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CHINAPLAS 2019 —— eye-opener for faus of hi-tech

CHINAPLAS 2019, the 33rd International Exhibition on Plastics and Rubber Industries, grandly opens today at the China Import & Export Fair Complex located in Guangzhou, China.

From today until Friday (May 24), the annual trade fair under the theme "Innovation is Key to the Future" will bring visitors insights into the essential technology needed for the plastics and rubber industries in the coming years.

The fair this year focuses on smart manufacturing, innovative materials, green and circular solutions. More than 3,500 exhibitors from 40 countries and regions showcase their latest products and solutions in an exhibition space of over 250,000sqm.

According to Adsale Exhibition Services Ltd., the show organizer, more than 3,800 machinery exhibits and 1,000 material suppliers are on show in the fair, presenting their latest solutions for plastics and rubber.

It is expected that about 180,000 professional visitors from 150 countries and regions will be visiting the show. Moreover, some 250 buyer delegations from China and other countries or regions are arriving for product sourcing and business negotiation.

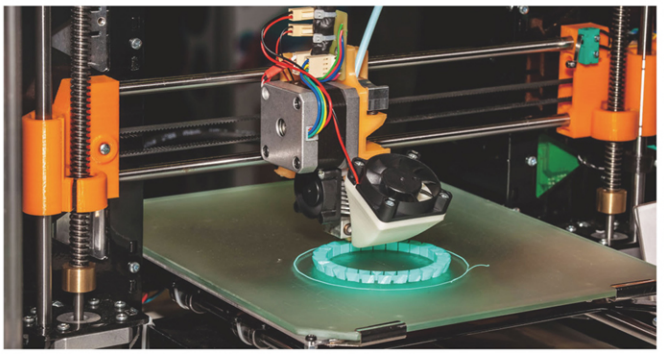
Debut in Guangzhou: 3D Technology, Recycled Plastics, TPE & Rubber Zones

As the world's leading plastics and rubber trade show, CHINAPLAS acts responsively to the market needs and technology trends and fully explores the new momentum in the plastics and rubber industries.

This year, CHINAPLAS comprises 20 theme zones to facilitate successful sourcing of buyers. Among them, the "3D Technology Zone", "Recycled Plastics Zone" and the "Thermoplastic Elastomers & Rubber Zone" make their debut in Guangzhou.

The 3D Technology Zone was introduced and received big success in the last edition of CHINAPLAS in Shanghai. In CHINAPLAS 2019, the zone returned in a larger scale and gathered more elite 3D printing suppliers. Exhibitors such as Autodesk, Hanbang, Bright, Sunshine, E-plus, GF, DMac, ZWCAD, Hong Cheng, Sigmasoft, Intamsys, etc. are presented and take center-stage.

A variety of high-end 3D printing (additive manufacturing) equipment, advanced 3D scanners (reverse engineering), 3D printing software and 3D printing materials are showcased, demonstrating the latest development of the prospective advanced manufacturing technologies.



3D printing is positively impacting the manufacturing industry.

manufacturing solutions, such as controllers, robotic arms, automated systems, equipment interconnection and visualization, etc. are showcased. Stand-alone machines and entire production lines are also exhibited.

Moreover, the concurrent event "Industry 4.0 Factory of the Future" emphasizes efficient production processes and practical applications of smart manufacturing solutions. Visitors are given the opportunities to experience the operation inside a factory of the future in real life.

In addition, the Recycled Plastics Zone is set up for the first time at the show, gathering leading exhibitors from China, Japan, Egypt, Latvia, etc. They display high-performance and recyclable materials such as rPET, LDPE, and PP. These materials can be used in a wide range of applications such as automotive, E&E, construction and building, etc.

Meanwhile, the Thermoplastic Elastomers & Rubber Zone aims at responding to the growing demand for energy-saving, environmentally friendly and lightweight thermoplastic elastomers (TPEs), which are gaining more applications in automotive, E&E and medical sectors.

Other theme zones are the Additives Zone, Auxiliary & Testing Equipment Zone, Bioplastics Zone, Chemicals & Raw Materials Zone, Chinese Export Machinery & Materials Zone, Colour Pigment and Masterbatch Zone, Composites & High Performance Materials Zone, Die & Mould Zone, Extrusion Machinery Zone, Film Technology Zone, Injection Molding Machinery Zone, Plastic Packaging Machinery Zone, Recycled Plastics Zone, Recycling Technology Zone, Rubber Machinery Zone, Semi-Finished Products Zone, Smart Manufacturing Technology Zone, Trade Services Zone.

Besides, 11 country/region pavilions have been set up, including Austria, China, France, Germany, Italy, Japan, Korea, Switzerland, UK, USA, and Taiwan Province.

Circular economy promoted to prime position

To foster circular economy is a global consensus. It is a major economic and social development strategy in China to achieve sustainable development. Following the ban on waste plastics import, recycling systems for renewable resources are urgently needed.

As such, circular economy is high on the agenda of the plastics industry. One of the missions of CHINAPLAS 2019 is to unlock the great potential and bounteous market opportunities arising from this megatrend.

Apart from the debut of the Recycled Plastics Zone, the "Recycling Technology Zone", first launched in 2016, comes with a stronger line-up of exhibitors this year, while the "Bioplastics Zone" introduces a vast number of biodegradable plastics and bio-based plastics to visitors with sustainability in mind.

More bioplastics are developed with improved properties and new functionalities.

In addition to the above theme zones, the first "CHINAPLAS x CPRJ Plastics Recycling & Circular Economy Conference and Showcase" was successfully held yesterday to facilitate mastery of advanced green technology in both processing systems and new materials. Speakers came from different countries have shared their experiences and insights.

The entire industry chain was analyzed and explained in depth and thoroughly by experts in the industry. Case sharing by renowned retailers and brands was also presented to demonstrate the latest applications.

Smart manufacturing continues to take center-stage

Smart manufacturing with Industry 4.0 applications is important to the transformation and upgrade of the plastics and rubber industries. Its influence is now going deep and wide.

As Chinese industry players seize the trend of smart manufacturing to reshape the industrial landscape on a national and global scale, the "Smart Manufacturing Technology Zone" is under the spotlight in CHINAPLAS again.

In the zone, a full spectrum of cutting-edge smart

Automated systems and robotic arms are crucial to achieving smart manufacturing.

Packaging innovations meet market trends

In light of the higher requirements for sustainability, functions and productivity, the packaging sector is facing opportunities and challenges. CHINAPLAS 2019 has plenty of innovative solutions that help the sector to address the needs.

To protect our planet from plastic wastes while maintaining the growth of the sector has become the top agenda of the packaging sector. At the mega show, many exhibitors display revolutionary biodegradable and bio-based materials which are on par in quality with conventional plastics.

Besides, a full range of high-end injection molding and extrusion machinery, film technologies, automation equipment for efficient and sustainability production are on display, facilitating packaging enterprises to upgrade their operations.

With the rapid growth of the young population and new consumption trends, experts from world-leading suppliers of green materials, flexible packaging and product brands are invited to the "Innovative Development of Packaging Materials under the New Consumption Trend Forum" to discuss how functional packaging materials can respond to the new market trends.

Potential of high-tech medical plastics further unlocked

The medical sector is a huge potential market which is growing at a fast pace. In view of this trend, CHINAPLAS has put in focus the application of plastics technology in medical devices, consumables and pharmaceutical packaging.

As medical plastics face higher user requirements and stringent safety regulations, many of the key suppliers of materials, such as silicone rubber, bio-safe resins and new polymers that have outstanding properties, are showcasing their high-tech offerings to show visitors from the medical sector.

An array of activities has been organized for the concurrent event "Medical Plastics Connect" to introduce the latest technologies of medical plastics, exploring more innovative applications for the medical sector.

Game-changing materials for automotive sector

The electro mobility (E-mobility) revolution offers plenty of opportunities for automakers and chemical producers, who are ready to master the corresponding technological challenges. In fact, the Chinese automotive industry is rapidly turning to electricity, and is leading the world's boom in the electric vehicle (EV) market.

Undoubtedly, innovative high-performance materials are getting wider applications in EVs. Crucial properties of the materials include flame retardant, hydrolysis and temperature resistance.

At the same time, lightweight materials, glass and carbon fiber reinforced thermoplastics as well as low-VOC resins continue to be the trend in the automotive sector. By contributing to the lighter weight of vehicles, plastics improve their energy efficiency and reduce CO2 emissions.

At CHINAPLAS 2019, many of the elite suppliers of new and innovative materials are on show. Visitors can get the first glimpse of a wealth of these materials that contribute to the rapid development of the automotive sector.

High-performance plastics are getting wider applications in automobiles.

