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THE ECONOMIC TIMES

POLYMERS

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INSIGHT

A NEW ERA OF
BOUNDLESS GROWTH

INTERVIEW

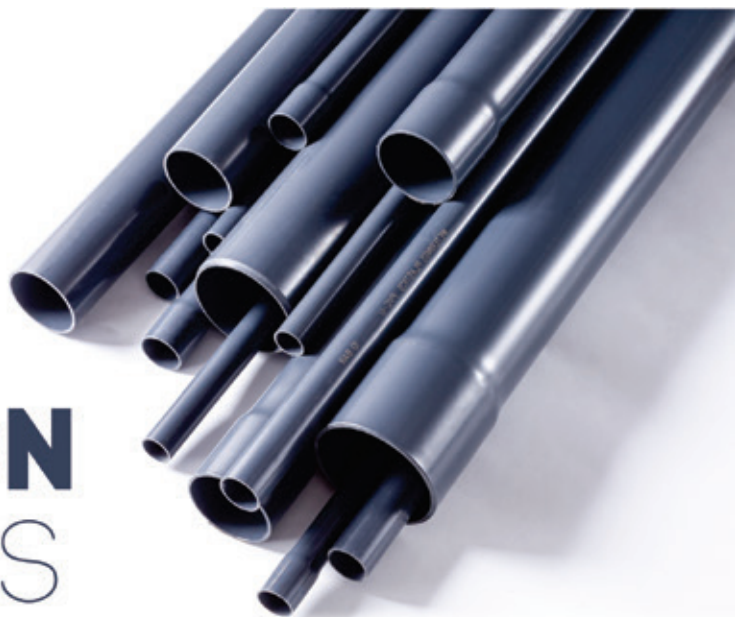
USHERING AN ERA
OF BIOPLASTICS

LEADERSHIP

LEARNING FROM
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Sustainability in the New Normal

If there is one thing that has remained unchanged despite the Covid-19 pandemic, then that is the significance of sustainability for human beings. Like it was with the 'old normal', the new normal must also include sustainability in its list of priorities. And one of the positives of the pandemic has been that it has made people more focused on solving problems and finding solutions. It has also made people and experts become 'more open' about plastics.

Well, nobody is turning a blind eye to the environmental damage caused so far due to poor waste management of plastics, but there is also a gradual change in perception of some people and experts who are now looking at plastics as 'part of the solution'. As consumers are becoming increasingly 'interested' and 'aware' about environment, this thought process is also shaping the way the plastics industry is evolving and developing.

Regulations world over have accelerated a move away from single-use plastics – and rightly so. However, it is critical that all future regulations are based on facts and science, rather than misinformation and emotions or vested interests. The true pursuit of sustainability demands a holistic approach to not one (plastics) but all materials available in the market with regards to the basics of environmental management (the three Rs of reduce, reuse and recycle).

It is time to aggressively move towards a value chain that is based on stronger and more informed engagement with the consumers rather than being unilateral. Plastic was and still is good! We need to work hard to keep this idea alive!

"There is also a gradual change in perception of some people and experts who are now looking at plastics as part of the solution."

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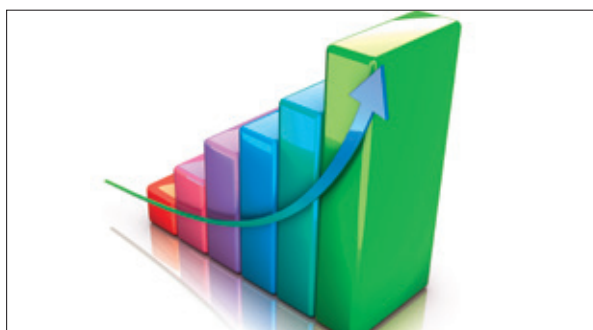
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Indian chemicals biz is a US\$300 bln opportunity: ICC

The Indian Chemical Council (ICC) and Boston Consulting Group have recently unveiled their whitepaper for the Chemicals industry: "Making India A Global Chemicals Powerhouse: Vision for the 2020s". The whitepaper highlights the significant latent potential in the Indian Chemicals industry, which could more than double to ~USD 300 billion by 2025 with the right combination of domestic and export tailwinds. The whitepaper further showcases the economic impact of achieving this: a reversal of India's Chemical trade deficit into a trade surplus, and the addi-



tion of up to 10 million direct and indirect jobs. According to Vijay Sankar, President, ICC "The Indian Chemical Industry is in a sweet spot of unrealized potential and tremendous opportunity. It should expe-

rience significant growth in the 2020s, driven by rising household incomes, the existing consumption gap & a huge export opportunity. While the shift will help increase "base" consumption across all industries, there will be a marked shift to higher specialty chemical consumption as categories premiumize. Currently, a large part of the domestic demand for specialty and downstream chemicals is served via imports—offering large headroom for local production. In addition, changing geopolitics offer the opportunity for India to emerge as a global production & export powerhouse."

FM announces Rs 73,000 crore stimulus



Union Minister for Finance & Corporate Affairs Smt. Nirmala Sitharaman has announced measures of Rs 73,000 crore to stimulate consumer spending in the economy in an effort to fight the slowdown due to COVID-19 pandemic following lockdown. Union Minister of State for Finance & Corporate Affairs Shri Anurag Singh Thakur, Finance Secretary Dr Ajay Bhushan Pandey, Department of Financial Services Secretary Shri Debashish Panda and Department of Economic Affairs Secretary Shri Tarun Bajaj were also present during the announcement of stimulus package. While announcing the demand stimulus package, Smt. Sitharaman said, "Indications are that savings of government and organised sector employees have increased and we want to incentivise such people to boost demand for the benefit of the less fortunate." The Finance Minister further said that if demand goes up based on the stimulus measures announced today, it will have an impact on those people who have been affected by COVID-19 and are desperately looking for demand to keep their business going. The Finance Minister stressed on the idea that today's solution should not cause tomorrow's problem. Smt. Sitharaman said that the Government does not want to burden the common citizen with future inflation and also not put the Government debt on an unsustainable path.

Indian pharma exports worth US\$ 20 billion

Union Minister for Chemicals and Fertilizers DV Sadananda Gowda has said India is one of the largest manufacturers and exporters of generic medicines across the world. Referring to India supplying these medicines to more than 120

countries across the world; he underlined that India thereby earned the reputation of reliable supplier of medicines. Gowda informed that India is the only country with largest number of US-FDA compliant Pharma plants outside of US.

Manjushree Technopack acquires Pearl Polymers

Manjushree Technopack Limited (MTL) has announced entering into a Business Transfer Agreement with Pearl Polymers Limited for acquiring the commercial operations and manufacturing facilities of their B2B vertical. This transaction is subject to customary closing conditions and regulatory approvals. The proposed acquisition of Pearl Polymers' B2B business will help MTL to consolidate their leadership position in the container segments, while reinforcing their technical strength. Sanjay Kapote, CEO of Manjushree Technopack Limited said – "The acquisition announced today is in line with our strategy to grow and diversify our business. Acquiring the B2B business from Pearl Polymers will allow us to consolidate our leadership position in the rigid packaging sector. Chand Sethi, CMD of Pearl Polymers Limited said, "This deal will allow us to focus and grow the well-known PearlPET brand to new levels. We expect to launch many new product lines in the future." With the consummation of the proposed transaction, Manjushree will have access to four of Pearl Polymers' production units and serve Pearls' existing customer base.



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NITI Aayog & Dutch Embassy sign statement of intent

NITI Aayog and Embassy of the Netherlands, New Delhi, signed a Statement of Intent (SoI) recently to support the decarbonization and energy transition agenda for accommodating cleaner and more energy. Through this collaboration, NITI Aayog and the Dutch Embassy seek a strategic partnership to create a platform that enables a comprehensive collaboration among stakeholders and influencers, including policymakers, industry bodies, OEMs, private enterprises, and sec-



tor experts. The focus of the partnership is on co-creating innovative technological solutions by leveraging the expertise of the two entities. This will be achieved through an ex-

change of knowledge and collaborative activities. Key elements include i) lowering the net carbon footprint in industrial and transport sectors ii) realise the target potential of natural gas and promote bio-energy technologies iii) adopt clean air technologies from monitoring to reducing actual particulates iv) adopt next-generation technologies, such as hydrogen, carbon capture utilization, and storage for sectoral energy efficiency v) financial frameworks to deliver and adopt climate change finance.

PM dedicates three key petroleum projects to the nation



PPrime Minister Narendra Modi dedicated to the nation three key projects related to the Petroleum sector in Bihar via video conferencing. The projects include the Durgapur-Banka section of the Paradip-Haldia-Durgapur Pipeline Augmentation Project and two LPG Bottling Plants. They have been commissioned by Indian Oil and HPCL, PSUs under the aegis of the Ministry of Petroleum and Natural Gas. Speaking on the occasion, the Prime Minister said the special package announced for Bihar a few years ago, focused much on the state's infrastructure. He said the special package given for Bihar had 10 big projects related to petroleum and gas worth Rs. 21,000 crore. He expressed happiness that he is inaugurating the Durgapur-Banka section (about 200 km) of an important gas pipeline project for which he laid the foundation stone about one and a half years ago.

Gulf Oil partners with S-Oil Corporation of South Korea

Gulf Oil Lubricants India Ltd. (GOLIL), has announced a long-term strategic partnership with S-Oil Corporation, South Korea, to exclusively manufacture and market their entire range of lubricants under the brand - 'S-Oil Seven' for the Indian market. The relationship which in the past has been built as key Term Partner on the base oil imports is now extended as the S-Oil lubricant products will soon be launched in India. It is the first-time ever that a S-Oil lubricant product is being manufactured outside of South Korea. Commercial production of S-Oil Seven recently began at Gulf Oil Lubricants' state of art production facility at Chennai, India. Ravi Chawla, MD & CEO, GOLIL said – "Our relationship with S-Oil gets even stronger with this opportunity as we will work together to launch new products and grow our market shares in India across segments, bringing in a range of technologically advanced products for Indian consumers looking for value creating solutions."

Tamil Nadu signs 14 MoUs worth Rs.10,055 crore

The Government of Tamil Nadu signed 14 Memorandum of Understanding (MoUs) worth Rs 10055 crore. These are in continuation with 42 MoUs worth Rs 31464 Crore in Q1 and Q2 that will generate 69712 jobs. MoUs signed with foreign and domestic companies will generate an additional 7000 new jobs in the state and will provide a fillip to the sustainable investment climate of Tamil Nadu. Tamil Nadu continues to attract investments in automobile and auto components and MoUs were signed with Apollo Tyres for Rs 505 crore, Hyundai Wia for Rs 109 crore and LS Automotive for Rs 250 crore. The state continues to attract electric mobility investments and has signed MoUs with Li-Energy for Rs 300 crore and Grinntech for Rs 90 crore. Dr Neeraj Mittal, MD and CEO of Guidance, the nodal agency for investment promotion and facilitation said "Under the leadership of our Hon'ble Chief Minister, Tamil Nadu has been the frontrunner in post-COVID investments in the country and shown how states can adopt and rebuild economies in the 'new normal'. Tamil Nadu's excellent industrial ecosystem, trained manpower, connectivity, connected supply chains and pragmatic policies allows investors to take advantage of global realignment of value chains."



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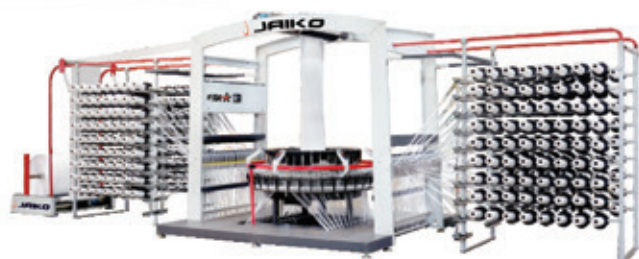
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Covestro to acquire DSM's coating resins business

Covestro has signed an agreement to acquire the Resins & Functional Materials business (RFM) from Royal DSM. By expanding its portfolio in the attractive growth market for sustainable coating resins, Covestro is taking a significant step in its long-term corporate strategy to strengthen its sustainable and innovation-driven businesses. Adding about EUR 1 billion in revenues and an EBITDA of EUR 141 million (2019), the integration of RFM is a substantial strategic growth opportunity to expand revenues of



the Coatings, Adhesives, Specialties (CAS) segment of Covestro by more than 40 percent to about EUR 3.4 billion (2019 pro-forma). The acquisition creates one of the leading

suppliers in the field of sustainable coating resins, with one of the most comprehensive and innovative product portfolios that enables a compelling customer value proposition. Covestro agreed to a purchase price of EUR 1.61 billion. Dr. Markus Steilemann, CEO of Covestro: "RFM enhances the growth trajectory of our business. By combining our strong innovation capabilities, sustainable product portfolios as well as complementary technologies and customer industries, we will unlock significant value."

DOMO Chemicals launches sintered carbon replacement



DOMO Chemicals has expanded its THERMEC range of enhanced polymers, with the introduction of a new solution for the replacement of sintered carbon in submersible pump thrust bearings applications. THERMEC S is a glass and mineral filled, lubricated polyphenylene sulfide (PPS) based material that offers outstanding abrasion and wear resistance properties to improve tool life. The product is not only cost-effective, but also offers excellent performance benefits,

when compared to sintered carbon. Due to its excellent processability, THERMEC S is suitable for both injection moulding and extrusion applications. "Sintered carbon thrust bearings have a long tradition of use within submersible pumps, but there is a risk of easy breakage during handling," says Tushar Parida, Country manager India at DOMO. "THERMEC S overcomes these issues by delivering on high compressive strength and temperature resistance, while also offering excellent mechanical performance, and low creep. It's an excellent addition to the THERMEC portfolio."

