

The average power factor in this sector has been estimated as 0.89 – 0.95, which is considered low in terms of industry standards. Power factor can be an important aspect to consider in an AC circuit; because any power factor less than unity means that the circuit's wiring has to carry more current than what would be necessary with zero reactance in the circuit to deliver the same amount of (true) power to the resistive load. Hence, the power factor of the generator can be improved by addition of capacitors parallel to the line. The penalty due to power factor has been estimated as 8-12% of total billing. By adding the appropriate capacitor, the charged amount will be reduced to zero. The payback period will be approximately 5-7 months.

Replacement of Energy-Inefficient Motors:

It has been found that the average current operating efficiency of a typical motor is 78%. This low efficiency is due to the common practice by many facilities to simply rewind an existing motor when it burns out rather than purchasing a high efficiency replacement motor. However, a rewound motor is typically less efficient than a new one. The loss of efficiency is due to the age of the failed motor and degradation of its stator core during failure, or as a result of the rewind process. The typical efficiency loss ranges from 1% to 5% for each rewinding process.

Installation of Variable Frequency Drives (VFD):

In many industrial environments, the application of variable speed control is cost effective. Energy savings result from reduced power consumption by the motors. As the system power requirements are reduced, the power consumed by the equipment can be reduced by an amount significantly greater than can be achieved with the existing controls. For example, in the case of pumps, flow is often controlled (throttled) by valves, which increase the pump head and reduce the flow rate. In the Plastic industry, VFDs can be applied to injection and blow moulding motors, pumps, and compressors. It is estimated that a saving of 15-20% of the motor electrical energy can be achieved if such controllers are adopted. Assuming an average saving of 17.5%. In average, the payback period will be approximately 9 -12 months.

Repair of Compressed Air Leaks

The cost of compressed air leaks is the energy cost to compress the volume of lost air from atmospheric pressure to the compressor operating pressure. The amount of lost air depends on the line pressure, the compressed air temperature at the point of the leak, the air temperature at the compressor inlet, and the estimated area of the leak. The leak area is usually detected depending on the sound and feeling of air flow from the leak. An alternative method to determine total losses due to air leaks is to measure the time between compressor cycles when all air operated equipments are shut off. It is estimated that a saving of 15-20% of the compressor electrical energy can be achieved if air leaks are eliminated. Assuming an average saving of 17.5%. In general, implementation involves one or two of the following: replacement of couplings and/or hoses, replacement of seals around filters, shutting off air flow during lunch or break periods, and repairing breaks in lines, etc. The payback period will be approximately 10-20 days.

Avoiding Poor Practices of Compressed Air Usages:

On site, several poor practices of compressed air usage have been noticed. For examples: Several companies use the compressed air to cool the extruded pipes or some devices such as motors, while others use it for cleaning purposes. Since the use of compressed air is either for cooling or cleaning purposes, air at sufficient flow rates can be adequate for these purposes. This can be done by blowers which use much less energy. It was estimated that a saving of 10-20% of the compressor electrical energy can be achieved by avoiding such poor practices. Implementation costs include purchasing blowers to replace the compressed air. The payback period will be approximately 1- 2 month.

Insulation of the Extrusion, Injection, and Blow Moulding Machine Heaters:

On site, it was found that some areas of the extrusion, injection, and blow moulding machines are not well insulated. This results in heat losses and associated energy costs. These areas of heat losses have to be studied.

The energy savings were estimated to be 10-14% of the total input electricity to heaters. Implementation costs include purchasing of insulation material in addition to labour costs with a payback period of approximately 1-2 months.

Building

Building energy costs are not always a significant percentage of the total energy costs in plastics processing and at the typical site they are 7– 8% of the total energy costs. Despite this, they are almost always the first area to be considered and improving building energy efficiency can reduce costs, improve staff comfort and improve work output.

Lighting

Lighting only represents around 5% of the energy use at a typical plastics processing. Lighting can be divided into 'ambient' and 'task' lighting - they are very different. Ambient lighting is to allow safe movement; task lighting is to allow completion of a specific task. The lighting levels are very different, recognizing this and taking action to separate them can reduce costs.

A 'lighting map' is vital in reducing lighting energy use. Map the lights, switches and controls on the site to identify areas for improvements.

Investments in replacing the LED lights & in controls such as sensors, timers and push switches can automatically reduce lighting costs without affecting product or lighting quality.

Overall Energy and Cost Savings:

After implementing the recommendations for all plastic processing facilities, the total annual electrical energy savings, the electrical demand savings, and the total annual cost savings are Hugh. The average payback period will not exceed 7-8 months.