Practical and inspirational concurrent events await you

Apart from exhibitions of high technologies, CHINAPLAS 2019 also presents a rich assortment of concurrent events that highlight some of the hottest industry trends. They include **"Industry 4.0 Factory of the Future"**, **"Design x Innovation"**, **"Medical Plastics Connect"** and **"Tech Talk"**.

In addition, there are more than 70 technical seminars where latest technology trends and market outlook are being discussed among professionals in the plastics and rubber industries.

Industry 4.0 factory in real-life operation

Building on the success of previous Industry 4.0 conferences at CHINAPLAS, the Industry 4.0 Factory of the Future event this year allows visitors to experience in real life the operation of a future factory.

At the fairground, there are two themed areas, "Manufacturing Intelligence Control Room" and "Smart Factory", to demonstrate practical Industry 4.0 solutions. The control room displays operational data recorded in machines operating at different booths and various factories in Asia and Europe.

Meanwhile, the Smart Factory located in the "Smart Manufacturing Technology Zone" simulates the production environment of the future manufacturing industry. Leading injection molding machine manufacturers join hands with auxiliary equipment suppliers to demonstrate how engineer and the control room communicate through data.

On the whole, visitors can view 10 simulation scenarios per day, from production shop floor, management to the entire supply chain. The scenarios include shift handover, seamless integration of production with supply chain, rapid R&D cycles, realizing smart production planning, etc.

The show organizer produces this event in cooperation with its core supporters of Industry 4.0 – iPlast 4.0, EUROMAP and VDMA. Enterprises that join in these demonstrations include Engel, Zhafir, Sumitomo, Piovan, Topstar, Matsui, and Monitor, among others.

Design x Innovation to bring inspirations on CMF

Industrial design continues to be a popular topic at CHINAPLAS. For this year, the organizer joins forces with the Guangzhou Industrial Design Association to present the Design x Innovation event, which comprises three parts: "CMF Inspiration Walls", "Design Forum" and "CHINAPLAS Designers' Night".

As in last year, the CMF Inspiration Walls reveals some of the emerging technologies being developed to advance CMF (Color, Materials and Finish) design for plastics. Covestro and Springfield-CMF are the repeat sponsors of this event. Meanwhile, PolyOne also participates for the first time.

CMF Inspiration Walls displays samples treated with DOD (Differential pressure Overlay Decoration) technology by Springfield-CMF. DOD is a process to stretch, laminate or transfer functional decorative coatings on different materials, including plastic, metal, wood, glass, or hybrid substrates. The coatings are printed with color, pattern and also can be embossed with different textures, special functions like soft touch and lighting effects.

For PolyOne, Geon FX Metal Compounds are introduced. These compounds are characterized by uniform metallic color effects in high gloss or matte appearance, flame resistance without additives, and cost savings by eliminating secondary operations such as painting, etc.

Meanwhile, Covestro showcases the Maezio Continuous Fiber-Reinforced Thermoplastic (CFRTP) composites which are extremely light and strong with a metallic effect. They can be reground and used in an injection molding process for chopped fiber composite materials, making them a sustainable material choice in an increasingly disposable world

This year's Design Forum is located in two places and fashioned around two themes: "CMF Design", a popular theme from last year, and "Design for Recycling & Sustainability" in response to the show's focus on green technology. Audience can get inspirations from award-winning product designs, leaders of renowned design institutes and representatives from enterprises.

There is a new highlight of the event this year – the CHINAPLAS Designers' Night. The event serves as a networking activity for the plastics and E&E appliances industries. Design masters from China, Asia and Europe will share their design and innovation experience of hot products. Innovative Design Display Corner will also be set up to display creative design works, including awarded design works of Guangdong Governor Cup Industrial Design Competition.

Industry 4.0 Factory of the Future

Manufacturing Intelligence Control Room
Venue: Opposite to Hall 4.2 Entrance, Zone A

Smart Factory
Venue: Booth 4.2D01 in Zone A

Features:
Demonstration of 10 scenarios of industry 4.0 solutions for covering production shop floor, management and supply chain at 10:00-16:30 every show day

Design x Innovation

CMF Inspiration Walls
Venue: Opposite to Hall 10.3 Entrance, Zone B

Design Forum
Theme 1: CMF Design
Date: May 22 (14:00-17:00) & May 23 (09:45-12:15)
Venue: Booth 11.3R21 in Zone B

Theme 2: Design for Recycling & Sustainability
Date: May 22 (09:45-12:15)
Venue: Outside Hall 4.1 on Pearl Promenade, Zone A

Medical Plastics Connect pinpoints unique technologies

As the medical plastics market continues to grow and develop, the CHINAPLAS concurrent event Medical Plastics Connect actively promotes medical-grade chemicals, raw materials, and equipment, establishing an efficient communication platform for medical devices, consumables, and pharmaceutical packaging manufacturers.

With more exhibitors expanding into the medical sector, the event is growing in scale and aims to show potential buyers the use of unique medical plastics technologies.

Medical Plastics Connect comprises "Medical Plastics Forum", "Pop-up Kiosk", "Medical Plastics Guidebook" and "Medical Plastics Guided Tour".

The Medical Plastics Forum, which has earned good reputation, continues to improve, covering a number of technologies and end products that are in demand, including biocompatible materials, polymer materials for medical consumables, innovative self-lubricating liquid silicone rubber, polyurethane products for high-risk medical devices, ultrasonic welding, 3D printing, and more.

International experts have been invited to share their valuable knowledge and experiences, and confirmed speakers come from both supplier and end user segments of the supply chain, including Lubizol, Momentive, PolyOne, Lehvoss, Branson, Johnson & Johnson, etc.

Meanwhile, the medical plastics product Pop-up Kiosk is staged to display exhibitors' latest medical product offering of all types, so that potential buyers can quickly spot their targets among the vast amount of exhibits.

Tech Talk returns with refined major themes

Tech Talk, celebrating its third year, has become a core part of CHINAPLAS.

Through collaborating with renowned exhibitors, such as DuPont, Lanxess, ExxonMobil, Ascend, KraussMaffei, Liansu and Jwell, Tech Talk unveils a wide array of new technologies and applications for different sectors, including automotive, E&E, construction, medical, packaging, etc. To delve deeper into different plastics applications, topics are refined to include 11 major themes.

The event not only presents major technological breakthroughs of exhibitors, but also provides a platform for industry professionals to better understand the challenges currently facing the plastics and rubber industries.

Medical Plastics Connect

Medical Plastics Forum

Date: May 21 (13:00–16:00); Outside Hall 4.1 on Pearl Promenade, Zone A

May 22 (10:00–12:15); Booth 11.3R21 in Zone B

May 23 (09:30–12:00); Meeting Room 8 South, Level B, Zone B

Medical Plastics Pop-up Kiosk

Venue: Zone A & Zone B Pearl Promenade

Tech Talk

Date: May 21–23, 2019
Venue: Outside Hall 4.1 on Pearl Promenade, Zone A; Booth 11.3R21 in Zone B
Language: Putonghua
Admission: Free of charge
Timetable:

May 21 13:00–16:00
Outside Hall 4.1 on Pearl Promenade, Zone A: Medical Plastics
Booth 11.3R21 in Zone B: New Energy Vehicle, TPE for Automobile

May 22 10:00–12:15
Booth 11.3R21 in Zone B: Medical Plastics

May 22 13:00–16:00
Outside Hall 4.1 on Pearl Promenade, Zone A: 3D Printing, Long Fiber Injection Molding, Hip Lifestyle with Plastics

May 23 13:00–16:00
Booth 11.3R21 in Zone B: Bioplastics, Composites & High Performance Materials, Antibacterial Solutions

May 23 10:00–13:30
Outside Hall 4.1 on Pearl Promenade, Zone A: In-mould Labeling, Precision Extrusion, Packaging Upgrade Solutions

Exclusive gifts for you

Trade visitors will have the chance to receive amazing gifts on Day 4 of the show (May 24), such as air purifier, Bluetooth sports bracelet, power bank, and special style USB. Limited redemptions and first-come-first-served while stocks lasts.

Venue: Hall 2.2 S69
Hall 9.3 S59

CEO Dialogue

Innovations and local strategies keep customers happy

Chairman of the Adsale Group, Stanley Chu, talked with two exhibitors of CHINAPLAS to find out more about the global companies' unique business strategies, especially that for the increasingly competitive Asian region.

Stanley Chu (SC) is the founder and Chairman of the Adsale Group, which organizes CHINAPLAS, and the Honorary Life President of Hong Kong Exhibition and Convention Industry Association (HKECIA). He has been a member of the Working Group on Convention and Exhibition Industries and Tourism under the Economic Development Commission of the Hong Kong SAR Government and the Chair of the Global Association of the Exhibition Industry (UFI) Asia Pacific Chapter (2011-2017). To acknowledge his dedication and contribution to Hong Kong's exhibition industry throughout many years, HKECIA presented Mr Chu the "Lifetime Achievement Award" in 2017.