AmSty, INEOS Styrolution and Trinseo sign agreement

To accelerate driving the circular economy for styrenics forward, three of the world's leading polystyrene producers, AmSty, INEOS Styrolution and Trinseo signed a Joint Development Agreement (JDA) to jointly explore recycling options for polystyrene. AmSty, INEOS Styrolution and Trinseo are committed to a circular economy for polystyrene. This JDA represents the first global combined effort to explore advanced recycling technologies, optimize them for commercial use and call for all contributors along the value chain to make circularity of polystyrene a reality. The three companies are aiming at an economy where post-consumer polystyrene waste does not end up in landfills but is recognised as a valuable resource for the development of new materials for future use. All three companies have done their own independent research and have invested in various projects to further the commercialisation of advanced recycling capacity. This new joint effort allows all participants to share best practices and optimise recycling technologies for large-scale commercial use.

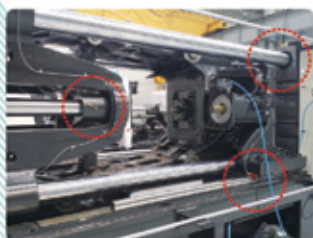
BASF to increase capacity for synthetic ester base stocks

BASF will almost double the production capacity for its synthetic ester base stocks at its site in Jinshan, China. The investment comes in response to the rising demand for high-performance lubricants in Asia Pacific. Synthetic ester base stocks are essential components in the formulation of high-performance lubricants providing several sustain-

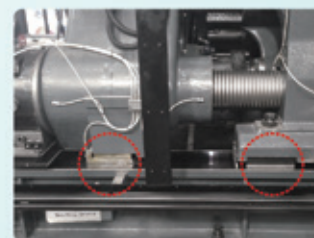
ability benefits. Fields of application include environmentally friendly refrigeration and air-conditioning, automotive as well as industrial lubricants. "The new production capacity for synthetic ester base stocks will bring additional security of supply for our customers particularly in the Asia Pacific region. Building on our backward integration into key

raw materials we will be leveraging the full strength of BASF as a leading and reliable component provider to the lubricant industry," explains Matthias Lang, VP, Business Management Fuel and Lubricant Solutions Asia Pacific and Performance Chemicals Greater China. "We are excited to serve our customers even better and grow together."

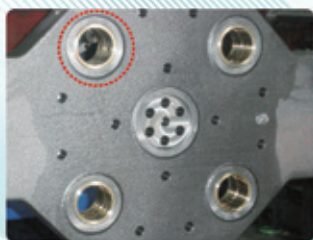
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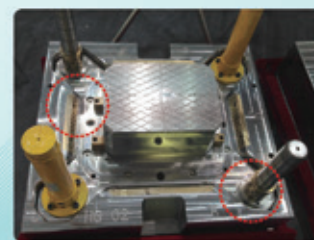
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New flame-retardant thermoplastic composite materials

Lanxess has introduced new flame-retardant thermoplastic composite materials with a polyamide 6 matrix. Tepex continuous-fiber-reinforced thermoplastic composites from Lanxess are characterized by their high inherent flame-retardant properties. One of the reasons for this is their high fiber content. They therefore already pass many of the flammability tests required for typical applications without flame protection. However, for some applications – such as housings for control cabinets or components of high-voltage batteries for electric vehicles – a V-0 classification in the UL 94 flammability test from



the US testing institute Underwriters Laboratories Inc. is often mandatory. For such cases, Lanxess has developed three new halogen-free, flame-retardant Tepex variants with a polyamide 6 matrix.

Lanxess to expand capacity for Oxone monopersulfate

Specialty chemicals company Lanxess is planning to expand its production capacity for Oxone monopersulfate by around 50 percent. To this end, the company intends to invest a lower double-digit million euro sum in its production facility in Memphis, USA. Lanxess uses Oxone monopersulfate as the main active ingredient in many of its Virkon and Rely+On disinfection products. Demand for these products has increased significantly in recent months due to, amongst others, the outbreak of African swine fever as well as the corona pandemic. The company also sells Oxone as a powerful oxidizing agent for numerous other applications. The capacity expansion is expected to be completed in the second half of 2022. “Disinfection products are important growth drivers in our highly profitable Consumer Protection segment. We expect a sustainable high level of demand even after the corona pandemic,” said Matthias Zachert, Chairman of the Lanxess Board of Management. Michael Schäfer, head of Lanxess’ Material Protection Products business unit, added: “We are also seeing a growing demand for Oxone in the water treatment sector as well as from the electronics and paper industries.”

DSM and Nedcam join hands for 3D printing

Royal DSM and Nedcam have announced their collaboration to improve access to scalable Fused Granulate Fabrication (FGF) 3D printing. Nedcam will be offering FGF 3D printing using DSM materials and the two companies will explore new applications in tooling, large-size and circular end-use parts. Collaborating with DSM on material and 3D printing technology, Nedcam will offer commercial 3D printing production services to manufacturers looking for large-size applications, using DSM's optimized pellet materials. The two companies



CEAD AM Flexbot 3D printer

will also collaborate to develop and test new materials, processes and applications and will bring innovative solutions to markets requiring large-

size 3D printing, such as marine, renewable energy, construction and infrastructure. They are currently collaborating closely with Royal HaskoningDHV for slicing of structural elements. The cooperation also opens the door for the two companies to realize their common ambition to drive manufacturing into more sustainable and circular processes. Nedcam currently produces plugs and molds from various materials, including glass fiber reinforced composites and steel, often for single or limited use, resulting in tons of waste every year.

Avery Dennison sells offset sheets biz to Torraspapel

Avery Dennison Corporation has reached an agreement to sell its Offset Sheets business in the Europe - Middle East - North Africa (EMENA) region to Torraspapel. Torraspapel is part of Lecta, a European manufacturer of coated woodfree and specialty paper products headquartered in London. The transaction is subject to competition approval from the German Federal Cartel Office. "This sale is part of the strategy for Avery Dennison to focus on categories where we are best positioned to deliver high growth and potential for our customers, with a particular emphasis on our Visual Communication (VISCOM) business. We believe this sale is in the best interests of both Avery Dennison and of our Offset customers given Lecta's strength in paper-based products," said Fred Noel, vice president Avery Dennison Graphics Solutions EMENA. "We trust that Lecta will be an excellent partner going forward." The transaction will involve Lecta taking over the manufacture and sale of Avery Dennison's portfolio of FASSON and JAC branded self-adhesive papers and films in EMENA. Lecta will manufacture these under a special limited licensing agreement with Avery Dennison, keeping the FASSON and JAC brands available through the existing network of distributors.

Total announces the acquisition of Lubrilog SAS

Total Lubrifiants has announced the acquisition of Lubrilog SAS. Lubrilog SAS is a French company, based in Romans sur Isère, specialized in the formulation and production of very high-performance synthetic lubricants. This acquisition will create value for both Total and its customers. It will strengthen Total Lubrifiants' position in the industrial lubricants market bringing a high level of expertise for critical applications in some key sectors such as mining or cement and materials. "I am glad to welcome Lubrilog in the lubricants team of Total", says Pierre Duhot, Senior Vice President at Total Lubrifiants. "This step is fully aligned with our strategy to develop technologies and to be the partner of choice of our customers. This range of products is also in line with Total's Climate Strategy and the Group's ambition to get to net-zero emissions by 2050 and to reduce the carbon footprint of its customers."

Henkel sees organic sales growth of +3.9 percent in Q3

Henkel delivered strong organic growth of 3.9 percent in the third quarter. Sales figures reached five billion euros and all business units contributed to the good performance. Commenting on the results Carsten Knoble CEO Henkel said, "The organic sales development in the third quarter reflects our robust, diversified portfolio with successful brands and innovative technologies

for our customers in the industrial and consumer goods business. We are particularly pleased that all our business units showed a positive development. This was partly due to catch-up effects from the second quarter, which was heavily burdened by the corona pandemic. We expect to feel the negative effects of the pandemic in the fourth quarter as well, but in our forecast for the year we

are not assuming a further extensive lockdown, as we saw in many countries especially in the second quarter. All in all, we are convinced to be on the right track with our strategic focus on purposeful growth and to emerge stronger from the crisis. Our special thanks go to our employees around the world, whose great commitment is making a decisive contribution to this."

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SABIC deepens collaboration with Brückner

SABIC has announced its recent collaboration with a leader in film manufacturing technologies, Brückner Maschinenbau. This industry-leading innovation combines SABIC's certified circular BOPP and BOPE materials with Brückner's world leading manufacturing technology for flexible packaging. The collaboration aims to encourage flexible packaging manufacturers to use SABIC's TRUCIRCLE solutions for certified circular polypropylene (PP) and polyethylene (PE) to create more sustainable products.



Dr. Stefan Seibel, Head of New Technologies, Brückner Maschinenbau, said: "This is a huge step forward in our journey towards closing the loop across the plastics value chain and

working together to create a circular economy." Mark Vester, Circular Economy Leader at SABIC, said: "With Brückner's machinery and processing expertise, converters can take full advantage of our innovative TRUCIRCLE solutions and integrate it into their flexible packaging. SABIC and Brückner are working together to find further solutions to improve the recyclability of packaging films and enable manufacturers to create more sustainable products which will help to drive forward the circularity of our industry."

Lindner Recyclingtech to double its capacity



Lindner Recyclingtech, the specialist in waste processing and shredding technology, broke ground for its new factory premises recently. The company is investing in a new site covering over 45,000 sq m. In addition to a state-of-the-art manufacturing facility, the new headquarters will become an international Centre of Excellence for waste recovery and recycling – in keeping with the circular economy concept. 'At the moment, the industry is undergoing a major change. Recycling rates and quality requirements for end materials are constantly rising and so we are continuing to develop new systems. Systems that enable our clients to meet these requirements,' explains CEO and owner Manuel Lindner during the groundbreaking ceremony at the future Spittal-Ost headquarters. 'To ensure that we can continue to do this efficiently, we are doubling our capacity and relying on the latest production technologies that meet industry 4.0 standards.' Besides a robot-assisted manufacturing facility and a modern logistics centre, an academy focusing on recycling technology will be built on the 45,000 square metre site.

Lindström acquires the Chinese operations of Cintas

Finnish multinational textile services group Lindström is to acquire the entire Cintas operations and personnel in China to support the realization of its vision 2025 in Asia. The new entity will be a clear market leader in workwear rental and cleanroom business in China's fast-growing market. The acquisition will also increase Lindström's geographical reach in the area and expand the service portfolio to new service lines. "We have been gradually expanding our market share in the market since establishing first operations in China in 2006, and our aim is to be the leader of offering sustainable rental textiles to our customers in Asia. The new entity will double our size and make us a more prominent player in one of our core markets", says Juha Laurio, CEO of Lindström Group.

Birla Carbon & CHASM sign strategic partnership

Birla Carbon and CHASM Advanced Materials Inc. have elevated their joint development agreement into a strategic partnership to commercialize novel nanomaterials to benefit various market segments including high-performance tires, conductive plastics, novel coatings, and next-generation batteries. Announcing Birla Carbon's strategic investment in CHASM, Dr. Santrupt B. Misra, Chief Executive Officer, Birla Carbon, Director, Chemicals, and Director, Group Human Resources, Aditya Birla Group, said, "We are proud to become a strategic technology partner to CHASM, building on our ongoing joint development agreement. Birla Carbon's investment will drive the commercialization of NTec™ nanomaterials, strengthening our ties with CHASM and securing the future of this game-changing technology". He further added, "This partnership is an excellent example of how Birla Carbon 'Shares the Strength', by strategically investing in the future of the industry." Birla Carbon and CHASM announced a joint development agreement in November 2019.

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LIMING CHEN APPOINTED TO SUPERVISORY BOARD OF BASF SE

At the request of BASF SE, the Ludwigshafen local court (Amtsgericht) appointed Liming Chen (60), Chairman of IBM Greater China Group, to the Supervisory Board of BASF SE by way of a resolution dated October 8, 2020. The appointment became necessary after Dr. Alexander C. Karp, CEO Palantir Technologies Inc., resigned from the Supervisory Board at the end of July 2020 for professional reasons. Liming Chen is Chairman of IBM Greater China Group, based in Beijing, China, a position he has held since 2015. Liming Chen was born in China and is a Singaporean citizen. He brings to the Supervisory Board his expertise and experience in information technology and the chemical industry, and in leading and transforming business processes at international companies in Asia. The Supervisory Board intends to propose Liming Chen, the Supervisory Board member now appointed by the court, to the next Annual Shareholders' Meeting of BASF SE on April 29, 2021, for election for the Supervisory Board's remaining term of office, which ends on conclusion of the Annual Shareholders' Meeting in 2024.

DR. BARRY ARKLES APPOINTED CEO OF GELEST INC.

Gelest Inc. has announced recently that Dr. Barry Arkles, has been appointed the Chief Executive Officer (CEO) of Gelest Inc. effective immediately. Dr. Arkles is also the Chairman of the Board of Gelest, the company he co-founded in 1991. On October 1, 2020 Gelest was acquired by Mitsubishi Chemical America, Inc. "Dr. Arkles' comprehensive knowledge of the business and technology of Gelest provides excellent continuity as members of the talented leadership team join to support the continued growth of the company in the key markets served: medical device, semiconductor, personal care, pharmaceutical and diagnostic science," remarked Steve Yurich, President of MCA. Dr. Arkles stated, "My primary objective will be to deploy the technological strengths of Gelest and its parent Mitsubishi Chemical in service to the customer base that depends on us and the communities that we serve. With the support of our reliable and talented employees, I anticipate a smooth transition into the Mitsubishi Chemical organization while sustaining the continued growth of Gelest." Dr. Arkles' appointment follows the resignation of Ken Gayer as CEO of Gelest.