Conclusions

An analysis and estimation of the potential electrical energy saving opportunities in the plastic industry has to be carried out. The results will be - there is a large room of improving the efficiency of plastics processing unit electricity consumption in this industry with remarkable energy cost savings. The total electricity cost savings represent nearly 23% of the industry's total annual electricity bill. This can be considered as an effective option for increasing profit and competition within this sector. Having listed all the different remedies that can lead to electrical energy conservation, the implementation of these recommendations is very crucial for the plastic industry to reach the desired cost savings. Such study can be considered as the corner stone in achieving national energy savings among all plastics processing industries. Therefore, it is highly recommended to carry out such studies and analyses in industries.

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BAN. PLASTIC BAN!

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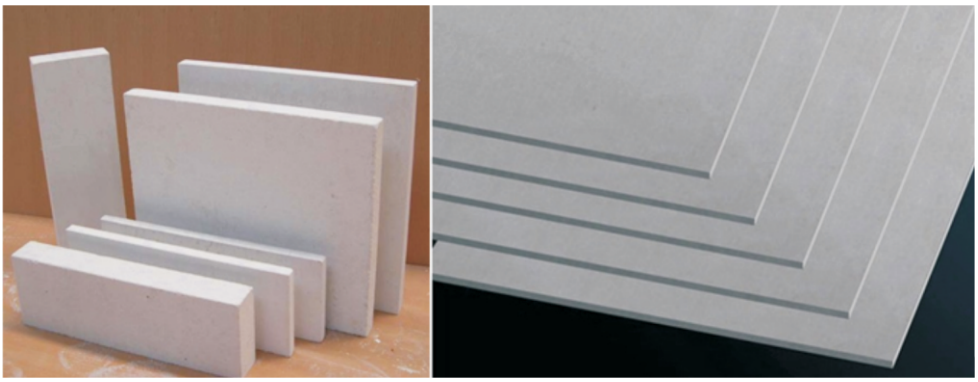
Once the most acclaimed substitute to almost all material plastics is to be banned for many common cheap applications. The excuse will be obtained by the able manufacturers hand in glove with the as usual typical politicians and BABUs sooner to propagate the thicker plastic and the manufacturers will have thicker turnover! Because the people in masses are illiterate and ignorant an also not truly patriotic as they should be. DO not wear befitting caps here. AND because patriotism is a rare character.

BUT still are there many substitutes of plastics now

Plywood / wood was being replaced by PVC foamed board and So-called wood plastic board, till recent past an even till now, many and most follow blindly, jump in to vicious well with already sunk many, exactly like people jumped in to well of much crowded Non-woven fabric making.

A well advocated 'newly introduced' phenomenon "MORBI-RAJKOT EFFECT" the meaning of which literally can be: follow the one, like many number in the heard [obviously of sheep] do.

LOOK around. Which most do not do. The boards for many applications can be and are now made by Cement + Fiber or Calcium silicate + Fiber with the following properties.



- Fire resistance: BS 476 incombustible A1 Class
- Waterproof
- 100% Asbestos Free
- Sound Adsorption
- Heat Isolation
- Impact resistance
- Easy to install

ALSO

- Thickness Range: 5-25MM
- Density: 1.00-1.25 g/cc
- Bending Resistance: 17.5 N/SQ.M
- Expansion after expose to the water for 24 Hr: 0.12%
- Noise Resistance: B38
- Modulus Flexibility: 4,500 Newton/SQ.M
- Water absorption by Weight: 34%
- PH Balance: pH7

AND APPLICATIONS:

- Ceiling
- Partition
- External sliding
- Cladding
- Floor decking
- Exhaust ducts
- Sub-roof board
- Decorative applications
- Insulation board

Can be made in color, can be laminated with films of paper/ plastic for needed color / designs

Let us see the Figures now.

The plant capacity 1600000 to 5000000 Square meter of board to make 18 mm to 6 mm thick board with 1.4 to 1.2 GCC density and so at an average can be assumed to make 3200000 Sq. M of material for 312 days for 22 hours.
Because of the one following table in Excel, the 'effect' as stated above is eliminated.

Initial Investment	Rs.
Plant and Machinery With Boiler	305000000
Land Three acre	21000000
Building Sq Feet 75000	75000000
All other utilities including Power, EB cost Etcetera	18000000
Shipment, Transportation, installation et-cetera	5000000
Total Initial Investment	424000000

The plant and machinery cost can be reduced to some extent in case we try to indigenize come parts of the machinery. Can avoid duty.
Go in for such things which never shall have any sort of BAN, No material shortage and no environment polluting product and process and CAN MAKE NICE MONEY.

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Disclaimer: All the figures and data are collected from Industries from time to time and readers' discretion is advised.