John Keane (JK) is Executive Vice President of Nordson Corporation, with extensive experience within all the company's global operating segments. He has been with Nordson for about three decades and took over the Polymer Processing Systems segment in 2014. His duties include integrating and optimizing acquired polymer processing product lines within the company's Adhesive Dispensing Systems segment. Mr Keane holds a bachelor's degree in mechanical engineering from the Massachusetts Institute of Technology (MIT) and attended the Harvard Business School's advanced management program.

Nordson

SC: During the fiscal year of 2018 (ending October 31), Nordson Corporation achieved sales of USD2.3 billion, with 2% organic growth, 8% rise in operating profit and 11% in EBITDA over the previous year. Which business segments have contributed most to the growth?

JK: Nordson designs and manufactures systems used to dispense, apply, and control adhesives, coatings, polymers, sealants, biomaterials, and other fluids, to test and inspect for quality, and to treat and cure surfaces. On average, we have delivered annual organic growth of 5% over the past five-year period. The fastest-growing area of our business is our advanced technology segment, which includes products and solutions for medical and electronic systems.

Our strategy for long-term growth is based on solving customers' needs globally. We are continually driving value through new products and applications, as well as finding new opportunities in emerging markets.

SC: Which business segments have the biggest potential for future growth?

JK: Each of our segments has strong opportunities for growth. We are tirelessly developing opportunities to add value for our customers and create our own demand. Innovation has always been one of Nordson's core values. By understanding our customers' needs, we develop new products that will help them be successful.

We also continuously uncover new application opportunities. For example, the growth of electronic content in automobiles, such as cameras, safety sensors and screens, is a compelling new area for Nordson. We take pride in working with new and existing customers as technology advances, and our customers know they can depend on us for innovative solutions.

We strive to stay in lock-step with our customers to ensure they have the aftermarket support that they need to run their manufacturing lines as efficiently and effectively as possible. Across Nordson's substantial base of installed systems, we steadily develop product enhancements that will help our customers increase output, reduce waste, and improve the overall reliability of their product lines. With these kinds of relationships, we work hand in hand with our customers to identify new opportunities and expand our growth potential.

SC: As far as the China market is concerned, how is Nordson's business going?

JK: While we do not disclose country-by-country sales data, sales in our Asia-Pacific and Japanese geographic regions totaled USD753 million in 2018, which is 33% of Nordson's worldwide sales that year. Growth prospects in China have caused us to devote a significant amount of our investment budget to further strengthen our presence in that country.

SC: What are the important landmarks which contributed to Nordson's business development in China?

JK: By 1990, Nordson had set up offices in Hong Kong and Shanghai, and in 1995 we established a subsidiary in China to sell directly to our customers there. Our growth in China has been steady ever since. Currently 15 of our businesses have offices in mainland China and Hong Kong.

Our "footprint" in China includes production, sales, engineering, technical support, and aftermarket capabilities. In turn, these local capabilities are part of the company's global supply chain. Today we have operations in more than 30 countries.

This reflects Nordson's longtime strategy of serving as a global company with highly localized interaction with customers, including strong local technical expertise and a knowledge of local markets. International sales first accounted for more than half of our annual revenue by 1990. In 2018, they made nearly 70% of our total sales.

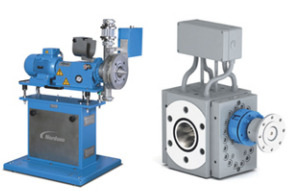
SC: How do you see the China market in the coming 5

Nordson's latest products on show

Nordson's Polymer Processing Systems (PPS) business is exhibiting melt processing systems for use by resin manufacturers, compounders, molding and extrusion processors, and recyclers, as well as for sale to extrusion and injection molding OEMs. These systems are designed to increase productivity, save energy, reduce material waste, cut costs, and enhance product quality.

The PPS product lines include:

- BKG® pelletizers, including underwater and water-ring types.
- BKG® melt delivery systems, including gear pumps, screen changers, and other melt filtration equipment.
- Extrusion Dies Industries flat extrusion dies and coextrusion feedblocks for film, sheet, and extrusion coating.
- Premier™ fixed-lip and Ultracoat™ flexible-lip slot dies for applying fluid coatings.
- Xaloy® screws and barrels for extrusion and injection molding.



BKG pelletizer and gear pump are part of Nordson's PPS product lines.

"Nordson's PPS business is unique for the range of melt processing components that it offers and the degree to which these products often can work together as part of an extrusion or molding operation, making us a single source of multiple components," said John Keane, Executive Vice President of Nordson Corporation.

"In many cases we can supply a combination of components that work together to optimize the customer's process. A recycler, for example, can rely on Nordson for pelletizers, melt pumps, and filtration systems, while a manufacturer of film or sheet can look to us for components ranging from screws and barrels to filtration systems and extrusion dies."

Nordson also offers a new system designed for recycling highly contaminated material. Called the HiCon R-Type system, it is an altogether new type of filtration system, processing highly contaminated polymer more efficiently than standard screen changers. The company is introducing at CHINAPLAS a new FlexDisc filter for piston-activated screen changers that substantially enlarges available filter screen area, increasing efficiency without the need for a larger machine.

Premier die positioner for accurately positioning a slot die.

Booth: 2.1F41

CEO Dialogue

BASF

Andy Postlethwaite (AP) is Senior Vice President, Performance Materials Asia Pacific, and Chairman & Director on the Board of Directors, BASF South East Asia Pte Ltd. He studied MBA at the University of New England in Australia and joined BASF New Zealand Ltd as a marketing trainee in 1986. Throughout his career with the company since then, he has worked in Malaysia, China, Hong Kong SAR and Singapore, where he is now based.

SC: How do you evaluate BASF's Performance Materials business in Asia Pacific region in 2018?

AP: Asia Pacific is a key market for BASF's Performance Materials division. While we faced challenging raw material and macro-economic conditions in 2018, we did outperform in products such as Ultraform® polyoxymethylene (POM).

Last year we inaugurated a 50:50 joint venture with Kolon Plastics to produce POM standard & specialty products for the global market. The joint venture enables us to serve the growing POM market, particularly in Asia and strengthen our ability to support our customers' needs with high-performing, innovative specialties.

Our focus continues to be on close collaboration with customers and fuelling our innovation pipeline with solutions for market needs. Our strong capabilities in R&D provide the basis for innovative products and applications.

BASF's Ultrason grades are materials especially designed for applications that require high heat resistance.

We look for important unmet needs in the market and develop solutions for that, and accelerate innovation by recognizing and fulfilling customers' needs, in tandem with regulatory changes.

SC: Does the trade tension between the US and China affect BASF's business? How does BASF cope with the impact, if any?

AP: As an international company with integrated global value chains, minimizing trade barriers and tariffs are essential to BASF operations. The company benefits – as do customers – from free trade as any duty represents an indirect tax. We are therefore concerned about the US measures and announcements, and the counter-measures of several of US trading partners, to impose import tariffs on a wide range of products that could affect the chemical industry and its numerous customer industries.

We are still analyzing the potential consequences of such measures on our business. BASF is deeply convinced of the value of open markets and a rules-based global order. We hope governments will, in the end, resolve trade disagreements through sustained multilateral dialogue and in respect of WTO rules.

SC: Looking ahead, what would be the biggest challenges or obstacles faced by Performance Materials in pursuing growth? How would the company overcome them?

AP: The macro-economic situation remains unpredictable. We continue to stay focused on our strategy and invested in our future. For instance, we recently launched the Creation Center in Asia Pacific, to enhance and bring the interaction with our customers to a new level. We will also speed up and boost our innovation power and penetrate new markets with the launch of our New Market & Incubation unit.

China remains one of the key markets for certain segments, such as electric vehicles. However, we see a slowdown in China. We will continue to innovate and collaborate with partners to grow the market and address market need.

How do you think the plastics industry in China will evolve in the next 5–10 years? And how will CHINAPLAS evolve?

SC: How China's plastics industry will change in the next 5–10 years will depend on different factors, such as government policies, Chinese and global economic situations, the development and trends in the global plastics industry.

China will carry on with its industrial transformation in the coming years and gradually eliminate low-end manufacturing as it turns to high-end production, which stresses the importance of technological innovation. Plastics will be applied in an even wider spectrum of industries, especially those requiring high performance in materials, e.g. electric vehicles, airplanes and railways, building and city infrastructural development, medical equipment and pharmaceutical packaging, electronic products with AI technology, sports and leisure, etc. Therefore, China has high demand for high-end machinery and technology in the next decade.