PIRAMAL GLASS APPOINTS SUDIP MAZUMDER AS GLOBAL CDIO

Piramal Glass has appointed Sudip Mazumder as Vice President, Global Chief Digital & Information Officer (CDIO). Mazumder joins Piramal Glass from Larsen & Toubro (L&T), where he played the role of Deputy Head Digital. At Piramal Glass, he will be responsible for reinforcing digital transformation journey and lead the next phase of Digital 2.0 that the company has embarked on. This will include setting up Advanced Analytics Technology stack and building a dedicated team of professionals and run a Digital Center of Excellence & Academy through which business use cases will be driven using Artificial Intelligence, Machine Learning and Deep Learning (AI/ML/DL) to impact the bottom-line. Mazumder will report to Samit Datta, Global Chief Supply Chain & Technology Officer, Piramal Glass. Vijay Shah, Vice Chairman, Piramal Glass, said, "With the appointment of Sudip as CDIO, we are hopeful to catalyse the journey that will build the right technology and team to deliver value."

APOLLO TYRES APPOINTS HIZMY HASSEN AS CDO

Apollo Tyres has appointed Hizmy Hassen to the newly created position of Chief Digital Officer. Hizmy will be based out of the company's London office, and will be responsible for leading the strategy and operations of Apollo Tyres' digital journey, including responsibility for Information Technology. Commenting on Hizmy Hassen's appointment, Neeraj Kanwar, Vice Chairman & Managing Director, Apollo Tyres Ltd, said, "With digitalisation being a key focus area for the company, especially considering the challenges that we face today due to the global pandemic, we have created this position of Chief Digital Officer. Hizmy, who comes with 30-years of rich experience, will be the ideal person to develop and execute the future architecture roadmap and evolve the IT delivery model, through partnerships with cross-functional leaders across Apollo Tyres." Hizmy's last assignment was with Coats PLC, prior to which, he was with Unilever. In over 20 years with Coats he has worked across areas of Supply Chain, Information Technology and Digital Enablement. Hizmy Hassen will be reporting to Neeraj Kanwar, Vice Chairman and MD, Apollo Tyres Ltd.

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BW INTEGRATED SYSTEMS PROMOTES HEATHER SPITLER

BW Integrated Systems, a Barry-Wehmiller packaging company, has announced that Heather Spitler has been promoted to Vice President of Culture and People Development (CPD). In her one year with the company, she has made significant contributions, while focusing on creating harmony between people and performance, a key business goal. Spitler has helped to guide the company through the unprecedented challenges associated with the COVID-19 pandemic. Previously serving as the Director of Culture and People Development, she has been an integral member of the executive leadership team, partnering with all functions to identify potential opportunities for team members and the business. Spitler joined BW Integrated Systems in 2019 after spending much of her career focusing on people development and effective organizational design structures with some of North America's leading manufacturing and industrial businesses. During her career, she has led human resources teams across multiple manufacturing sites and has supported various disciplines for companies, including Signode Packaging Systems and Ideal Industries Inc.



DR. HENNING KAGERMANN WINS HONDA PRIZE 2020

The Honda Foundation has announced that the Honda Prize 2020 will be awarded to Dr. Henning Kagermann, Chair of the Board of Trustees, acatech - National Academy of Science and Engineering (Germany), for pioneering the principles of Industrie 4.0 to connect the digital world with reality and declaring to the world the need to examine specifically how society can shape this paradigm shift for fostering economic growth and social benefit. Dr. Kagermann became the lead author of "Recommendations for Implementing the Strategic Initiative Industrie 4.0", published in 2013, which proposed the need for total industrial optimization with digitization in all industries, including manufacturing, distribution, healthcare, social infrastructure and agriculture. On that basis, the Platform Industrie 4.0 has been founded as one of the future projects in the "German Action Plan High-Tech Strategy 2020". In his function as Global Representative Advisor

of the Platform Industrie 4.0, Dr. Kagermann supported and formed numerous bilateral and multilateral cooperation and strengthened the international debate on digital transformation.

SUZLON GROUP APPOINTS ASHWANI KUMAR AS GROUP CEO

Suzlon Group has appointed Ashwani Kumar as its Group CEO. Ashwani Kumar, with over three decades of experience in the areas of projects, business development and finance at leading Indian Power and Infrastructure companies is a Mechanical Engineer, and an alumnus of IIM Bangalore and The Harvard Business School. Having led construction of over 6,000 MW of power projects from bidding to commercial operations, Ashwani Kumar has proven expertise in closing and managing large, complex contracts, effectively leveraging corporate affairs and leading transformations resulting in agile and responsive organizations.

Tulsi Tanti, Chairman and Managing Director, Suzlon Group said, "Ashwani Kumar brings with him rich experience of power and infrastructure sectors in India. Renewable energy has transformed into a mainstream source of energy offering power plant scale solutions, making his experience highly relevant for us. Having worked extensively in infrastructure as well as in utility management, Ashwani is the right fit for the organization given the current context of new opportunities for wind and renewable energy in India and all over the world."

ABB TO DOUBLE WOMEN IN MANAGEMENT POSITIONS

ABB has launched its new "Global Diversity & Inclusion Strategy 2030" through which it plans to double the proportion of female managers worldwide over the next ten years. With this step, ABB aims at reaching a 25 percent share of women in senior management positions from currently 12.5 percent. The target forms part of ABB's broader ambition to foster inclusion and equality across all areas of diversity, including gender, abilities, generations, ethnicity, and LGBTQ+. ABB will be offering employees inclusive leadership trainings and development programs, mentoring programs and learning interventions to foster an inclusive culture. "Building and fostering a culture of diversity and inclusion is a key priority for ABB and represents a foundation for innovation and better decision making," said Björn Rosengren, CEO of ABB. "This is not only the right thing to do, but also a means to further improve our business performance as diversity becomes increasingly important for both internal and external talents, customers, as well as investors."

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Coupled to future

Continental and system supplier aft automotive are setting up a joint venture to manufacture couplings made of high-performance plastics for the future of mobility.

Continental and aft automotive are setting up a joint venture to manufacture couplings made of high-performance plastics for the future of mobility. The partners have signed a relevant agreement to create a 50/50 joint venture. The two companies have already been jointly developing special couplings that connect the cooling circuit or the turbocharger/charge-air cooler with units in the engine compartment since 2016. This successful development partnership is now being further expanded by setting up a joint venture.

"No lines, no hoses, no future mobility. Our lines and connectors remain vital lifelines in cars – both for hybrid and electric vehicles and for IC engines," said Philip Nelles, head of the Mobile Fluid Systems business unit and therefore responsible for automotive lines and hoses at Continental. He adds: "The close collaborative partnership with aft automotive will enhance our skills as a system supplier and enable us to consistently expand our technological expertise in high-performance plastics for the future. The new company is planned to create more than 30 new jobs by 2025. Completion of the joint venture is subject to the approval of the relevant anti-trust authorities."




| Future potential: Sophisticated thermal management extends the range of e-vehicles.

Future potential

Unlike conventional vehicles, electric vehicles require multiple cooling circuits with sophisticated thermal management. Batteries in electric vehicles achieve optimum operating efficiency at temperatures between 20 degrees Celsius and 40 degrees Celsius. This temperature span enables long ranges, allows the batteries to work more efficiently and extends battery lifetimes. For that reason, in similar fashion to drive and power components, the batteries have to be either cooled or heated, depending on the outside temperature. That results in complex circuits that significantly increase the demands on the individual components. The weight of the new hose generation is also being further reduced. Smaller line cross-sections, for instance on the high-pressure side and in the battery cooling system, mean that less coolant is needed when compared with previous systems.

The right mixture of rubber, polyamide and aluminium materials and an ingenious line geometry ensure the system has adequate inherent stability. Special lines and couplings made of high-performance plastics are developed for this.

Up till now, line systems have often been made of rubber or stainless steel. Especially in vehicles with hybrid drives or electric motors, though, there is a growing trend towards replacing rubber with premium technical plastics. This has allowed the developers to achieve further weight reductions while simultaneously improving performance: Plastic components reduce vehicle weight and thus help lower fuel consumption and cut CO2 emissions. At the same time, the downsizing of space in IC engines is changing the demands on connectors and lines because lighter, quieter and higher-power drives result in increased pressure and thermal loads. For example, auxiliary unit components in the latest generation of IC engines have to withstand continuous temperatures of 160 degrees Celsius for over 3,000 hours with temperature peaks of up to 210 degrees Celsius. High-performance plastics such as heat-stabilized polyamide are able to meet these demands in full.

"Our components for safety-related systems are manufactured fully automatically and undergo extremely rigorous product tests; these ensure operational reliability, durability and efficiency. We have access to every system in-house ranging from a state-of-the-art 3D printer for prototyping to the test area for series production. Our joint venture will combine our know-how and experience in the future," declares aft founder and CEO Dirk Kramer. 

"NO LINES, NO HOSES, NO FUTURE MOBILITY. OUR LINES AND CONNECTORS REMAIN VITAL LIFELINES IN CARS – BOTH FOR HYBRID AND ELECTRIC VEHICLES AND FOR IC ENGINES." - PHILIP NELLES, HEAD OF THE MOBILE FLUID SYSTEMS BUSINESS UNIT, CONTINENTAL

The return of the economy

Showing remarkable resilience in the last few months, the Indian economy is on its way back to a clear growth trajectory with firm signals of further improvement, a latest ASSOCHAM Assessment on State of Economy (AASE) pointed out.

Braving the unprecedented global health crisis, the Indian economy has shown a remarkable resilience in the last few months. Lead indicators such as manufacturing PMI, exports, rail freight and energy consumption are returning to a clear growth trajectory with firm signals of further improvement, a latest ASSOCHAM Assessment on State of Economy (AASE) pointed out.

“Be it India’s Purchasing Managers’ Index (PMI - Manufacturing) or PMI for Services, robust recovery is visible. The PMI for Manufacturing expanded to 56.8 in September 2020, the highest since January 2012. The PMI for Services expanded for the fifth straight month in September to 49.8 from 41.8 in August. In other words, according to the outlook measured by the best-tracked global gauge, about 57 per cent of purchase managers for manufacturing and about 50 per cent for services expect the two vital pillars of the economy to expand,” AASE noted.

Agriculture, the third and the most crucial pillar of the economy, had kept the banner high, ensuring that the country had enough food security to feed its 1.3 billion people.



The latest trade data shows how rice exports jumped by a massive 92 per cent in September. “We not only ensured food security for ourselves but are also emerging as major food suppliers to the world. A similar trend in exports of drugs and pharmaceuticals was observed, with the sector showing over 24 per cent growth in September exports.”


Likewise, the chamber’s assessment pointed towards a further pick up in the coming months. “As a nation, we are giving a solid fight to Covid-19 pandemic. With the unlocking of the economy almost complete, people are returning to work, wearing masks and maintaining so-

cial distancing. However, a continuous campaign by the Centre, states and the local Governments would be required to reinforce these habits further,” ASSOCHAM secretary general, Deepak Sood said.

He also stated that undaunted by the health emergency, the Government under the leadership of Prime Minister Narendra Modi, has pressed the accelerator for reforms in labour laws, agriculture, defence production and incentives to domestic manufacturing.

Collection for the Goods and Services Tax (GST) at Rs 95,500 crore for September showed year-on-year improvement of four per cent, reversing from a negative trend for the previous six months. As more and more services reopen and the consumers learn more about dealing with the pandemic, the GST collections are expected to pick up further.

The rail freight, yet another critical indicator, showed a 15 per cent growth YoY in September. Similarly, annualised power consumption was up 4.6 per cent for the month at 113.5 billion units. Exports too have returned to the positive territory, logging in 5.27 per cent annualised growth at USD 27.4 billion for September.

“As we have been pointing out, there would be a marked improvement in the third and fourth quarter. With the festival season kicking in, the consumer spending has started showing positive signals. A cautious optimism should soon replace the entire cash conservation mind-set,” Sood said, adding once the vaccine is in place, the optimism would be pronounced. 

“AS A NATION, WE ARE GIVING A SOLID FIGHT TO COVID-19 PANDEMIC. WITH THE UNLOCKING OF THE ECONOMY ALMOST COMPLETE, PEOPLE ARE RETURNING TO WORK, WEARING MASKS AND MAINTAINING SOCIAL DISTANCING. HOWEVER, A CONTINUOUS CAMPAIGN BY THE CENTRE, STATES AND THE LOCAL GOVERNMENTS WOULD BE REQUIRED TO REINFORCE THESE HABITS FURTHER.”

ASSOCHAM secretary general, **Deepak Sood**

Steady recovery in H1

For the first time since the advent of the pandemic in the country in early 2020, India Inc is now estimating a capacity utilisation of more than 50 percent in the second half of this financial year.

A steady recovery of the Indian economy is on the anvil as corporate India restarts business and economic activity with lockdowns being increasingly relaxed in many parts of the country. For the first time since the advent of the pandemic in the country in early 2020, India Inc is now estimating a capacity utilisation of more than 50 percent in the second half of this financial year.

It is important to allow a complete opening up of the economy for demand to pick up which in turn will propel capacity utilisation. CII has been working closely with states and city corporations to bring down uncertainty over the opening protocol. The uptick in demand is expected to gain momentum in the coming weeks with the festive season round the corner.