છાપાની પસ્તિ અથવાં અનેક જાતના કાગળના વેસ્ટમાંથી હવે પેપર પેન્સિલ બનાવવામાં આવે છે. આ એક નવો નાનો ગ્રુહ ઉધોગ છે.

પરંપરાગત રીતે લાકડાં માંથી બનાવવામાં આવતી પેન્સિલ, તે પછી પ્લાસ્ટિક માંથી બનાવવાનું શરુ થયું. લાકડાં એ પણ વુક્ષો કાપીને મેળવાય છે, એટલે પર્યાવરણ માટે એ ઉચિત નથી. પ્લાસ્ટિક એ ભૂગર્ભ એટકે કે ધરતીના પેટાળમાંથી લેવામાં આવતાં પેટ્રોલીયમમાંથી તારવવામાં આવે છે. અને પ્લાસ્ટિક નો નાશ નહિ થતો હોવાથી એ પર્યાવરણ માટે હાનીકારક છે.

તદદન નવો વિકલ્પ એ કાગળ છે. એ પણ વપરયેલાં કાગળમાંથી બની શકતી હોબવાથી, કાગળની પેન્સિલ એ આદર્શ વિકલ્પ છે.

ફક્ત 10 HP પાવર અને લગભગ રુપિયા સાડા પાંચ લાખ ની મશીનરીથી આ ધંધો શરુ થઇ શકે. ચાર થી પાંચ કારીગર લાગે અને દસ કલાકનાં દિવસમાં દસ હજાર સુધી પેન્સિલ બની શકે.




કાગળમાંથી બનાવવામાં આવતી પેન્સિલ ને રંગીન બનાવી શકાય, એની ઉપર પ્લાસ્ટિકનું આવરણ લગાવી શકાય, અને રબર પણ લગાવી શકાય.

નાના ઉધોગકર્મીઓએ અને ઉધોગ સાહસિકો જોખમ કરવા લાયક આ નાનો ધંધો આગળ જતાં મોટી કંપનીમાં રુપાંતરીત થઇ શકે. માત્ર એક થી સવા રુપિયા માં આ પેન્સિલ બની શકે અને માત્ર બે રુપિયા વેચાણ કિંમતે માત્ર પચાસ પૈસાં મળવાપાત્ર હોય તો પણ 312 દિવસ કામ કરીને આપ વરસે રુપિયા 15,60,000 તારવી શકો. દિવસનાં ફક્ત દસ કલાક કામ કરવું પડે, પણ વેચવા માટેની વ્યવસ્થા કરવા માટેની મહેનત લાગે

શા માટે આ ધંધો કરવો જાઇએ? માત્ર બજારમાં મળતી કોઇપણ પેીન્સલ નો ફક્ત ભાવ પૂછી જુઓ. આ કામ કરવા માટે પૂરતું બહાનું મળી રહેશે.

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AVOID COMMON MOLD SET-UP MISTAKES

Every molding machine has to shut down periodically for a mold set-up.

Unfortunately, machines are commonly out of action far longer than necessary due to avoidable mistakes in set-up procedures. A poorly planned or executed mold set-up can resemble a comedy of errors.

When the machine is started up again, the result can be slow cycles, high scrap rates, tool damage, defective parts, rework, an unstable process, late delivery of product, and the loss of profit margin on the job.

Manufacturing unit can embraced the challenge of perfecting the mold changeover process rather than just accepting it as a necessary task. Along the way, experts have acquired some insight on avoiding common mistakes. Getting change-over right is particularly important to focus on short-run manufacturing.

Right approach works: Mold- change times can be trimmed by 50% over the years, and one will able to complete many change over for smaller presses in less than 30-60 min and for largest presses within 2-4 hr.

TIP No. 1

Avoid Unnecessary Idling

At many molders, once the press completes its last cycle, it typically is shut down and sits idle while the changeover crew takes out the finished mold and puts it away, locates and retrieves the next mold, stages any required auxiliary equipment, and finally conducts the set-up. We recommend pre-staging the next mold changeover while the press is still in production with the current mold. Use a set-up cart that contains all of the tools necessary to tear down and set up the mold. The cart should include wrenches, mold clamps and bolts, nozzles, cleaners, and any other equipment required. A member of the crew should go over the set-up cart during the pre-staging effort to ensure it isn't missing any essential items. Pre-staging helps shave as much as 33% off the average changeover time. Scheduling and staging material in time is also critical. Many materials require pre-drying from 2 to 6 hr before processing. Failure to adequately schedule and pre-stage the material has the potential to idle a press much longer than the rest of the changeover activities combined.Prioritize the set-up crew's activities: Concentrate on getting the new mold up and running first, not on putting the just-removed mold into storage. There's time for that after the changeover is complete and production resumes.