With the increasing labor cost in China, integrated automation technology will be in high demand. Deeper application of Industry 4.0 and the production of customized products in small batches at lower costs and faster speed will be more common in near future.

China has also stopped the import of plastics waste since the beginning of 2018. With increasing global concern on the plastics pollution problem, the plastics industry in China as well as the world will see fast changes related to plastics recycling.

Despite the slowed GDP growth in China in recent years, the Chinese government has laid strategic plans on future development of the country, e.g. the Greater Bay Area Plan transforming Hong Kong, Macau and nine provinces in South China into the world's innovation and development powerhouse; the Belt and Road Initiative promoting trade between China and emerging countries in Asia, Africa and Europe.

Chinese enterprises will invest more in R&D and

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years? What would be the opportunities and challenges? How would Nordson cope with them?

JK: Nordson will continue to make significant investments in China and other Asian countries to ensure that we grow along with the key markets in the region. Consider, for example, the fast-developing market for lithium-ion batteries used in automotive and energy-storage applications. Practically every one of Nordson's diverse businesses has developed technology that helps to improve battery production at every stage, including component manufacturing, cell production, module production, battery pack assembly, and product integration with vehicle and storage systems.

SC: Does the present trade tension between China and the US affect Nordson's businesses? What measures can be taken to minimize the impact, if there's any?

JK: The trade situation has certainly caused us to re-examine our supply chain structure, but with our large and growing operational presence in China and throughout Asia, we feel we are in a good position to respond nimbly in this changing trade landscape. Having a strong manufacturing presence in the region is a key advantage for us.

SC: What can visitors to Nordson's booth expect to experience in this year's CHINAPLAS?

JK: On display at our booth will be equipment representing every one of our brands. We will have an extensive technical team on hand, from technical service specialists to experts in application development. There will be technologies designed for every type of plastics processing operation, including general-purpose equipment that maximizes economy and output, systems configured for use in highly automated plant settings, and sophisticated systems for producing advanced products with critical requirements, such as battery components for energy storage and screen materials for electronic displays.

SC: You have been with Nordson Corporation for more than 27 years. What are the most significant changes you have observed in terms of the profile of customers, their requirements and expectations? How did Nordson cope with the changes? Could you give some examples?

JK: In the quest for profitability, increasingly customers have scaled back on in-house engineering, instead entrusting process development and maintenance to their suppliers. This has played into Nordson's "service-first" strategy. Our global service team has readily engaged this new need of our customers.

Growth in the plastics industry has increasingly been dependent on improving capabilities versus just increasing capacity. Nordson's emphasis on product development has brought a steady stream of more capable hardware and software that increases efficiency, increases output, and enables new features for our customers. In this way, we have delivered business growth beyond what the capacity numbers might indicate.

SC: What is your leadership style and business philosophy? What corporate culture and core values would you like to build?

JK: I believe in hands-on leadership where more is learned about an organization by walking the plant floor or participating in the engineering process than sitting in a conference room watching PowerPoint presentations. This is reflective of Nordson's culture. Our global team engages customers in their plants every day to look for ways to make their processes run better or help to enhance their products.

Nordson's founders also instilled in our mission statement a care for the communities in which we operate that still thrives today. The "Nordson Impact", as we call it, is a program that has contributed more than USD100 million in grants, scholarships, and donations, reflecting our commitment to improving the lives of the people in the communities where Nordson employees live and work.

SC: What was the greatest obstacle or crisis that you have ever encountered in your career? Could you share how you'd overcome it?

JK: Anyone who works in an industrial field deploying new applications, products, or processes knows that things don't always turn out right. It is in such a moment of crisis that the true values of an organization are demonstrated. Nordson has consistently demonstrated that we will never quit, will make it right, and will stick by our customers no matter what to ensure that they will keep coming back to us.

welcome more collaboration with overseas suppliers in the next decade. China-made technology is not just attractive in pricing but will continue to progress in terms of scope and technology.

CHINAPLAS, which is now serving mainly China and the Asian markets, will increase its focus on innovative technology and their applications. Sectorial promotion will further penetrate into different plastics application sectors with high development potential, e.g. medical, EV, AI products.

In response to market development, the scale of CHINAPLAS may exceed K Fair within 10 years. There will be more contribution by CHINAPLAS to the global plastics industry. The number of international visitors is expected to largely increase in near future. The growth will be more prominent from Asian countries and emerging countries in the world.

For BASF's Performance Materials, which countries/regions in Asia present a good prospect apart from China? Will you consider investing more in these places?

AP: Asia Pacific as a whole is important for us. Markets with historically strong demand in Asia are Japan and Korea. Recently, we see significant growth in ASEAN and South Asia as well.

From 2014 till today, we've acquired businesses to strengthen our core competencies, expand our product offerings and to seek new innovations. These efforts will drive the future growth of our company. For instance, we acquired the TPU adhesives business from TWSS, Taiwan; and entered into a joint venture with Kolon Plastics for the production of PM in Korea.

In Dahej, India, we expanded its manufacturing capacity of Cellasto® with a new production line and supplemented Cellasto's testing equipment. This was for faster response and local expertise, for the benefit of our customers.

Last year BASF started up a new production line for its high-temperature resistant thermoplastic Ultrason® (polyarylsulfone) at its site in Yeosu, Korea. In 2016, BASF expanded its polyurethanes system house in Bangpoo, Thailand, to meet growing regional demand, in particular from the transportation and footwear segments.

SC: Which application areas will be the rising stars for Performance Materials in the coming few years and the reasons for their fast growth?

AP: The plastics market has shown strong growth over the past years – serving the increasing demand of the electric vehicle, robotics, healthcare and consumer electronics segments in particular.

Several major trends drive the industries that we serve. For example, tougher regulations and the changing lifestyle and personalization of consumer goods that focuses on more sustainability. A number of products and applications that we launched in the last couple of years are well in line with these trends. For example, our bio-based PU foam systems with Elastoflex® E contribute to lightweighting. Ultradur® Barrier has excellent barrier properties against moisture and oxygen while containing the aromas.

Another key area for usage of plastics is in the building & construction industry due to rising population and rapidly growing infrastructure facilities. Plastics are widely used in this industry for applications ranging from pipes, to windows and cold storages. The market for cold storage is especially promising, with an expected growth well above GDP in the next years.

SC: You have been with BASF for more than three decades. What made you stick to the company? How would you establish staff loyalty as a leader of the corporation?

AP: BASF takes care of its employees, providing a clear career path and opportunities for growth and development. Establishing staff loyalty against this backdrop is not difficult. That said, I have always tried to maintain an open leadership style with my team across the region. This helps to build trust, understanding and collaboration.

SC: Do you enjoy living in Singapore? How do you maintain a work-life balance?

AP: Singapore is a pleasant place to live and work. I travel quite a bit for work though. So maintaining a good work-life balance is important. I try to maintain my exercise schedule when I travel and adhere to a good diet. I also try to keep to reasonable working hours while I'm in Singapore.

BASF co-creation projects highlighted

BASF is launching a few exciting technologies at CHINAPLAS 2019, including a new grade of Ultramid® Advanced – a new group of compounds based on polyamide 6T/6I.

Ultramid® Advanced T1000 introduced last year is the product group with the highest strength and stiffness within the Ultramid® family, with stable mechanical properties at temperatures of up to 120°C (dry) and up to 80°C (conditioned). Due to its partially aromatic chemical structure, it offers high resistance to humidity – outperforming many conventional polyamides and other PPA materials on the market.

Some co-creation projects are also highlighted, including a yoga outfit, a mobility care wheelchair, a building of the future, and GAC concept cars. They demonstrate the company's customer centricity and how successful collaboration along the entire value chain can better serve market needs – both now and in the future.

In short, visitors can expect to see how innovative chemistry-driven solutions are empowering the future of mobility, infrastructure, natural resources, and daily life.

On display are renewable and/or biodegradable polymers, which can be applied in single-use, disposable consumer goods; insulation systems which save energy and reduce emissions; and innovative materials for developing future transportation systems, such as lightweight automotive parts, and components for electric mobility.

Mobility care wheelchair.


Yoga outfit.


GAC concept cars.


Building of the future.