CEOs of top 115 companies who met at CII's National Council (its apex board), indicated revival of positive business sentiment and gradual rise in expected corporate performance. The CEOs who deliberated on a virtual platform had joined from across the country earlier this week. CEOs of the top companies who took the poll included representatives across sectors from metals and mining to manufacturing, auto, pharma, health, energy,



infrastructure, construction and leading services sector including ITES, health hospitality tourism and e commerce. The apex body also had large representation of the medium and small sector apart from start-ups.

The unlocking of almost all economic activities along with the reform and revival measures announced by the Government and RBI have contributed to the gradual improvement in business sentiments in the second half of the current financial year. While in most cases, the performance – revenue or capacity utilisation – is estimated to be lower than the comparative figures in 2019-20, a large percentage of the CEOs polled have shown confidence in the days ahead indicating that the worst may be behind.

On consumer demand, while 32 percent of the CEOs are hoping for better prospects and another 27 percent of them expecting no

change when compared to the second of last year. However, only 31 percent of the CEOs expected their revenue growth to be in the positive territory in the second half of current financial year compared to last year as far as revenue growth is concerned. On exports, 40 percent of the CEOs expected better prospects on exports and 24 percent of them expect no change in prospects during second half of current year when compared to same period last year.

Apart from the Agri-sector that has been in the positive territory there are now clear indications of a smart recovery in some sectors like automobiles, FMCG, consumer durables and construction equipment.

The FMCG sector has been sequentially improving with each month looking better than the previous month and demand in semi-urban and small towns is estimated to be back at pre-COVID levels except in urban areas like Mumbai, Pune, Chennai, etc. where it is still picking up. A similar story is playing out in the consumer durables sector where demand is expected to grow by 20 percent by Q3. Consumer Durables sector is witnessing a strong demand, with double digits growth in August. Washing machines, refrigerators, TVs especially large TVs, kitchen appliances, lighting, etc. are all doing well. However, supply side constraints may create challenges in meeting this demand if there are restrictions imposed on movement of goods and services.


Paper board and Packaging sector, which mirrors the aggregate demand in the economy is back to

“THE UNLOCKING OF ALMOST ALL ECONOMIC ACTIVITIES ALONG WITH THE REFORM AND REVIVAL MEASURES ANNOUNCED BY THE GOVERNMENT AND RBI HAVE CONTRIBUTED TO THE GRADUAL IMPROVEMENT IN BUSINESS SENTIMENTS IN THE SECOND HALF OF THE CURRENT FINANCIAL YEAR.”

“APART FROM THE AGRICULTURE SECTOR THAT HAS BEEN IN THE POSITIVE TERRITORY THERE ARE NOW CLEAR INDICATIONS OF A SMART RECOVERY IN SOME SECTORS LIKE AUTOMOBILES, FMCG, CONSUMER DURABLES AND CONSTRUCTION EQUIPMENT.”

about 90 percent of pre-COVID levels. The retail is showing some interesting trends because even though footfalls have been low, the ticket size of purchases have gone up with the economy opening. The Automotive sector too is seeing a demand pick up. The Two/Three/Four Wheelers are doing relatively better in August with the Four-wheeler segment witnessing a 15 percent growth in August. Tractor sales in the month of August have been extremely good - the industry, which is a large contributor to the GDP, has been able to make up for lack of sales in April and May.

Most high-frequency data points have shown a continued normalisation in activity levels in September 2020. The most promising sign is the turn-around in outbound shipments for the first time in seven months with merchandise exports expanding by 5.3 percent in September as per the provisional official trade data. In addition, weekly vehicle registrations continue to increase on a year-on-year basis in September, while weekly CMIE unemployment rate has continued to decline and is now below the pre-lockdown levels. Google mobility indicators have also improved with a rise in workplace-related and grocery/pharmacy trips. The news of the first advance estimates of kharif crop topping a record 144.5 million tonnes has also brought much cheer.

According to CII the Governments both at the centre and State would need to focus on livelihoods in addition to lives and hence efforts need to be made to stall the practice of sudden and adhoc lockdowns announced by States as well as districts. These not only further disrupt the revival of economic activities but also do not yield the desired results on lives either. 



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Forest Essentials partners with Reliance Industries

Forest Essentials has been strengthening its policies towards eco-friendly packaging and organised recycling by partnering with Reliance Industries Ltd. (RIL). RIL will undertake recycling of waste plastic packaging for Forest Essentials products and convert the plastic into high-quality eco-friendly materials. Through this association, Forest Essentials will set up a collection facility in each of their stores across the country, starting with a few cities and slowly expanding to a PAN India presence. Customers will be encouraged to drop empty jars and bottle of the Brand at select stores via an empties collection and reward programme. Reliance will then effectively re-purpose the recyclable plastic processing it into secondary applications. Vipul Shah, COO, Reliance Industries Ltd. Petrochemicals Business said, “We encourage entrepreneurs to promote organised recycling and our partnership with Forest Essentials is a step in that direction.”



Conagra Brands improves sustainability of Swiss Miss Packaging

Conagra Brands and Berry Global have announced a new package design for Conagra's Swiss Miss Hot Cocoa line, representing the first major hot cocoa brand to move from round canisters to a more eco-efficient recyclable cube. Created in partnership with Berry Global's Blue Clover Studios, the new light blue easy-grip container is made of recyclable plastic with a wraparound in-mold label and a space-efficient tapered cube design that, based on an analysis conducted by Berry Global, reduces the carbon footprint associated with manufacturing and transporting the hot cocoa containers by 15 percent. The new package design will initially be used for Conagra Brands' 38-ounce size Swiss Miss Milk Chocolate Hot Cocoa Mix. The new Swiss Miss light blue easy-grip container is made of recyclable plastic with a wraparound in-mold label and a space-efficient tapered cube design.



Constantia brings a fully recyclable packaging

Ahmedabad based Nuvae Healthcare is the newest customer of Constantia Flexibles to bring the recyclable flexible packaging solution EcoLamPlus to consumers. Nuvae Healthcare handcrafts has launched one of its most important products the 'GOSAN Hand Sanitizer' in small batches. Nuvae and Constantia Flexibles joined forces for a complete recyclable packaging made of EcoLamPlus. EcoLamPlus laminate is one of Constantia Flexibles' products in the monopolymer EcoLam packaging family based on PE.

Ice Cream Tubs with certified circular polypropylene

Ice Cream brand Magnum has announced the roll out of more than seven million ice cream tubs made with certified circular polypropylene from SABIC's TRUCIRCLE initiative that uses feedstock made from recycling used, mixed plastic. The launch represented the “world's first” tub within the ice cream industry that contains recycled plastic and that aims to contribute towards the



challenge of keeping plastic waste out of the environment and in the value chain. Magnum is the first to

use recycled plastic within the ice cream industry and after a successful pilot launch in Spain, Belgium and Netherlands last year, the full roll out across all European countries is another exciting step. New Magnum tubs have been developed in close collaboration of Unilever and SABIC. SABIC has developed a new polypropylene impact copolymer for frozen food packaging.

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Transformation Time

The year 2019-2020 has been exciting as it was a transformation year for the company, and it ventured into the journey from just being a single channel to multi-channel brand, says **Deepak Chhabra**, Managing Director, Tupperware India

By Niranjan Mudholkar

Would you say the Covid-19 outbreak has been the biggest leadership challenge for you? Why?

Leadership is a huge responsibility, as the organisation and its people entrust their future in your hands and believe in your capability to safeguard their interest. This role evolves and poses new challenge each day.

Covid-19 has changed the way the world works and has made some fundamental and strategic shifts for businesses to survive and thrive in a new normal. Few months of lockdown were full of challenges as for any other corporate player, but at Tupperware, we believe that every challenge comes with a silver lining which opens doors for new opportunities. The evolving consumer demands emanating from this changing scenario are in sync with the ethos and values of our brand as millions of people are still spending 'More Time at Home'. We redefined our priorities and adopted digital solutions to stay connected with the world as one big family separated by distance but united by our spirit of

positivity and hope. From launch of initiatives like social selling, to home delivery services, to extending support to store managers, to extending support to our employees, the brand left no stone unturned in standing tall with all its stakeholders. We also adopted new ways to engage with existing and potential customers and stood strongly in tough times across platforms.

How did it (Covid-19) impact the overall Tupperware India business and operations? What have been the key learnings?

Covid-19 impacted businesses across the world but rising to the occasion with an appropriate response was need of the hour. Amid the Covid-19 crisis, we at Tupperware invested time, effort, and resources in revitalising the business operations to suit the external eco-system in line with government guidelines. We refashioned our work approach for the direct sellers, retailers, and distributor's network via strategic digital shift; offered related trainings and

"WE BELIEVE PLASTIC IS NOT BAD; IT IS THE WAY IT IS USED AND DISPOSED. SINGLE-USE PLASTICS (SUP) IS A RISK TO OUR HEALTH AND CHOKES OUR ENVIRONMENT. THE IRRESPONSIBLE BEHAVIOUR OF MANKIND HAS MALIGNED THIS MATERIAL WHICH HAS PROVED TO BE A BLESSING IN MORE WAYS THAN ONE."



tech enabled solutions for them to transition smoothly through this demanding and dynamic phase. Also, as the external ecosystem became conducive post Covid, Tupperware went all out to reinstate its retail operations. Unlike many businesses which reduced / retracted retail presence, Tupperware launched new exclusive brand stores across 10 cities, with national count of Tupperware outlets reaching a figure of 64. To

keep the momentum going, Tupperware plans to add 100 additional new brand outlets within 2020.

In terms of business growth and revenue, before the Covid-19 pandemic hit us all, for the calendar year 2020 we were achieving an average growth rate of around 15 percent in Q1 2020, till March. The months of April 2020 and May 2020 were definitely the most challenging months as the external environment was

extremely unsettling and unpredictable, but with the improving situation, we are expecting a 10 percent growth for the year 2020. Direct Selling continues to be the major contributor and the core channel for the company with 80 percent revenues coming from it. E-tail and retail contributes to about 12 percent and 8 percent respectively. To accelerate business, a multi-channel marketing festival, TupperFest was strategically



“THE MONTHS OF APRIL 2020 AND MAY 2020 WERE DEFINITELY THE MOST CHALLENGING MONTHS AS THE EXTERNAL ENVIRONMENT WAS EXTREMELY UNSETTLING AND UNPREDICTABLE, BUT WITH THE IMPROVING SITUATION, WE ARE EXPECTING A 10 PERCENT GROWTH FOR THE YEAR 2020.”

launched in August as the demand for dry storage and preparation range went up by 30 percent. Brand is confident of a continuous uptick in the consumption pattern since the newly debuted audience will shop more to experiment, and upscale their newfound cooking talents in future as well.

To manage the surge in orders and timely delivery of products, Tupperware recently partnered with Swiggy Genie and Dunzo to home deliver products to the consumers from stores across 32 markets. As the modern Indian consumer is looking for connected solutions and instant gratification, Tupperware's presence across retail, e-tail and direct selling further strengthens a consumer's loyalty towards the brand.

What is your overall manufacturing capacity in India and how much of it are you utilizing at

present?

This year, Tupperware India is looking to sell over four million units across 400 SKUs in categories like dry storage, bottles and lunch/tiffin boxes. The company exports to around 30 countries in Asia Pacific, Africa and Latin America. Backed by a workforce of around 600 people, the company has a 10-million unit per annum (installed capacity) modern manufacturing facility at Dehradun, Uttarakhand, which is also one of the global manufacturing hubs for the group.

How was the previous fiscal (2019-2020) for Tupperware? What kind of numbers are you expecting for the ongoing financial year?

The year 2019-2020 was exciting for all of us at Tupperware India as it was a transformation year for the company, and we ventured into our journey

from just being a single channel to multi-channel brand. The impact of hard work is visible now and we are positive to see the real benefits of it in coming years. This year we were looking at growing 20 percent; but owing to Covid-19, we revisited our targets and are expecting 10 percent growth for the year 2020.

Tupperware has always been reaching out to its end users through its direct selling network. But in August 2020, you directly engaged with the end users through an online fest. How was the response to the same? What made you bring in a paradigm shift in your marketing strategy?

We at Tupperware transformed our sales strategy and adopted a harmonised multi-channel approach last year including Direct Selling to serve latent demand. Evolving with the times, we entered retail and e-tail channels to get closer to our dynamic target consumer base. Tupperware's webstore was also introduced in line with the brand's harmonized multi-channel sales approach. The response so far has been extremely encouraging as we already had a strong and loyal base of customers across the country and our direct presence has only strengthened customer sentiment.



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The purpose of launching a two week-long multi-channel marketing festival TupperFEST in August 2020 was to elevate the joy of consumers with amazing deals on Tupperware's wide range of world class product categories and enhance the kitchen experience like never before. Also, owing to newly debuted audience in the kitchen combined with WFH culture led to increase in demand for dry storage and preparation range by 30 percent; expected to be on an upswing for a while. Therefore, the timing for this first ever Tupperware shopping festival was aligned with our marketing strategy as our consumers found immense value in specially curated deals and discounts for them.

Since you cater to a very demanding end user who primarily operates from the kitchen, it must be keeping your product innovation team on the toes. What are you doing on this front particularly, in India?

The products of Tupperware are like a family heirloom that's handed down generations. We are known for our amazing range of kitchen and exciting products, on-the-go solutions, and space saving utility products that makes your work effortless. The products are safe, innovative, and durable and ensure high quality standard as good health of customers is of utmost priority.