TIP No. 2

Organize Mold Storage

A trouble spot for many molders is mold storage. They often waste time finding and retrieving molds. Part of the problem is inefficient ways of storing and inventorying molds. Another part of the problem is storing molds too far away from the press. To improve mold storage and retrieval, We can built what we call mold grandstands and are located adjacent to the press. Every mold is assigned a place on a specific rack, and each mold is numbered. The most frequently run molds are stored where they are easiest to reach. So, when a mold is needed, one of the crew performing the changeover needs only to walk across the aisle to retrieve the mold. An overhead crane is used to transport the molds. We have separate grandstands for small and medium-size molds, while the larger molds are stored on a vertical racking system near the large injection machines.

TIP No. 3

Follow a Checklist

In the absence of a defined process for changeovers, molders may face long start-ups and other challenges that adversely affect market competitiveness. Establishing a checklist for the tools and steps for mold connection to the press is vital. Production supervisors can use the checklist to make sure each scheduled changeover was completed and to evaluate how well it was done. One has to analyze every

changeover and looks for ways to improve the process. Even non-machine-related factors, such as material drying, can be reviewed closely for areas of improvement. In fact, one can go so far as to create an instruction manual for each of the molds run. It includes checking the first and last parts in a job run for signs of warpage, flashing, mold wear, and other process maladies. One can also have a checklist for the auxiliary equipment used, which is a part of the work order.

TIP No. 4

Commit to Training

Sometimes mold set-ups are protracted simply because there are too few people in the shop qualified to execute a mold changeover. In even a small molding shop, it is not uncommon to have several machines due for mold set-ups at the same time. Yet many molders rely on just one or two specialists. That means presses may remain idle while specialists are bogged down during busy periods or difficult set-ups. This can be avoided by training machine operators to do mold changeovers. One can train 40% of its operators for this task. Not only can all changeovers be done in a timely fashion, but set-up times have also been reduced since machine operators are able to pitch in and help in all phases of the process. Shift supervisors now create ad hoc changeover teams of trained molding operators on a daily basis, rather than having only one person or one crew perform them. One can create a proven formula for executing changeovers: Always use two-person teams, regardless of press size. The team members have defined roles and work one on each side of the press.

TIP No. 5

Communicate Effectively

Production schedules change unexpectedly. This leaves many molding firms scrambling to address issues of who, what, where, when, and how right before a machine is due to be changed. Often the result is that the machine sits idle longer than necessary. One way to avoid this situation is to conduct daily production meetings. One can uses a "Manufacturing War Room" concept. Daily meetings are held between cross-functional teams to review and discuss the job schedule and make assessments of priorities and resources. The daily meetings help to anticipate and minimize unplanned glitches throughout the manufacturing sequence, including mold change-overs. Any problem that can affect part production, quality, and delivery is placed on a board in the Manufacturing War Room and is resolved within 48 hr. It pays to get as much feedback as possible from everyone associated with the mold-change process. Doing so helps ensure the process is continually honed. And you never know where the next good idea will originate.

TIP No. 6

Don't Neglect Maintenance

A common mistake among molders is to compromise on equipment maintenance. A broken ejector pin, stripped-out bolt hole on a platen, or a worn check ring will delay the successful start up of a mold.

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PLAST BENGAL	KOLKATA	13 TO 15 JULY-2018
IPLEX-18	HYDERABAD	3RD TO 6TH AUGUST-2018
INDPLAS'18	KOLKATA	30TH NOV TO 3RD DEC-201
PLAST SHOW	RAJKOT	16TH DEC TO 19TH DEC-
PLEXPO-2019	MUMBAI	17TH TO 20TH 2018 JANUARY=2019
INDIAPLAST	NODIA	28TH TO 4TH MARCH-2019
PLASTI WORLD	DELHI (PRAGATIMAIDAN)	5TH TO 8TH MARCH-2019
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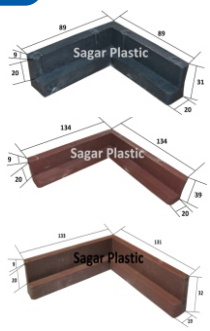

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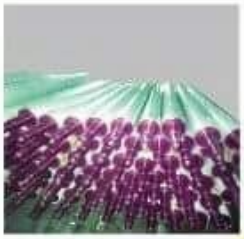



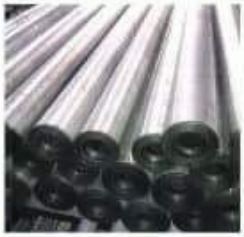









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