Booth: 11.2A41

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1. **Flame Retardant (FR UL94 V0, V2, HB) / Glow wire test (GWFI and GWIT > 750°C - 950°C)**
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2. **Non-Halogenated / Non-Brominated Flame Retardant Grades**
   - PBT + GF, PC/ABS, PC + GF, PP, NYLON + GF, PC
3. **Glass Fiber (GF) reinforced / Aramid Fiber Compounds (AFC) / Carbon Fiber Compounds (CFC)**
   - PC, ABS, PP, NYLON, PBT, PPS, PPE, ASA
4. **Light Shielding / Reflecting** - PC, ABS, PC/ABS
5. **Light Dispersive (LED Product covers / housing)**
   - PC, PMMA (General Purpose and High Impact grade)
6. **Impact modified (Low temp application: -20°C to -50°C)** - NYLON, PBT
7. **Wear Resisting / Self-lubricating / Low Noise / Low Friction (PTFE or MoS_2)**
   - POM, NYLON, PC
8. **UV Resistant** - ABS, PP, NYLON, POM, PC
9. **Over-moulding TPE** for - NYLON, PC, PP, PC/ABS, ABS
10. **GF reinforced improved surface finish** - PBT, NYLON, PC, ABS
11. **Dimensional stability / Minerals filled (TALC, $CaCO_3$, others)** - PP, NYLON
12. **High Density materials (Density > 2g / cm^3)** - NYLON, PBT, PP
13. **Alloys** - PC/ABS, PC/PBT, PA/PBT, ABS/PBT, PC/PET, PC/ASA, PBT/ASA, PA/ASA
14. **Thermoplastic Elastomers** - TPE, TPR, TPO, TPEE, TPU (FR)
15. **High Gloss / Anti-Scratch** - ABS, PP, PC
16. **Electric Conductive** - POM, ABS, PP, PS
17. **Anti-Static** - POM, ABS, PP, PS
18. **Flame Retardant PE for film / Blow molding** - PE
19. **Laser Marking** - ABS, PC, NYLON, PBT

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Welcome to visit us at CHINAPLAS 2019 Booth No. 2.2M75

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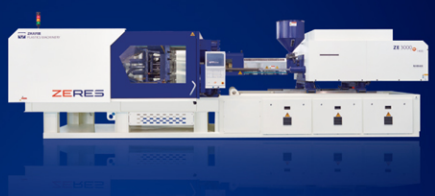

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Automotive plastics enter new era

High-performance and bio-based plastics are the focus

Today, the automotive industry has evolved to develop in four directions: new energy, lightweighting, intelligentization, and internet of vehicles.

The new energy and lightweighting trends have given a direct boost to the use of plastic parts in automobiles. For instance, the use of interior and exterior decorative parts like plastic bumpers, fenders and wheel housings has become a norm. Also, plastic front-end carriers, plastic tailgates and so on will be key development targets in the next round of product change.

Different from the former two trends with direct impact, the other two trends – intelligentization and internet of vehicles – promote the use of automotive plastic parts in an indirect way because of their needs for large quantities of electrical and electronic products. An example is that flame-retardant plastic materials, such as polyphenyl ether (PPE), polycarbonate/acrylonitrile butadiene styrene (PC/ABS) alloy, and flame-retardant reinforced polyamide (PA), are usually chosen to make the supports, frames and endplates of new energy power batteries.

Although its domestic vehicle production slid in the past year (down to 27.81 million vehicles), China continues to be the largest automobile market in the world. Compared to developed countries, China still has large room for development in terms of car ownership per capita, hence a high potential for the development of the country's automotive plastic parts industry.

Based solely on the figure that a passenger vehicle consumes 145kg of plastics, China's consumption of passenger vehicle plastic parts was estimated to be 4.03 million tons in 2018.

Across the global market, a number of groups are actively developing innovation in automotive plastics. Last year, for instance, saw the birth of the world's first car with 90% of its key parts and components made in plastics. The concept car was researched and developed under the framework of an innovative technology plan, and completed by scientists from the University of Tokyo in collaboration with automotive producers. Thanks to the use of different kinds of plastics, the car is 40% lighter in weight than ordinary vehicles.

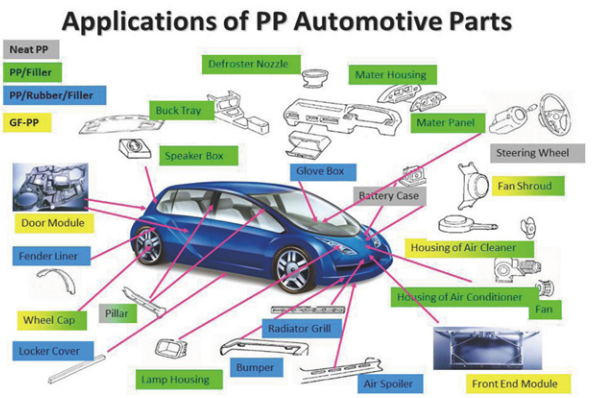
In conclusion, the aim and thinking of developing automotive plastics, which was targeted at reducing the car weight originally, have been gradually widened and enriched. High-performance plastics and bio-based degradable plastics have become the industry's focal points. With respect to the two points mentioned above, this article will provide a summary of the noteworthy news issues about automotive plastics in 2018 as well as a simple analysis of their characteristics and value when they are used in automotive applications.

High-performance plastics

Polypropylene (PP) and modified PP have been used in large quantities in automotive interior and exterior decorative parts as well as under-the-hood parts. In countries with a well-developed automotive industry, the per vehicle consumption of PP accounts for 30% of the total quantity of all plastics used in a complete vehicle, making it the kind of plastic that is the most consumed in automobiles.

Development planning states that by 2020, the average plastic content of a vehicle is targeted to reach 500kg, or more than one-third of the total materials used in an automobile. However, a big challenge exists in growing the average plastic content of a vehicle by solely boosting a vehicle's usage of PP and modified PP because the development of these materials has been reaching a bottleneck. Therefore, efforts must be put in developing high-performance plastics, which are light in weight and with strong mechanical performance, if it is to further increase the rate of utilization of automotive plastics.

But every challenge comes with opportunities. For instance, to precisely place a substantial quantity of battery cells in a tiny space, the battery holder, battery support as well as housing assembly must possess exceptionally strong dimensional stability and high mechanical robustness. According to the design principle of battery packs, the choice of material must also be flame-retardant in compliance with the V-0 flammability class of the US Underwriters Laboratories, Inc's UL94 flammability standard. With respect to combustion engine lightweighting, it is very challenging to replace metal combustion engine parts and components with plastic ones because today's minimized turbocharged combustion engines can produce very high temperatures.



Polypropylene used in automotive parts and components.

Nevertheless, the advantages of high-performance plastics should not be left out of consideration. For instance, engineering plastics produce less friction than their metal counterparts in such engine parts and components as timing systems, oil sumps and bearing carriers, which is favorable to increasing the combustion efficiency. Grasping this trend, many companies have over the past year presented how their high-performance plastics can be used.

Bio-based degradable plastics

A report released by the Organization for Economic Co-operation and Development (OECD) reveals that the global plastic waste production has been on a continuous rise since 2015, with more than 0.3 billion tons of plastic waste flowing into the environment every year. This figure is anticipated to reach about 12 billion tons by 2050.

For this reason, as far as the use of automotive plastics is concerned, the issue of being "green, environmentally friendly, renewable and easy to degrade" must also be taken into consideration in addition to expanding the materials' coverage in automotive parts and components. The key to tackling this issue is bio-based degradable plastics which have advantages including degradability, a wide source of raw materials, low odor, and a low content of VOCs (volatile organic compounds). In the "Made in China 2025" strategic plan, bio-based degradable plastics have been included in the forefront research area of new materials.

In recent years, large-scale automobile manufacturers and material suppliers from across the world have been putting in more efforts in the research and development of bio-based degradable plastics. Ford Motor Company, for instance, has been researching the application of this kind of products since 2008 and now the automobile manufacturer has been using eight kinds of sustainable materials, namely soybean foam, castor oil, wheat straw, Kenaf fiber, cellulose, timber, coconut fiber and rice hull, in automobiles.

Visionary Concept, a concept tire from Michelin.

Among suppliers, Michelin has launched a concept tire, Visionary Concept, with an aim to deal with "black pollution" caused by waste tires. Statistics reveal that China generated 330 million waste tires in 2015. Growing by 8% to 10% every year, this figure has reached nearly 400 million waste tires now.

Apart from Michelin, there are other suppliers that have pioneering designs to offer. One of them is the bio automobile team from the Eindhoven University of Technology in the Netherlands, which released a degradable car last year. Called "Lina", this car was manufactured from bio-based composites made of flax and sugar beet, excluding the wheels and the suspension system, to achieve its greatest advantages of being biodegradable and lightweight.

But despite that these concept products are very appealing, the world's plastics production is about 335 million tons, of which only 1% is bio-based plastics, according to published statistics. This is directly related to shortcomings such as high costs, poor heat resistance, and uncontrollable degradability.

Lina, a degradable car developed by the Eindhoven University of Technology in the Netherlands.

In conclusion, bio-based degradable plastics will develop in the following directions in future. The first is to develop bio-based composites with sufficient performance for use in automotive applications, promote their application and enlarge their market scale. The second is to develop bio-based materials that are low-cost but with high performance. The third is to use bio-based fibers or inorganic long fibers to modify bio-based degradable plastics with the purpose of further improving the overall performance of bio-based plastics and hence promoting their application in the automotive segment.