Our innovative and agile teams always have their ears to ground and based on consumer insights and market scenario, they keep introducing innovative products to keep the brand alive and relevant. Tupperware recently launched a range of steel products which is specially designed to cook with less water, preserving the juices, flavours and nutrients naturally present in the food. This year in India, the brand will introduce an absolute stunning serving range of products with an elegant table setting and steel range



"BACKED BY A WORKFORCE OF AROUND 600 PEOPLE, THE COMPANY HAS A 10-MILLION UNIT PER ANNUM (INSTALLED CAPACITY) MODERN MANUFACTURING FACILITY AT DEHRADUN, UTTARAKHAND, WHICH IS ALSO ONE OF THE GLOBAL MANUFACTURING HUBS FOR THE GROUP."

of products ensuring flavour in every bite and nutrients intact. Also, we are one of the most awarded brands in our category and have won design and quality awards including IDSA, Industry Forum Design, Red dot Awards and a lot more.

The pandemic has also accelerated the process of digital transformation for many organizations. What has been the case with Tupperware?

Learning, innovation and evolution keeps a brand alive and relevant in which a digital strategy is the key to success in today's VUCA world. Especially in absence of physical meetings in today's times, presence on digital platforms plays an important role for the brand in replacing traditional meet-and-greets and offering

wider reach to engage with existing and potential customers irrespective of where the direct sellers are physically stationed.

During this pandemic, we realised that all consumers buy/encounter our brand's offerings through different channels, and we have to give them that choice and convenience of shopping. Tupperware India through its 70,000 women sellers shifted its focus on digital driven customer experience. For ensuring transparency, we invested in digital technologies and initiatives such CRM, digital Kiosks, launched brand's webstores, etc. Today, our products carry a unique QR code which can be easily scanned by the customers through their smartphones. This enables them to access the complete information about the product such



| Tupperware
Dehradun Facility

as our processes, its functionality, price, warranty, availability, quality, customer ratings etc. This process does not involve intervention of sales executives and with digital, it is completely self-sufficient. The product is further self-carted and now bought at the outlet immediately.

We are adding IT to the top and bottom lines of Tupperware business strategies and operations by quickly adapting market trends. We believe automation brings higher efficiency and consistency in business. Currently, we are performing detailed analysis of ROI and exploring off the counter solutions rather than in-house development and integrating them with our ERP systems to meet faster implementation.

For many years now, the plastics industry has been in the focus for all the wrong reasons due to the negative impact of plastics waste on the environment. Do you think the pandemic has given it a second chance due to the present and clear advantages it offers?

We believe plastic is not bad; it is the way it is used and disposed. Single-Use Plastics (SUP) is a risk to our health and chokes our environment. The irresponsible behaviour of mankind has maligned this material which has proved to be a blessing in more ways than one. Especially when social distancing is new normal, people avoid trips to the shops for food supplies as far as possible leading to bulk storage of food. There's differ-

“WE ARE NOT ONLY MANUFACTURING IN INDIA FOR INDIA BUT ARE PROUD TO STATE THAT INDIA ALSO EXPORTS TO 30 COUNTRIES ACROSS THE GLOBE IN DEVELOPED NATIONS LIKE SOUTH AFRICA, MEXICO, INDONESIA, AND EUROPE.”

ence in SUP and MUP/ durable plastic. Tupperware, world over has been an advocate of buying right, cooking adequately and storing leftovers properly. Tupperware's Smart Storage Solutions helps people in bulk storage of food, optimal utilization of space, and keeping its nutrition intact for long with lifetime warranty.

At Tupperware, we follow the recommendations and guidelines of governmental regulatory agencies regarding materials used in our BPA free high-quality products. Each of our products is approved after testing to check behaviour during its lifetime and is in compliance with EU, USFDA, and Indian standards. Tupperware products are innovative, durable, long-lasting and recyclable. We are committed towards environment safety and our products are specially curated in a way that they are unlikely to be thrown in the landfills but instead comes back to us for replacement.

Given Tupperware's mission statement of 'No Time to Waste' in the environmental context, would you say that today consumers give preference to brands that demonstrate environmental commitment

through eco-friendly products?

At the start of the plastic revolution nearly 70 years ago, Tupperware was a leader in introducing reusable, long-lasting plastic in the home. Today, Tupperware continues to design products that are durable, high-quality, and made to keep food fresher, longer and to be reused for years to come. From the start, these designs have been rooted in sustainability – from Earl S. Tupper's signature seal that was uniquely designed to lock in freshness, to today's modern Eco Water Bottle, which replaces single-use plastic bottles.

Nowadays, consumers have become conscious of products they are using and choose brands that believe in creating chain of commitment towards the environment. Tupperware has always functioned on the philosophy of 'care for food' and our products are also designed to optimise resources, be it time, storage space, leftover makeover or more. Consumers have trust in Tupperware products because we use high quality materials in compliance with the EU, USFDA, and Indian standards to make durable and long-lasting products assuring safety and well-being of our customers.

Women empowerment has been a pillar of strength for Brand Tupperware. How do you see it evolving in the New Normal?

Tupperware remains committed to women empowerment and our opportunity in India is exclusively for women. Even when we transformed and moved to newer channels, we ensure to take our Salesforce along and our outlets are also operated by women. We are constantly upskilling our salesforce. Keeping in mind the balance that a woman has to strike in their career & personal lives, we have recently introduced a concept called “TupShop” in India. We have brought retail into their homes. In addition to that, Tupperware became one of the first brands to strengthen its Direct Selling channel through Social Selling.

Over the last 24 years, we at Tupperware have cultivated a strong and loyal network of more than a million direct sellers/consultants in India. We invest in igniting global community, especially women, to realize their best selves through opportunity, enrichment, celebration, and above all else, uplifting relationships. As we all embrace the idea of a virtual world, The brand upskilled 70, 000 DS with technology-enabled virtual solutions to interact digitally on social platforms like Facebook, Instagram, WhatsApp, video platforms, etc. and increase consumer outreach, engagement, and drive sales. The platform enabled DS to stay connected with its customers through added advan-

“WE BELIEVE AUTOMATION BRINGS HIGHER EFFICIENCY AND CONSISTENCY IN BUSINESS. CURRENTLY, WE ARE PERFORMING DETAILED ANALYSIS OF ROI AND EXPLORING OFF THE COUNTER SOLUTIONS RATHER THAN IN-HOUSE DEVELOPMENT AND INTEGRATING THEM WITH OUR ERP SYSTEMS TO MEET FASTER IMPLEMENTATION.”


tages of zero-investment initiation model, in-built convenience and efforts being saved in terms of time and other similar resources. Observing a contrasting trend of social distancing, social selling as a concept was specially introduced to evolve and support brand's sales force in tandem with new normal and create opportunities as a gesture of care and support that, Tupperware is ‘Always with you.’

Do you also encourage women employees on the shopfloor of your manufacturing plant/s?

We encourage women employees on shopfloor and we employ women in manufacturing plant as well. We have approximately 20 percent of shopfloor resources who are women and work on assembly lines, for product quality check system, product packing work and more.

The Government of India has enhanced the scope of ‘Make in India’ through its ‘Atmanirbhar Bharat’ (Self Reliant India) campaign. How do you see this from Tupperware’s perspective?

In May 2020, Tupperware completed 24th year of its presence in India. The brand has been contributing to the Indian economy through its business operations across the nation. Tupperware has a strong global legacy yet takes pride in ‘Making in India’ since inception and has a world-class manufacturing plant in Dehradun. All products manufactured by Tupperware globally follow same quality standards irrespective of which country they are being manufactured in. More than 90 percent of all products sold are indeed manufactured in our Plant in India itself. We are not only manufacturing in India for India but are proud to state that India also exports to 30 countries across the globe in developed nations like South Africa, Mexico, Indonesia, and Europe.

While the brand had many plans, the unprecedented COVID-19 pandemic brought along new challenges for everyone including the team at Tupperware India. Yet, with its foresight, agility and earnestness, Tupperware sailed through the tough times and resumed its manufacturing and delivery operations in line with Government directives and with due precautions. The brand has stayed connected with its consumers digitally and from launch of initiatives like social selling, to home delivery services, to extending rental support to outlet owners, to extending support to its stakeholders and employees. The brand left no loose ends to ensure health, safety, wellbeing, and livelihood of the extended Tupperware India family. 





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A New Era of Self-Chartered & Boundless Growth

The futuristic and robust 'Atmanirbhar Bharat' campaign presents a great scope for the chemical industry, and it is a period of radical reforms, that can be a turning point not just for the Indian chemical sector in its domestic markets, but also in international waters.

By Parag Jhaveri

As one navigates through the complex post pandemic world, one can see a change in the dynamics for most countries in their financial operations, right from their monetary policy frameworks to their trade guidelines. There is a powerful shift in their internal commerce, with the setting up of conservative and stringent fiscal measures to revive the local economy.

India is no different. The futuristic and robust 'Atmanirbhar Bharat' campaign presents a great scope for the chemical industry, and it is a period of radical reforms, that can be a turning point not just for the Indian chemical sector in its domestic markets, but also in international waters.

The chemical industry is central to economic growth since it converts raw materials (such as oil, natural gas, minerals, etc.) into products used extensively in daily life. Hence,



it plays a vital role in the economic development of a country and the quality of life enjoyed by its people. The chemical sector today manufactures about 90,000 products for a plethora of industries ranging from agrochemicals, textiles, construction, polymers, surfactants, nutraceuticals, to F&F and the consumer industry to name a few.

An extensive report on the industry by McKinsey and Co. found that between 2006 and 2019, the compound annual growth rate

(CAGR) in TRS for India's chemical companies stood at 15 percent—a figure much higher than the global chemical-industry return, with a CAGR of 8 percent, and the overall global equity market, with a CAGR of 6 percent.

Even when one takes into account the staggering displacement caused by the pandemic, there is no reason to worry, as the report observes that between 2016 and 2019 when

India's economy faced headwinds, the chemical industry maintained a CAGR of 17 percent. This is an extremely positive indicator of the future of the sector's prospects, and the global pathway for the Indian chemical segment.

According to Invest India, the sector employs over two million people, and is a sign that points towards the steadfast growth of the sector in the domestic markets. It is also a very encouraging indicator about the potential jobs it can generate during a period of crisis for the economy, and yields a blazing opportunity for the Indian chemical industry to contribute in a multitude of ways to the Atmanirbhar campaign by extending support to various dependent sectors of the economy during these unprecedented times. Additionally, the employment this will generate within the industry, and the ones it supports directly and indirectly will push the



“THE CHEMICAL INDUSTRY IS CENTRAL TO ECONOMIC GROWTH SINCE IT CONVERTS RAW MATERIALS (SUCH AS OIL, NATURAL GAS, MINERALS, ETC.) INTO PRODUCTS USED EXTENSIVELY IN DAILY LIFE. HENCE, IT PLAYS A VITAL ROLE IN THE ECONOMIC DEVELOPMENT OF A COUNTRY AND THE QUALITY OF LIFE ENJOYED BY ITS PEOPLE.”

domestic influx of trade and increase business further for all these sectors.

From bulk chemicals to pharmaceutical API intermediates, India imports a significant amount of chemical raw materials. There is a very large room for Indian companies to capture this market by developing these products indigenously and make our country self-reliant and truly Atmanirbhar. It will also help in reducing our trade deficit against countries like China.

Furthermore, due to China's aggressive foreign policy, there is a growing interest in the West for sourcing chemicals from alternate countries. Indian companies are very well positioned to capitalize on this opportunity and to emerge as a leading choice for the world.

Another factor that comes into play is the state of the art facilities and infrastructure that can be built in to accommodate the swift and rapid developments to be undertaken to recover post COVID costs, and boost efficiency in chemical factories. It will open new avenues to implement the latest in digital and analytics to improve margins and cut costs, making India truly Atmanirbhar. The Indian chemical sector has a huge potential of compounding production rates, which in turn translates into a giant leap in earnings before interest, taxes, depreciation, and amortization from the latest technologies.

The new ecosystem could also coerce the chemical industry to move swiftly in the direction of personalised and sophisticated customer-centric technology. It could boost the client's needs and create an atmosphere of collaboration and convergence, steering the entire sector and those it directly supports, in a direction of boundless growth. This will in turn propel new development models, re-designing and recreating the latest global trends

“DUE TO CHINA'S AGGRESSIVE FOREIGN POLICY, THERE IS A GROWING INTEREST IN THE WEST FOR SOURCING CHEMICALS FROM ALTERNATE COUNTRIES. INDIAN COMPANIES ARE VERY WELL POSITIONED TO CAPITALIZE ON THIS OPPORTUNITY AND TO EMERGE AS A LEADING CHOICE FOR THE WORLD.”

that the chemical industry needs to embrace, for tailor made market specific needs.

Some of the segments that can take this growth curve forward in the new Atmanirbhar model are the agrochemical and specialty chemical segments, that have successfully emerged as new age competitive markets infused with the best in class technology.

The agrochemicals market in India is expected to make a leap of eight percent CAGR reaching a staggering US\$3.7 billion by FY22 and US\$4.7 billion by FY25, driving an agrarian economy like India to the frontline. Additionally, the specialty chemicals constitute 22 percent of the total petrochemicals market in India and this demand for speciality chemicals is further expected to grow at 12 percent CAGR from FY19-22, according to the Indian Government.

Furthermore, India is home to several age-old industries that can be revived under the Make in India scheme, and drive an instant surge in the domestic spectrum. One of the many feats India was renowned for in the ancient world was the luscious and rich texture of Indian dyes, and the high-end quality of Indian fabrics. The country has an extraordinarily vast legacy of promoting dyes that travelled the far length and breadth of the world and piqued the interest of merchants across every massive dock- and can be revived and infused with new age automation. As of today, India accounts for about 16 percent of the world's production of dyestuff technology and

dye intermediates, particularly leading in the production of reactive acid and direct dyes, according to Inside India Trade.