Conclusion

In automobile production, the use of 100kg of plastics can replace that of 200–300kg of other materials to achieve a fuel saving of 0.5L per 100km. The quantity of plastics used in automobiles of all kinds in China has now reached 130–160kg per vehicle. In particular, the quantity of plastics used in a passenger vehicle has reached to a level that accounts for about 10% of its weight, which is on par with the world's leading levels (9–12%). In the next phase, the issues of our concern will be how to grasp the development trend and enhance our leadership.

Teijin steps up innovation through materials integration

At CHINAPLAS 2019, Teijin Ltd's Resin and Plastics Processing Business Unit presents its CFRTP (carbon fiber reinforced thermoplastic) prepregs; resin solutions for vehicle windows; thermally modified, light-modified, electrically modified and environmentally modified polycarbonate resins, and so on.

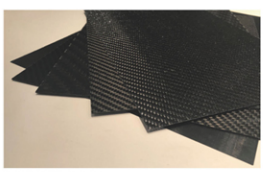
According to Wataru Fukumoto, Managing Director of Shanghai Teijin Kasei Trading Co. Ltd., CFRTP prepregs include those based on polycarbonate or polyethersulfone resins. Compared to traditional thermoset prepregs, they can be stored and transported at room temperatures and feature flame-retardancy.

"This kind of prepreg is aesthetic, light, thin and highly tensile. It can be compression-molded in a cycle time of several minutes and so it is suitable for mass production in a number of end-use areas including automobiles, electronics and electrical appliances (such as video camera cases and notebook computer cases), and daily products. In addition, it can be recycled, hence saving a great deal of money in secondary processing," explained Mr Fukumoto.

"There are new requirements on different aspects of raw materials, including appearance, electrical, thermal and light performance, as well as recyclability and degradability."

Wataru Fukumoto, Managing Director of Shanghai Teijin Kasei Trading Co. Ltd.

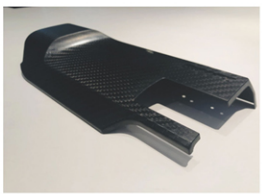
Presently, electronics and electrical appliances are the main application areas that Teijin's Resin & Plastics Processing Business Unit focuses in the China market.



CFRTP sheets.

"Electronics and electrical appliances are being developed to become more lightweight, environmentally friendly and intelligent. Therefore, there are new requirements on different aspects of raw materials, including appearance, electrical, thermal and light performance, as well as recyclability and degradability. Based on the expertise we have in resins, films, aramids, carbon fibers, composites and so on, Teijin is actively carrying out customization services according to customers' needs," said Mr Fukumoto.

He revealed that Teijin is also actively integrating its different materials that are taken care of by its different business units. For instance, CFRTPs presented at this CHINAPLAS are a result of integrating the Resin & Plastics Processing Business Unit's polycarbonates with the Carbon Fibers Business Unit's carbon fiber fabrics. Breaking down the barriers between business units, the effort to integrate enables the company to provide integrated and highly efficient solutions.



Video camera case.

In addition to electronics and electrical appliances, Teijin also places an emphasis on exploring the automotive market in China.

Teijin Ltd has established a joint venture, CSP-Victall, in China to provide glass fiber-sheet molding compound (GF-SMC) materials for automotive parts and components suppliers to produce automotive exterior decorative parts.

In 2018, the company invested in building its second Chinese factory which is still under construction at the moment.

CSP-Victall recognizes a rather high growth potential for new energy vehicle battery cells as well as pick-up truck parts and components in China. After construction completion, the new factory will mainly produce battery cells and products related to new energy vehicles such as the outer panels of pick-up trucks and automotive bodies.

Resin automotive front window.

Looking into the future, Teijin Ltd is very concerned about the topic of "circular economy". The company started implementing the "Declaration on Solutions to Marine Litter"(translated) on September 1, 2018. Meanwhile, it has launched activities related to the clearing of marine refuse and the recycling of PET beverage bottles.

Teijin finds that fluff fallen easier from raised fabrics made from synthetic fibers (such as wool) during the washing procedure is a significant cause of marine microplastic contamination because the fallen fluff flows into the ocean with the aid of water current after entering the drainage system.

Based on this issue, Teijin releases the "DELTA" product series as an alternative, which contributes to reducing marine plastic contamination by significantly lowering the amount of fluff flowing into the ocean (about 50% less as compared to Teijin's existing raised fabric products).

Booth: 11.2K41

Exhibits

High performance Ingeo biomaterials drive innovative applications

From coffee capsules to food appliances to 3D printing, these and more new innovative applications of Ingeo biomaterials across a spectrum of industries are waiting for visitors at NatureWorks' company booth.

Along with its customers and supply chain partners, NatureWorks demonstrates how Ingeo can be tailored to enhance performance attributes critical to application performance from barrier, to heat and impact resistance, to thermoformability, while embracing the concepts of circular bioeconomy.

Sustainable packaging is an application for Ingeo biomaterials to contribute to the goals of the circular economy from recycling to diverting food waste to compost.

NatureWorks displays an array of innovative applications using Ingeo biomaterials.

At the booth, a new generation of Ingeo-based tea bags and coffee capsules show how packaging can be designed to enhance beverage taste and aroma while offering the compostability that enables organics recycling of the used coffee grounds or tea leaves.

Specific to the market in China, NatureWorks also displays samples of adhesive tape and air-filled packaging made from Ingeo for e-commerce packaging and carrier bags used for supermarkets. These applications highlight how the company's partners are taking advantage of the versatility of Ingeo to introduce more innovative applications.

Meanwhile, a first-of-its-kind refrigerator liner is on display showing how Ingeo's barrier properties can be leveraged to increase the energy efficiency of refrigerators by 7-15%. These measurable energy savings are the result of peer-reviewed research conducted by NatureWorks and the United States Department of Energy Oak Ridge National Laboratory Peer.

Also under the spotlight is the new Ingeo 3D printing grade 3D450, a new break-away formulation for use in dual extrusion 3D printers. The formulation supports clean and fast printing of parts with a high quality finish.

Ingeo 3D450 is compatible with professional market-focused Ingeo 3D series grades 3D850 and 3D870. Like the other Ingeo 3D grades, at printing speeds up to 100 mm/s, 3D450 prints and cools well without warping.

As part of the company commitment to the circular bioeconomy and decoupling materials from fossil feedstocks, NatureWorks recently announced that 100% of the agricultural feedstocks used for Ingeo biopolymers will be certified as environmentally and socially sustainable by 2020, by the International Sustainability & Carbon Certification System to the ISCC PLUS standard of best practices in agricultural production.

Booth: 13.2L41

POLYSTAR well presents the Repro-Flex one-step recycling machine

The Repro-Flex plastic recycling machine and blown film machine are well presented at the booth of POLYSTAR.

The Repro-Flex is a highly efficient one-step plastic recycling machine, and was designed for the reprocessing of PE polyethylene (HDPE, LDPE, LLDPE) and PP polypropylene flexible packaging material, printed and non-printed.

Other types of material such as PS sheet, PE and PS foam, PE net, EVA, PP mixed with PU are also applicable on the Repro-Flex.

This cutter integrated pelletizing system eliminates the need of pre-cutting the material, requires less space and energy consumption while producing high quality plastic pellets at a productive rate.

POLYSTAR also uses energy saving and high performance motors as quality components for the machine.

In addition to in-house (post-industrial) film waste, the system is also able to process washed flakes, scraps and regrind (pre-crushed rigid plastic waste from injection and extrusion).

The company highly recommends the Repro-Flex to packaging film producers of commercial bags, garbage bags, agricultural films, food packaging, shrink and stretch films, as well as producers in the woven industry of PP woven bags, jumbo bags, tapes and yarns.

The stable material feeding together with the hot die face pelletizer produce round-shaped, uniformed size pellets that are higher in value and optimal for reproduction (extrusion processes).

The Repro-Flex is a highly efficient one-step plastic recycling machine for reprocessing different materials.

POLYSTAR is one of the experienced market leaders in the recycling field, especially for the recycling of packaging film. Until now, more than 1,700 POLYSTAR's Repro-Flex plastic recycling machines have been installed worldwide.

Booth: 7.1D21, 10.1J17

Demark: Smart packaging solutions are rising stars

At CHINAPLAS 2019, Demark Holding Group is showcasing a range of products including its ECO series of high efficiency preform injection molding system, iTP new servo energy-saving two-platen injection molding machine, DMK-CM high-speed fully automatic cap compression molding machine, and iPP high-speed specialized machine for packaging applications.