However, just like every other business in the world, an industry can only flourish when it is backed by an efficient system of governance, and is given the needed push coupled with systematic checks and hospitable policies in place, to ensure growth in a steady upward direction.

Some of the policies, that complement this new era of 'Make In India' and give the required momentum for this fresh wave of self-sustenance are Zero per cent FDI, and the de-licencing of most chemical produce. Another important blueprint is the Government of India's launch of the Draft National Chemical Policy, with the singular aim to increase the share of the chemical sector in the country's GDP and provide needed ammunition to transform the trade.

This new era is here to stay and is a gateway to a mammoth of changes that can forever steer the industry towards a self-chartered path of tech integration, futuristic vision, well mapped out domestic objectives and international trade partnerships resulting in insurmountable revenue generation. It could turn India into a leading global trade hub for the chemical sector, and some fundamental strongholds of the industry such as its capital intensive and highly asset based nature are only bound to take this a step further, for a truly Atmanirbhar Bharat! 🇮🇳

The author is CMD, Yasho Industries Limited

Ushering an era of bioplastics

Bioplastics are the key component to bringing the plastics industry out of a wasteful linear economy and into the circular economy, says Hitesh **Rasiklal Sanghavi**, Director, Advance Bio Material Co. Pvt. Ltd.

By Niranjan Mudholkar

Give us a brief overview of Advance Bio Material Co. Pvt. Ltd. in terms of its origin and business operations.

Advance Bio Material P. Ltd. is an innovator and is dedicated to developing high performance bioplastics. Our company started in the year of 2012, and we are dedicated to high performance bioplastics only. Our products include bioplastics raw material as well as flexible films and packaging based on bioplastics. Also, we are already exporting our products to many countries.

How has the Covid-19 outbreak affected your operations and how have you dealt with the same?

Except for a lockdown period of four months, it has not affected much, but it is part of uncertainties in business.

What exactly are bioplastics and are they hundred percent biodegradable?

Bioplastics can be either biodegradable or non-biodegradable. The following diagram will help you understand it better.

What are the benefits of bioplastics compared to conventional plastics?

The advantages of bioplastics include reduced use of fossil fuel resources, a smaller carbon footprint, and faster



decomposition. Bioplastics are also less toxic and do not contain bisphenol A (BPA), and reduction in litter and improved compostability from using biodegradable bioplastics.

Do you think bioplastics can play a key role in furthering the cause of circular economy?

Bioplastics will be a major component in the new plastic economy. In circular economy, bioplastics are:

- Reducing the carbon footprint and sourcing from sustainable feedstocks (preserve and enhance natural capital).
- Utilising compostable materials that bring nutrients back to the soil, reducing the amount of fos-

sil fuels used and recycling petroleum-based plastics to reduce landfill waste (optimise resource yields).

- Increasing the quality of bioplastics through technological innovations, increasing utility value, lifecycle and functionality (foster system effectiveness).

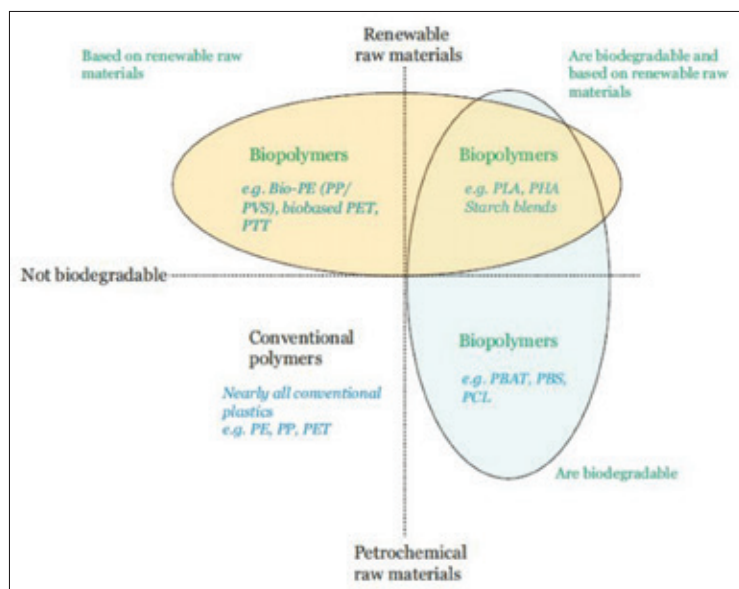
Innovations in sustainable plastics to improve recyclability and compostability are happening every day. Scaling up commercial composting facilities to handle compostable plastics will speed up the process of recovering and regenerating these materials into usable forms.

Bioplastics are the key component to bringing the plastics industry out of a wasteful linear economy and into the circular economy. Their increased use will yield positive results via the New Plastics Economy, not only in environmental and economic instances, but also in terms of functional impacts.

You have personal experience and



“BIOPLASTICS ARE ALSO LESS TOXIC AND DO NOT CONTAIN BISPHENOL A (BPA), AND REDUCTION IN LITTER AND IMPROVED COMPOSTABILITY FROM USING BIODEGRADABLE BIOPLASTICS.”



“INCREASED USE OF BIOPLASTICS WILL YIELD POSITIVE RESULTS VIA THE NEW PLASTICS ECONOMY, NOT ONLY IN ENVIRONMENTAL AND ECONOMIC INSTANCES, BUT ALSO IN TERMS OF FUNCTIONAL IMPACTS.”

expertise in the rotomoulding and flexible packaging industries. Do you think bioplastics can be used in these two sectors effectively and efficiently?

Most Rotomoulding product are not single use and so I think even though there is possibility to switch from conventional plastics to Bioplastics, it may not happen unless and until bioplastics will be cheaper than plastics. But for flexible packaging, definitely yes! Our company is working very actively and successfully for many years on flexible pack-

aging solutions using bioplastics. Our company is coming up with completely new project for the same.

What kind of product portfolio do you have?

Our product portfolio includes bioplastics raw materials and flexible packaging with bioplastics.

Which are the key industry sectors that you cater to?

We are catering to the bag making industry for raw material and the FMCG sector as well as food com-

panies for flexible packaging.

What kind of manufacturing capabilities and capacities do you have?

Our infrastructure includes the complete set up to manufacture raw material and flexible films - for printing and lamination (with and without barrier properties) using latest technologies.


Tell us about your R&D activities and the overall focus on innovation.

We have already applied for patent for the high heat seal grade using PLA, chain extender, and using melt rheology theory. We have also applied for patent on flexible bioplastic film and high barrier film. We will continue to develop new products as per market requirements. We are also developing bio-based and home compostable products and applying for international certifications for the same.

How was the last financial year in terms of numbers and what are your expectations from the ongoing fiscal?

Last year was good, but almost half of this year got wasted due to Covid-19. However, we are hopeful to recover that in second half.

What is your vision for the organization and where do you see it three years down the line?

We want to be known as an organization that is ethical and famous for its products. Our vision is to be a globally renowned world class bioplastics company. 

UPDATE

Need to invest in science and innovation: PM

While delivering the keynote address at Grand Challenges Annual Meeting 2020, Prime Minister Narendra Modi said the future will be shaped by societies that invest in science and innovation. He said the benefits of science and innovation can be reaped at the right time by

investing in it well in advance. He said the journey to these innovations must be shaped by collaboration and public participation. He added science will never prosper in silos and the Grand Challenges Programme has understood this ethos well.

Fresh Air of Innovation!

A real estate company decided to develop and manufacture an air disinfection system to be deployed in its campuses. **Ankit Sharma**, Director, Airific Systems Pvt. Ltd. shares the journey with **The ET Polymers**

By Niranjan Mudholkar

What was the motivation behind this start-up and how has been the journey since then?

Well, to answer this question, I would need to go even further back. I am an engineer, by education, from The University of Texas at Austin, and therefore as you can imagine technology has always been at the forefront of what I decide to do. We, as a family, have other businesses in the commercial real estate field, and we also develop and market building and energy management systems. Advant Navis Business Park, one of our campuses present in sector 142, Noida, has always been ahead of time with the technology deployed within the campus. UVGI systems for air disinfection is something we always discussed as a company to implement within our campuses, but for one reason or the other, it never came to fruit, until COVID-19 struck. It quickly became apparent how important it is to disinfect the air that we breathe in indoor environments, and unfortunately (or fortunately for me) there were no organized players here in India that



developed such systems, and the ones abroad were too busy with their own internal requirements. It was then that we decided that we will manufacture our own systems, develop our own design software, and provide clean air to as many people as we can, because everyone deserves to breathe free and I must say it has been a fun journey ever since!

Airific is a rather 'different' name. What does it mean and what is its genesis?

I quite like the name Airific. It is actually a combination of two words, the word 'Air' and the word 'terrific', and I think that's the end goal for us, we want to provide 'terrific air' quality to everyone, therefore I think the

name is quite apt.

Tell us something about your R&D activities.

Through many iterations, and long hours spent in the office and at our manufacturing facilities, we have finally come up with what we believe as the perfect technology to deal with the issues that we see today. There are two ends to this product, and without one joining the other, the process of getting the correct solution to our clients fails. The first component is obviously getting the right hardware setup. It was very important to realise that we must design a system that we can mass produce. One whose production can be scaled up several notches if required, and in that capacity we were able to create a modular design that requires very little customisation that allows us to provide quick delivery times to our customers, and reduces the overall cost as well. The second component is software. It is one thing placing a UV lamp in a duct and hoping that you kill the pathogens present in the duct, for that I might not have even needed to create this product! But, to get the right output, it is very im-

"THROUGH MANY ITERATIONS, AND LONG HOURS SPENT IN THE OFFICE AND AT OUR MANUFACTURING FACILITIES, WE HAVE FINALLY COME UP WITH WHAT WE BELIEVE AS THE PERFECT TECHNOLOGY TO DEAL WITH THE ISSUES THAT WE SEE TODAY."



portant that each and every system is designed on the basis of each and every location. We have developed a software that takes in various input parameters in a 3D format, and on the basis of these input parameters, we are able to determine the number of lamps required to achieve 99 percent disinfection of certain viruses, bacteria, etc. in the air. The software also creates an intensity map, and portrays the kill percentage of various types of pathogens present in the air at different locations!

How has the Covid-19 outbreak affected your business and how are you dealing with it?

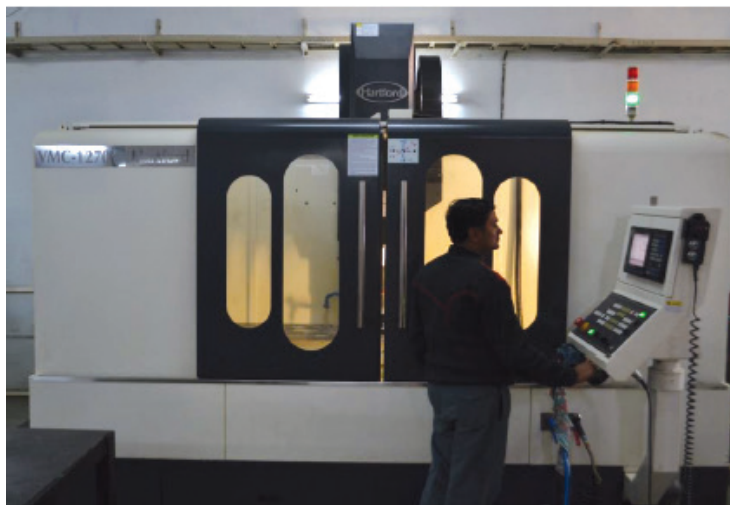
Covid-19 has been tough on everyone personally and professionally. But, if you see with every crisis, new businesses emerge, and go on to do big things! I guess I am holding on to that glimmer of light, and hoping that the situation resolves soon!

Disinfection or neutralizing the virus has suddenly become everyone's priority in the New Normal. Is this what inspired your team to come up with UVHeal SafeAir?

To answer the question, yes. But it is so much more than that. Did you know that there is a term that coined in the West called 'Sick Buildings'? This is a term that has been recalled over and over again over the last several years. The reason for buildings being termed as 'sick' is the bad quality of air circulation. Mold and fungi accumulation are common themes in Air Circulation units, and many people are allergic to such exposure. Therefore UVGI technology has been used extensively to eradicate these types of problems, and it is my goal to bring the same to India.

How does this innovation work and has it been certified by the relevant authorities in India?

The name of the product we are promoting at the moment is called




“COVID-19 HAS BEEN TOUGH ON EVERYONE PERSONALLY AND PROFESSIONALLY. BUT, IF YOU SEE WITH EVERY CRISIS, NEW BUSINESSES EMERGE, AND GO ON TO DO BIG THINGS! I GUESS I AM HOLDING ON TO THAT GLIMMER OF LIGHT, AND HOPING THAT THE SITUATION RESOLVES SOON!”

UVHeal SafeAir. It is an in-duct disinfectant for continuous air supply for central air conditioning systems. The modular design of this product allows you to get the best solution for your requirements. Each and every system is designed using CFO (computational fluid dynamics), and designed on the basis of exposure time, and UV dosage required to disinfect a particular pathogen. Air disinfection takes place through the air being forced by natural convection into the irradiated region of a UV disinfection device. The air then passes through the UV rays from the germicidal lamps within the UVHeal SafeAir system. The UV rays render the airborne microorganisms, such as viruses, bacteria, yeasts and fungi, inactive by disrupting their cellular membranes and by damaging their DNA or RNA. This technology provides a range of Industrial Ultraviolet Disinfection Systems that prevent the spread of airborne bac-

teria, viruses and mold within public areas. Public places like airports, hotels, corporate offices, hospitals, movie theatres etc. admit not only thousands of people on a daily basis but also several airborne microorganisms.

We were recently accredited by the Sriram Instituion of Research to be 99.9 percent effective in the disinfection of various types of microorganisms present in the air.

What's the way ahead for Airific from here on?

There's a long way to go, we have only gotten started. UVHeal SafeAir is an important product for us, and we will keep trying to bring in new technology to it. We also have something very cool and interesting coming up for people at homes. Very soon you will be able to breathe safe air at your homes too, and we hope to bring you this technology within the coming days! 

Clariant to build new production site in China

Clariant has announced the construction of a new state-of-the-art catalyst production site in China. This project represents a significant investment which further strengthens Clariant's position in China and enhances its ability to support its customers in the country's thriving petrochemicals industry. The new facility will be primarily responsible for producing the Catofin catalyst for propane dehydrogenation, which is used in



the production of olefins such as propylene. Thanks to its excellent reliability and productivity, Catofin delivers superior annual production output compared to alternative tech-

nologies, resulting in increased overall profitability for propylene producers. Construction at the Dushan Port Economic Development Zone in Jiaxing, Zhejiang Province is scheduled to commence in Q3 2020, and Clariant expects to be at full production capacity by 2022.

The new plant in Jiaxing will be Clariant Catalysts' most digitized facility to date. Once completed, it will be Clariant's third catalyst production plant in China.

Wacker opens Global Competence Center in China



Munich-based chemical group Wacker opened a global competence center for thermal interface materials in Shanghai, China. The new laboratory is located at the company's China headquarters in Caohejing High-Tech Park. It will conduct fundamental research in order to develop novel silicone-based thermal interface products and solutions for the electrical vehicle market as well

as for consumer electronics and telecommunication industries. The company's new R&D lab in Shanghai will focus on the development of silicone-based thermal interface materials and novel applications, Gimber emphasizes. "With the new lab installed, Wacker will be able to significantly improve its capability of fundamental research for such materials and come up with tailor-made products to support our customers around the world." Located at Wacker's Shanghai Center in Caohejing High-Tech Park, the TIM competence center shares existing resources such as analytics and the e-mobility lab of the site.

Funskool Goa plant gets BIS certification

Funskool India is the first Indian toy manufacturer to get certified by the Bureau of Indian Standards for Safety of electric toys – IS 15644 for the manufacturing plant based at Goa. Also, the Ranipet plant of Funskool is the very first toy manufacturing unit from South India to get the BIS accreditation as per IS 9873-Part 1 standards for non-electric toys. The BIS standardization was made mandatory for all toys designed or intended for use in play by children below 14 years of age, by the Ministry of Commerce and Industry.

Waters establishes innovation & research laboratory in Cambridge, MA

Waters Corporation has announced the establishment of Immerse Cambridge, a new Waters' research laboratory in the heart of Cambridge's Kendall Square. Immerse Cambridge will serve as a strategic, collaborative space in the community, where Waters can partner with academia, research and industry

to accelerate the next generation of scientific advancements. "Immerse Cambridge will house the latest analytical instruments and technology from Waters and will allow us to offer the deep expertise of our scientists to partner with the biotech community to innovate, collaborate and interrogate



biology in new ways," said Dr. Udit Batra, Waters President and Chief Executive Officer.

Understanding USP<1220>

Answers to WHAT, WHY & HOW of Method lifecycle approach

By Kuldeep Sharma (Ph.D.)

USP<1220> and ICH Q14 are among most discussed topics today in analytical industry. With evolution of compliance and work-flow understanding, need to incorporate Quality by Design (QbD) principals in analytical methods has been long realized. Analytical life cycle management is holistic approach of implementing structured QbD approaches in analytical workflow (also segmented as stages I-II-III). To better understand this concept, we can consider evolution of wheel as an example. When wheel was invented, it was a great invention. Initially wheels were made of stone and that added to lesser efficiency or more force required to pull. Later physicians designed wheels with wooden frame (to reduce weight) with outer circumference covered with metal ring (to provide strength). In modern times, scientists worked on improving efficiency and created modern day metal frames, with rubber tyres. Is it the end of this evolution? Definitely no! As several researchers are continuously working on newer technologies to improve it further.

When I look at pharmaceutical products, evolution/ adoption of newer technologies is not so fast



“LIFECYCLE MANAGEMENT APPROACH BRINGS A SHIFT FROM CURRENT SEGMENTED

APPROACH TOWARDS A HOLISTIC APPROACH.”

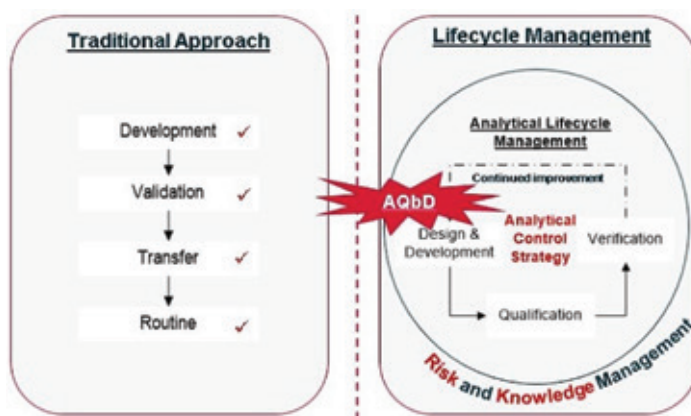


Image source: Article 'Implementing a more structured approach to analytical method development' by Waters published in Worldpharmatoday.

and easy. Considering its possible implications on human health, a detailed assessment is made mandatory by regulatory authorities. But this has made industry follow some old technologies/ approaches that gives repeated failures and (in some cases) even limits detection of poor-quality products. Recent recommendations from USP and ICH are in direction of providing a structured approach for design and development of these analytical strategies, that support development of analytical methods with better control on variabilities. In simple words, we can say that Method lifecycle approach is preventive approach to control method variables and understand method parameters space better.

Lifecycle management approach brings a shift from current segmented approach towards a holistic approach. In current workflow, Analytical development team develops methods and gains understanding on impact of variables on method performance in a very

limited space/ scope. Also, another missing portion is transfer of this knowledge space to subsequent stages. Due to unstructured development approach many variables are not properly assessed. Later Validation as per USP<1225> is completed and a final method protocol goes (Analytical procedure transfer USP<1224>) for next stage (i.e. QC lab) for routine usage (Analytical Procedure verification USP<1226>). Now with proposed USP<1220> all these stages (Development, Validation and Routine monitoring/ usage) will be covered under single chapter/ section.

To understand this upcoming transformation in analytical methods handling, I would try to answer rationales of What, Why and How for Analytical Method Life cycle approach.

What is Analytical Method Life cycle approach?

As defined in USP<1220>; The current concepts of validation, verification and transfer of procedure address portions of lifecycle but do not con-

sider it holistically. The purpose of proposed new chapter <1220> is to fully address entire procedure lifecycle. Approach is based on Quality by Design concepts as described in International council on Harmonization Q8 (R2), Q9, Q10 and Q11. The lifecycle management process provides a framework for defining the criteria for and development of an analytical procedure that meets the acceptance criteria. The procedure then becomes part of a continuous verification cycle to demonstrate that it meets the predefined criteria over the life of the analytical procedure. 'Analytical method lifecycle is a science-based risk management approach to develop robust analytical method by identifying impact of critical assay parameters and controlling variability by implementation of control strategy'.

Why it is important?

During inspections, auditors find multiple instances of method failures as root cause for Out of Specification (OOS) results. OOS handling routes towards corrective and preventive actions (CAPA) for proper identification and correction for these attributes. But considering complexities in evaluation, many analysts initiate a development exercise i.e. push the method back to development team to understand problem and suggest solution/ modifications. Below are few audit observations that clearly indicate a lack of proper scientific decision making in handling analytical failures (Excerpts from warning letter issued by US FDA in 2016, 2017 & 2018).

Observation-1: During the period between 01Jan 2018 to 15Oct 2018, there were approximately 175 events identified as "repeated incidences" from QC, including at least 19 events due to column conditioning and 15 poor column performances that resulted in aborted or invalid HPLC sequence runs. *Based on your assessment and identified root causes, insufficient actions were taken by the Quality unit to ensure the robustness*

and suitability of the analytical test procedures and the equipment. Incident events with similar root causes were not thoroughly reviewed for historical trends and corrective actions were not implemented to reduce the occurrence of atypical events from similar root causes.

Observation-2: Proper controls are not exercised over computerized systems used for analytical testing to ensure drug products meet their specified quality attributes.

Your firm engages in extensive use of "Inhibit Integration" and other anomalous integration techniques for assessing US API's such that unknown impurities are disregarded without scientific justification. Furthermore, unknown impurities are not accurately assessed or reported.

A review of chromatograms from your firm's last 30 batches of drug product revealed that unknown impurities are routinely integrated as a part of the desired API. Your firm's officials failed to explain why impurities would be as a part of the desired API peak.

Observation-3: *Failure to ensure that all test procedures are scientifically sound and appropriate to ensure that your API conform to established standards of quality and purity.*

Firm failed to establish adequate test procedures. For example, analyst manually integrated a high-performance liquid chromatography test for API, despite the fact that the chromatogram lacked peak resolution. When a chromatogram lacks peak resolution, detailed methods and appropriate oversight are essential to ensure test results, considered by the quality unit in batch release decisions, are scientifically valid. Firm lacked an approved protocol for manual integration or quality oversight of the practice.

How to implement it?

To begin with; first and most important aspect of lifecycle approach is setting objectives, here its referred as

Analytical Target profile (ATP). This defines/ stipulates the performance requirements for analytical method. ATP is derived considering requirements of analytical method and performance attributes associated in laboratory environment.

Stage-1 is critical step towards analytical lifecycle management. It begins with 'Knowledge Gathering' approach to collate information about chemical structure, solubility, reactivity and stability of molecule/ compound. This information is helpful in selection of analytical technology and its suitability in achieving the ATP requirements. Second step is 'Risk assessment evaluation and control' to identify process variables and ascertain their impact on method performance. It is recommended to include some guiding tools in decision making e.g. Ishikawa Diagram & Design of Experiments (DoE). Ishikawa diagram helps in identifying all possible variables and DoE helps in understanding effect of variables on process. Next step in development is 'Analytical Control Strategy' which includes establishing controls based of outcomes of DoE studies. These controls determine the process variability and provide a opportunity to establish/ set process parameters in best suitable operating limits. Control of variables may include direct restriction/ control on variable or incorporate replicates to reduce/ control random assay variability. Next step is 'Knowledge management' and reflects importance of information gathered during development to be passed to subsequent stages of method lifecycle for effective utilization. It includes systematic approaches to obtaining, understanding, retaining and transferring information to lifecycle stages for effective control strategies. Last step is 'Preparing for Qualification' that indicates a pre-assessment of experimental data to confirm absence of significant bias, before taking method for Stage-2.

Next stage (After development)




is 'Procedure Performance Qualification' with objective to confirm that the procedure generates reportable values that meet the ATP criterion and remain apposite for test method. To avoid random variabilities, its recommended that laboratory that will be using the analytical procedure for testing should conduct qualification study. Based on ATP; criteria for qualification protocol are established and analytical control strategies can be modified based upon experimental outcomes/ observations.

Stage-3 'Continued Procedure performance Verification' is a continuous exercise to confirm the suitability or fitness of analytical method. ATP is used as reference point for monitoring performance of method. Monitoring may include trending of analytical results, system suitability, out-of-specification results, stability data and other results. Primary objective of this exercise is to identify potential performance issues in analytical method and identify changes required in analytical method.

Analytical method plays a very important role at all stages of pharmaceutical product lifecycle i.e. Right from product development stage, till final product batch release from production. Selection of appropriate method attributes plays a very important contribution in determining suitability of method for its intended purpose. Drug product quality is confirmed by associated control strategies including procedure controls, environmental controls, Materials control and selection of instrumentation. Waters has several offerings to support Analytical Quality by Design (AQbD) implementation in analytical laboratories. Our Liquid chromatography systems includes Fast Systems (Ultra performance Liquid Chromatography i.e. UPLC) for faster chromatographic analysis. It's very impactful for DoE evaluation and scientists can explore more experi-

ments to ascertain Permitted acceptable range (PAR) of method attributes. Arc HPLC, Waters new LC offering elevates the routine chromatographic system performance standards to a newer & better level. Higher system reproducibility, lesser carry-over and increased back-pressure tolerance limits make this unique offering the best available HPLC in the market. Some unique features include Auto-Blend PLUS feature that enables scientists to create online different pH buffers for evaluation of pH impact on chromatographic resolution. Waters chromatographic columns have diverse range of sorbent and particle size options available. Also, unique feature here is e-cord, a electronic chip that is hooked with UPLC columns. Connecting a column equipped with an e-Cord to the ACQUITY UPLC System operated by Empower 3; lets these three technologies (Column, UPLC and Software) communicate with each other in a unique way. Automated monitoring and tracking of column usage data can be the cornerstone of a valuable data integrity workflow in laboratory. This data can be used for internal control processes, such as column lifetime, system integrity monitoring, and process development. Waters also offers HPLC vials that are certified through unique 4 step evaluation process. These include Material, Dimensional, Associated parts geometrical alignment and chemical cleanliness testing. Empower Software, our flagship chromatography data system, makes it easier than ever to run samples and produce meaningful results. It supports compliance and data security requirements. Also empower Improve your information management, storage, and data mining capabilities. Scientific design space modeling has proven effective in yielding high levels of robustness, critical to effective transfer and routine use of analytical methods across

laboratories. AQbD approaches meet ICH guidance on scientific and risk-based analytical procedure development as suggested in USP<1220>, Q12 and proposed Q14, including effective regulatory communication and providing the basis for post-approval flexibility. Empower can seamlessly integrate with existing leading AQbD software's i.e. Fusion & Dry-Lab4 for efficient method development and knowledge management.