Packaging companies go smart amid rising costs

Jason Xue, Assistant of Chairman and Marketing Director, revealed that the plastic packaging industry has been under severe challenge from rising labor and raw material costs as, in terms of the cost of manpower, certain economically developed regions in China have become more expensive than some East European countries.

Jason Xue, Assistant of Chairman and Marketing Director

"Plastic packaging production is set to become more intelligent and integrated in future."

The rise in the costs of labor and raw material is pushing many plastic packaging companies to upgrade and transform themselves towards smart manufacturing. "Plastic packaging production is set to become more intelligent and integrated in future. In an environment that emphasizes smart manufacturing, the market has to achieve production line automation and, with the support of the internet of things and big data, build highly efficient, environmentally friendly and energy-saving smart production lines and factories that can continuously operate with few errors," explained Mr Xue.

He said that it is by combining intelligent production lines with smart systems that Demark is helping companies build completely intelligent and unmanned workshops, hence making better profits faster as a result of greatly improved production efficiency and reduced profit loss due to machine breakdowns and inefficient production.

Focusing on intelligent machine features

At CHINAPLAS 2019, Demark has its focus on displaying smart equipment and technology that can help shorten customers' investment payback period.

The ECO series of high efficiency preform injection molding system, for instance, is built with pressure retaining valves to enable that both the plasticizing and pressure retaining processes can take place at the same time. "This doubles the production efficiency as compared to ordinary cap injection molding machines," said Mr Xue.

In addition, the ECO series can be used in conjunction with Demark's high quality preform injection molds, post mold cooling robots, Beckhoff's control systems and high efficiency material drying systems so as to create more returns for customers at limited investments.

The DMK-R, a series of sixth generation fully automatic rotary blow molding machines from Demark, is distinctive thanks to its capability to automatically arrange and heat up preforms and carry out the stretch blow molding of bottles. With a broad range of products available, the automatic and highly intelligent series achieves an exceptionally high blow molding capacity of 2,400 bottles per hour, hence reducing the production cost and energy consumption by 30% and 46% respectively, according to Mr Xue.

DMK-R6 rotary stretch blow molding machine.

He added, "This kind of highly automatic and intelligent production model requires a very high degree of line integration. Ordinary suppliers without line integration capabilities will ultimately be merged or even eliminated."

For guaranteeing the quality of its equipment, Demark has in recent years introduced the most advanced CNC processing equipment from Europe and the US. For instance, the iTP new servo energy-saving two-platen injection molding machine on display at CHINAPLAS 2019 is made in China in accordance with European equipment R&D and manufacturing standards. In particular, the 800T, a model in the iTP series, offers over 25% higher energy saving performance than injection molding machines of its kind thanks to a dry cycle time of 4.1s as well as a clamping unit with characteristics including high rigidity platens, a touchless tie-bar design, a servo hydraulic system, as well as linear guides for platen movement.

Talent and policy are crucial factors

The four main application areas of the solutions currently offered by Demark are liquid packaging, medical packaging, FMCG packaging and automotive and motorcycle parts. "Through complete line integration and smart upgrading, we provide packaging solutions for beverages, fats and oils, and fast moving consumer goods, solutions for medical parts and pharmaceutical intravenous infusion, and solutions for automotive and motorcycle plastic parts," introduced Mr Xue.

Demark is presently engaged in long-term strategic partnerships with various technology R&D teams at renowned universities, scientific research institutes and The Thousand Talents Plan (a Chinese national recruitment program to bring in overseas top talents to China) to develop smart factory and lights-out factory turnkey solutions by realizing intelligent corporate decision-making, automatic production and smart warehousing and logistics through the use of internet and internet of things technology.

Mr Xue recognized that talent would be one of the key factors affecting Demark's development in the next few years. "The smart era has come! We have greater and greater demand for people talented in the smart manufacturing, especially those with expertise related to software and industrial control," he said.

Besides, he noted that national policy and multi-lateral trade relationship would also be significant factors as far as the company's development is concerned.

Booth: 9.1J41, 11.1E21

Exhibits

ILLIG's new IC-RDM 73K thermoformer makes Asian debut

The focuses of presence at CHINAPLAS 2019 for ILLIG, the German leading global supplier of thermoforming systems and mold systems for thermoplastics, are automatic roll-fed machines.

One of the highlights is the new IC-RDM 73K thermoformer which is displayed in Asia for the first time. The machine is integrated in a fully automated production line for drinking cups made of A-PET and A-PLA.

At the same time, the IC-RDK 80 automatic roll-fed machine is in live production on the line of an oval A-PET tray.

The new IC-RDM 73K thermoformer integrated in a fully automated production line for drinking cups.

IC-RDM 73K: High output and quick-change system for molds

IC-RDM-K machines are designed specifically for serial production of cups in various shapes and sizes from thermoplastic material. The new IC-RDM 73K has a high output and a quick-change system for molds. Moreover, ILLIG consistently implemented the Cleantivity concept in the machine.

Compared to the IC-RDM 70K machine, the forming area of the new machine is enlarged by 23%. Subject to applications, all improvements together contribute to an up to 25% increased production.

Besides, a new, easy to use system for block change of molds reduces tool installation and removal times by more than 50%, which means the change can be performed in less than 60 minutes.

At the show, drinking cups are produced on the line using a 32-up mold, at a speed of 50 cycles per minute. The cups are made of A-PET and A-PLA films (0.7 mm thick). The machine on stage is combined with an in-line PH 73 stacking machine which can be variably equipped with different discharge options.

Machines of the IC-RDM-K series are also frequently used as in-line systems with pre-linked extruders, e.g. for large-volume production of drinking cups in quantities of millions. The ILLIG IC supports the aspects relevant for large-volume production. It includes modules for general process optimization, high productivity and availability as well as minimization of operation costs.

IC-RDK 80: High availability and easy operation

With IC-RDK series, ILLIG developed a forming and punching technology suitable to achieve excellent part quality and reproducibility of rays and hinged packs, used for protection of food during transport and as sales packs. The machines feature high availability and easy operation.

Heated materials are formed by means of pre-stretcher and compressed air, and the part is punched out of the material in the same cycle. Thanks to this method, parts can be manufactured without punching mismatch in the rim area, and thus automatic pack processing is improved.

The company showcases the IC-RDK 80 automatic roll-fed machine with live production on the line of an oval A-PET tray made of a 0.4 mm thick film with A/B stacking using a 10-up mold, at a speed of 50 cycles per minute.

Booth: 5.1M01

Bright future anticipated for biodegradable polymers

When it comes to agriculture and gardening, we regard them as eco-friendly, clean and sustainable industries. Yet ironically, most of them are still using traditional non-biodegradable thermoplastics such as single-use plant pots, root trainers, polybags and mulch foils.

In particular, hydroponics is a fast-rising sector in the agricultural industry, but most hydroponic reservoirs are currently built using single-use, non-biodegradable plastic pots, as Dr. Karsten Brast, CEO of Spectalite GmbH, pointed out: "Thousands and thousands of non-biodegradable thermoplastic containers are polluting the environment every day."

Can substituting non-biodegradable plastics with 100% biodegradable polymers effectively reduce the constantly rising non-degradable plastics accumulation in the environment? Yes, but the use of 100% bio-degradable polymers in the gardening, agricultural and hydroponics industry is still very limited, according to Dr. Brast.

Dr. Karsten Brast, CEO of Spectalite GmbH

"Switching from traditional plastics to eco-friendly biodegradable polymers will be a major shift, a disruptive change across all industries."

"Bio-based alternatives are regarded as lacking performance such as inadequate properties, difficult processability, limited raw material supply, limited new supply chains, and the lack of understanding and experience. But the biggest hurdle is the cost, which is too expensive due to the high material costs of bio-polymers. These obstacles are restricting the use of biodegradable materials," he explained.

But this is changing. At CHINAPLAS, Spectalite is displaying products and applications for the agricultural, gardening and hydroponics industry – 100% biodegradable, easy to process, and low-cost.

Spectalite uses high-performance, low-cost natural fibers such as bamboo, rice husks and wheat straw to increase the performance of bio-polymers. The reinforcements are natural and sustainable and bring cost levels of bio-polymers to a level that opens the door to mainstream applications.

Spectalite is a global supplier of sustainable materials and products. Its "Spectadur" material is durable and recyclable and so can reduce weight and cost, while its "Spectabio" material is 100% biodegradable or compostable.

These materials are available in two forms: as bio-compounds suitable for injection moulding, extrusion and blow moulding, and as bio-sheets suitable for compression moulding and thermoforming. To suite different product needs, different grades are offered with varying strength, stiffness, impact and flow properties.