With major analytical guidance documents being revised (to include guidance on systematic approach towards analytical method development, validation and performance monitoring), industries have the discretion either to retain conventional traditional development approach or adopt Method life cycle management principles in their routine work-flow. But looking at advantages of AQbD work-flow, its difficult to avoid this approach for longer time. AQbD gives a structure to analytical method development and learnings gained are helpful in handling failures in systematic approach. Several researchers follow systematic design of experiments approach in development, but these learnings need to be handled in statistical approach for defining method operable range and should be transferred to later stages for effective utilization. 

The author is Product Manager- Waters (India) Pvt. Ltd.

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What the pandemic has taught us!

The ET Polymers presents gems of wisdom from some of the industry leaders about what they have learnt from the Covid-19 outbreak



"It has taught us the importance of self-discipline and adaptability to unforeseen uncertainties. This pandemic has also brought out the importance of the digital platform and has also provided us an opportunity to understand the value of family."

V B Lall, *Director, SCJ Group of Industries*



Let's stand shoulder to shoulder and come out stronger by working together, sharing together, and supporting one another. We also need to ensure sufficient investments in R&D to stay ahead of the curve and build efficiencies. Also, spend 'More Time Living, Loving, Laughing and Caring for your loved ones'.

Deepak Chhabra, *Managing Director, Tupperware India*



"It has taught us the importance of having flexibility and accepting the corresponding changes into professional and personal life."

Rajnikant Patel, *Director India, HASCO India Pvt. Ltd.*



"Lots of lessons from this outbreak but most importantly I have learned that we need to be digitally very good and fast at any given point of time we should be prepared."

Rahul V Podaar, *Managing Director, The Shakti Plastic Industries*



"The ability to adjust to a unique global crisis and to come out stronger together with businesses and its people will stay forever."

Anand Srinivasan, *Managing Director, Covestro India*



"The warmth and positivity in reaching out to old friends and customers has actually made us realise that such a pandemic was needed to elevate our spirit and to bring in warmth and kindness to help mankind."

to elevate our spirit and to bring in warmth and kindness to help mankind."

Sunildutt Chaudhari, *Director, Haitian Huayuan Machinery India (Pvt) Ltd*



"More stronger contingency planning is needed for every organisation. Life is very fluid and uncertain."

Kailesh Shah, *Managing Director, All Time Plastics Pvt Ltd*

Cost-efficient and sustainable

A packaging technology major and a global leader in diversified chemicals have launched a joint packaging concept for frozen food packaging

Syntegon Technology and SABIC, a global leader in diversified chemicals, have developed a sustainable packaging concept for the frozen food industry with a substantial material reduction potential. Their solution comprises the new PHS 2.0 sealing technology from Syntegon and the 20-micrometer thin biaxially oriented polyethylene (BOPE) film from SABIC.

Brand owners can now substantially reduce material consumption and increase their output rates by replacing conventionally used low density polyethylene (LDPE) films with BOPE sealed on PHS 2.0 equipment.

Throughout the frozen food sector, pillow bags are the pack style of choice, with the majority currently made of LDPE. Driven by their mission to deliver sustainability without compromise, Syntegon joined forces with SABIC to find an alternative to LDPE films. The answer lies in the newly developed BOPE film from SABIC and the innovative PHS 2.0 sealing system from Syntegon for vertical form, fill and seal machines. "Our concept enables the use of thinner films at higher speeds, whilst offering the same sealing quality and product protection as with LDPE," Pierre Hamelink, director business, market and sustainability strategy at Syntegon in Weert, Netherlands, explains. By switching to BOPE, manufacturers can reduce film thickness to 20 micrometers. This thin gauge offers a potential packaging material reduction of 35 to 50 percent compared to blown PE films such as



| Syntegon's new PHS 2.0 sealing technology – in combination with SABIC's 20 micrometer-thin BOPE film – enables brand owners to substantially reduce material consumption and increase output rates.

LDPE, and a cost saving potential of up to 30 percent.

A winning combo: 25 percent speed increase and 50 percent downgauging. Tests run on Syntegon machines show that the new material outperforms or performs just as well as conventional polyolefin monomaterial films. Its main benefit: Substantial downgauging compared to LDPE films. Depending on product and machinery specifics, LDPE films typically range from 30 to 80 micrometers in thickness. The BOPE solution from SABIC is a monolayer film structure of only 20 micrometer thickness that offers the same level of puncture resistance and barrier protection as 30 micrometer LDPE films.


This PHS 2.0 sealing system includes servo-driven sealing jaws, an active knife and two-sided heated sealing strips for more consistent, high-quality seals. The new sealing technology stands out for its material efficiency and speed: it reduces the required clamped film surface by up to 6.8 percent and increases the packaging speed by as much as 25 percent – up to 130 bags per min-

ute. The increase in speed is achieved by reducing the sealing and cooling times by 50 and 30 percent, respectively.

What is more, manufacturers can maximise their film yield per roll and reduce film roll changes. This helps to reduce costs, save time and optimise storage space. The new packaging concept for frozen food not only offers material savings and output

gains: The BOPE film from SABIC is fully recyclable via mechanical and chemical PE recycling streams. Chemically recycled post-consumer plastics are safe for food packaging applications and can undergo multiple recycling loops without a loss of quality, thus bringing the packaging industry one step closer to a circular economy.

Collaboration between equipment provider and material supplier

The new sustainable packaging concept demonstrates the value of cooperation between stakeholders throughout the supply chain. "As a system solution provider, we know that sustainability cannot be achieved single-handedly," Hamelink explains. "In order to test machine performance with sustainable materials, we partner with stakeholders very early on in the development process. When it comes to sustainability, we make sure brand owners don't have to compromise on speed and quality." 

Source: Syntegon Technology

Recycling used chains is good for the environment

igus initiates first recycling program worldwide for energy chains

What happens when a plastic energy chain reaches its maximum service life? Usually, it is simply disposed of and incinerated with other plastic waste. With its “igus green chainge recycling program”, the motion plastics specialist igus is now doing something completely new: users can send their plastic chains to igus for recycling – completely irrespective of the manufacturer. They can eliminate disposal costs and receive a voucher for making purchases from igus. Customers and the environment both profit from this.

Only around 16 per cent of the plastic waste produced in Germany is reused for new products, according to the Plastikatlas 2019. Even though a long-lasting plastic energy chain is not comparable with daily throwaway products such as plastic packaging, the question of how to dispose of it still arises at the end of its service life. Normally, the chain is disposed of together with other plastic waste. Recycling rarely occurs as the cost of separating the different materials in a product and recycling them to make usable granulate (grinding) is too high. In most factories, the usual procedure is therefore to remove energy chains from their machines and throw them into industrial waste skips. In most cases, the plastics are then incinerated. igus is now offering an environmentally friendly alternative in the form of the “igus green chainge recycling program”.

Recycling made easy

The aim of the program is to recy-



How plastic granulate is produced from old chains: 1. Clean the chains 2. Weigh them 3. Record quantity and contact us 4. Dispatch the chains to us (Source: igus GmbH)

“THE AIM OF THE PROGRAM IS TO RECYCLE THE PLASTIC FROM ENERGY CHAINS AND REUSE IT FOR NEW PRODUCTS. TO THIS END, USERS CAN SEND THEIR OLD OUT-OF-USE PLASTIC ENERGY CHAINS TO IGUS AFTER CLEANING THEM – COMPLETELY IRRESPECTIVE OF THE CHAIN’S ACTUAL MANUFACTURER.”

cle the plastic from energy chains and reuse it for new products. To this end, users can send their old out-of-use plastic energy chains to igus after cleaning them – completely irrespective of the chain’s actual manufacturer. The plastics are then sorted, cleaned, shredded and packed. After this, they can be reused by igus or other companies to produce high-quality technical products. In return, the customer receives a voucher amounting to 0.78 euros per kilogram. “igus takes on this responsibility and, with its igus chainge recycling program, is aiming to make a contribution towards

a reduction of plastic waste and an improvement of the recycling process”, says Frank Blase, CEO of igus GmbH, adding: “This is not something new for us. As the world’s biggest manufacturer of plastic energy chains, we already recycle 99 per cent of the plastic waste occurring in production in order to reuse it as re-granulate. The chainge program is now the next important step in the direction of sustainable business operations.” The igus green chainge recycling program will be rolled out worldwide in the coming weeks. First, igus is starting the program in Germany and it will soon be implemented locally in many other markets such as China, the USA, Japan, Taiwan and Korea.

“IGUS TAKES ON THIS RESPONSIBILITY AND, WITH ITS IGUS CHAINGE RECYCLING PROGRAM, IS AIMING TO MAKE A CONTRIBUTION TOWARDS A REDUCTION OF PLASTIC WASTE AND AN IMPROVEMENT OF THE RECYCLING PROCESS.”

Frank Blase, CEO of igus GmbH

For more information, contact Kausshik Ramanujachar, Product Manager, E-ChainSystems®, igus (India) Private Limited, Email: kramanujachar@igus.net, or visit www.igus.eu/recycling

New Standard of Performance for Chromatographic Analyses

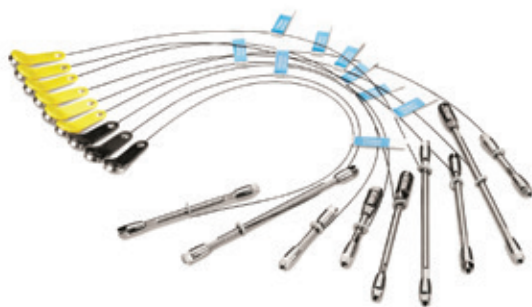
Novel Column Technology Designed to Put Disease Research and Drug Development on More Productive and Efficient Path

Waters Corporation has introduced ACQUITY PREMIER Columns, a new family of premium sub-2-micron columns featuring MaxPeak High Performance Surface (HPS) technology. The columns are for use with any brand of UHPLC system and can measurably improve data quality by mitigating the loss of sample analytes due to analyte-to-surface interactions. Designed for the analytical laboratory seeking to exercise greater control over their chromatographic separations, the columns improve sample throughput, assay-to-assay reproducibility and overall confidence in analytical results.

"Analyte loss due to non-specific adsorption is a significant problem that deserves more attention because of the cost of wasted effort and lost productivity. Most of the time, scientists don't even know what they are missing. There are workarounds but they come with their own problems," said Erin Chambers, Vice President, Chemistry, Waters Corporation. "So we challenged our engineers to come up with an innovative solution that removes one of the biggest impediments to getting quality results. Our ACQUITY PREMIER Columns rectify a problem that has long-plagued chromatography analyses and enable scientists to create the best quantitative and qualitative analytical methods whether for discovery, development or quality control applications."

Rising to the Challenge

Waters ACQUITY PREMIER Columns feature MaxPeak HPS technology, a hybrid organic/inorganic surface technology that forms a barrier surface layer between the sample and the stainless steel column. The



| Waters ACQUITY PREMIER Columns are ideal for both small molecule and biopharmaceutical applications. (Photo: Business Wire)

benefits of this new technology are many, among them:

- increased sensitivity for low-level, metal-binding analytes that would otherwise go undetected and unseen
- better all-around peak shapes and peak capacity for more accurate analyte identification and data interpretation
- greater reproducibility for separations prone to adsorptive losses meaning less re-work or troubleshooting, and more confidence in results

Willy Verluyten and Irene Suarez with Janssen Pharmaceutica NV, Belgium, evaluated the columns for their own methods development work. "The Waters ACQUITY PREMIER Peptide BEH C18 300Å Column shows an excellent degree of specificity and selectivity in denaturing and non-denaturing analysis of synthetic oligonucleotides, due to the absence of non-specific binding properties of this new column hardware in combination with great stationary phase performance," says Verluyten. "The Waters ACQUITY PREMIER Column is a highly-valuable addition to our column test package for the future development of synthetic oligonucleotides analytical methods."

From Challenge to Opportunity

The introduction of ACQUITY PREMIER Columns sheds light onto a well-known problem among scientists: the adsorption of sample analytes to the interior wall of steel analytical columns. This is a significant problem when analyzing metal-loving analytes ranging from organic acids and organophosphates to oligonucleotides, peptides, glycans and phospholipids.

Organizations are known to spend days and tens of thousands of dollars of precious product (e.g. oligonucleotides), just to condition an LC column prior to analysis in order to minimize adsorptive analyte losses.

Kerri Smith, Principal Scientist, at Waters Corporation has studied organic acid metabolites that play a role in diabetes, cancer and heritable diseases. "If you lose a low-level analyte because of analyte-to-metal adsorption, and don't detect it in its correct concentration, you'll never understand if it's playing an important role in the disease you are studying," said Smith.

Waters ACQUITY PREMIER Columns are ideal for both small molecule and biopharmaceutical applications and are manufactured with trusted sub-2-micron particle technologies; Bridged/Ethyl Hybrid (BEH) for maximum column stability, Charged Surface Hybrid (CSH) the best choice for mass spectrometry analysis, and High Strength Silica (HSS) for increased retention when analyzing challenging polar compounds. The columns are now available worldwide from Waters.

For more information about ACQUITY PREMIER Columns with MaxPeak HPS, download a free copy of the Waters white paper titled Low Adsorption UPLC Columns Based on MaxPeak High Performance Surfaces, or visit www.waters.com



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