Dr. Brast is optimistic that biodegradable polymers will gain a bigger market share year on year across all industries. The reasons are two-fold: countries around the world are gradually enacting legislation to ban single-use, non-biodegradable plastic items such as single-use cutlery; meanwhile, consumer awareness is reducing the demand of eco-unfriendly products. He expects that these two factors will accelerate the shift to completely biodegradable polymers and more investments will go into the development and manufacturing capacity of bio-polymers.

He is confident that Spectalite materials, with the right cost levels, can accelerate this development, bringing huge market opportunities and potential. "Currently, the market for biodegradable polymers is expected to expand substantially. Global demand should clearly exceed a million tons by 2022," he forecast.

Dr. Brast hopes that people will give up using eco-unfriendly plastics. "Let us limit the use of traditional, non-biodegradable plastics wherever possible. Switching from traditional plastics to eco-friendly biodegradable polymers will be a major shift, a disruptive change across all industries. Let us make this shift happen quickly. It is necessary now!" he urged.

Compounds and fibers.

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Promising new trends in medical 3D printing market

The 3D printing market has been flourishing worldwide in recent years with the technology having permeated into a number of different industry sectors including construction, medical, aerospace, consumer products and education. From 3D-printed houses to 3D-printed hearts, and to 3D-printed toilet bowls, the technology is showing enormous market potential. Rapidly developing, this market is also driving demand for upstream materials. The current main materials for 3D printing are plastics, rubber, metal powders, epoxy and ceramics. With unique edge in performance, plastics are a hot choice of material for 3D printing.

Statistics from foreign research institute MarketsandMarkets anticipate that the global 3D printing plastics market, being worth about USD0.49 billion and USD0.62 billion in 2017 and 2018 respectively, will reach USD1.97 billion in value by 2023. This represents a compound annual growth rate of 26.1% in the years between 2018 and 2023!

More importantly, the study also suggests that by 2023, the medical sector will prevail in the 3D printing plastics market.

The US and Europe keep leading positions

The aerospace, national defense and medical sectors are major end-users of 3D printing plastics. Thanks to the high maturity of these sectors in their regions, North America and Europe will continue to be the main markets of 3D printing plastics by 2023, followed by the Asian Pacific region.

The forward integration of major polymer producers is one of the factors that drive the growth of the 3D printing plastics market. Also, other factors, including the increasing demand for 3D printing technology in all kinds of applications, as well as the demand for bio-based plastics, also have a positive impact on the 3D printing plastics market.

The US, Germany, China, Japan and the UK are the major consumption markets of 3D printing plastics, thanks mainly to the ever increasing use of 3D printing technology in all kinds of end-user industries in these countries.

In North America and Europe, those big names in the chemical industry are investing more and more on the 3D printing plastics market. These companies are working with printing machine manufacturers to develop 3D printing plastic grades that are suitable for use with specific technology.

The leading 3D printing plastic brands include 3D Systems Corporation from the US, Stratasys Ltd, DuPont, BASF, Evonik and SABIC. With mature sales networks and knowhow in the 3D plastics market, increasing investment in research projects, and strong technology and market development capabilities, they are capable of upgrading their existing products to suit new applications.

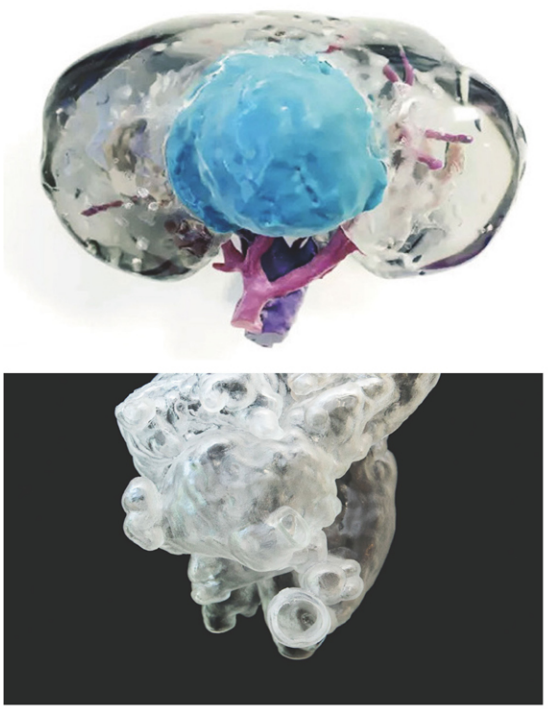
As for China, 3D medical plastic products are being widely used in the medical industry. For instance, a total of seven products in relation to 3D printing plastics were selected to be listed in the 2018 Results of Defining the Classification of Medical Equipment (translated) recently released by China's National Institutes for Food and Drug Control. They include medical equipment products such as light cured modeling materials, which is a kind of light cured resin, for dental casting applications.

Medical sector will prevail in 3D plastics market

According to MarketsandMarkets' study, based on the end-user industry, the 3D printing plastics market has been segmented mainly into aerospace and national defense, medical and healthcare, automotive, electrical appliances and electronics, and so on.

The study shows that while the medical sector took up the largest share of the 3D printing plastics market in 2017, it is anticipated to occupy a leading position by 2023.

It is also expected that medical facilities and equipment, and orthopedic and dental implants will dominate the growth of the medical 3D printing plastics market in the next foreseeable few years.



3D-printed kidney and heart (Image courtesy: Austin Health 3D Medical Printing Laboratory)

Promising prospect for PEEK development

As medical materials have direct interaction with biological systems, there are stricter medical requirements on their biological compatibility, safety and so on. Their material selection, development and approval processes are also more stringent compared to those of other functional materials.

The materials that are mainly involved in polymers for medical 3D printing are polyamide (PA), polyethylene terephthalate (PET), polyethylene (PE), polyvinyl chloride (PVC), polytetrafluoroethylene (PTFE), thermoplastic polyurethane (TPU), polycarbonate (PC), polypropylene (PP), acrylonitrile butadiene styrene (ABS), and so on.

It is noteworthy that polyetheretherketone (PEEK) has become an emerging hot material in the medical 3D printing plastics sector thanks to its excellent manufacturing and mechanical performance.

PEEK resin, which is a kind of special engineering plastic with ultrahigh performance, is the kind of resin with the highest thermal resistance grade and the best comprehensive performance. PEEK is high heat-resistant (with a loaded heat deflection deformation temperature reaching 316°C, a long time service temperature of 260°C, and an instant service temperature up to 300°C) while being abrasion-resistant and toxic-free. Together with outstanding fatigue resistance, chemical corrosion resistance, and ductile and tensile strengths, the biological material has exceptionally high potential for use in the medical implant sector.

At present, PEEK is mainly used in implants for surgeries for spines, traumas, joints and so on. One typical application is lumbar interbody fusion cage. Compared to conventional orthopedic surgical implants made from materials like titanium and so on, those made from PEEK stand out positively with advantages including offering instant cervical stability, securing fixed bone grafts, and facilitating bone graft fusion. In addition, thanks to PEEK's X-ray permeability, they will cause no interference to CT or MRI scanning.

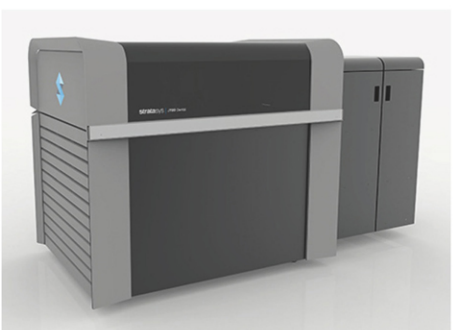
What's more, PEEK is also used in such areas as artificial joints, artificial intervertebral discs and artificial nuclei. All in all, PEEK is more and more widely used clinically in medical products for spinal surgeries, traumas and orthopedics.

Four distinctive technologies

At the process technology level, 3D printing has gradually become an important direction of development for medical technology in the aspects of, for instance, implant manufacturing, tissue model manufacturing and surgery analysis and planning, tissue engineering support material customization, and cell or tissue printing.

The more often used technologies for the 3D printing of medical plastics today include fused deposition modeling (FDM), selective laser sintering (SLS), stereolithography (SLA), and PolyJet.

Every of these four processes has its own distinctive advantages and is being improved continuously. An example is the world's leading 3D printing solution provider Stratasys' new J720 Dental 3D multi-material 3D printer. Being ultra-efficient, the new machine offers 1.75X greater daily throughput than competing DLP and SLA dental printers!



The J720 is an all-in-one dental printer combining speed, large capacity, high resolution and access to up to six materials at once.

Compared to smaller single-material printers, the J720 offers faster production thanks to a large tray that enables the printing of up to six materials at the same time. The need for material change is therefore reduced and the installation of multiple printers becomes unnecessary. Also, it can print multiple case types for faster production.

In addition, the J720 is built for realizing smarter production. With the GrabCAD Print software, it provides a simplified, all-digital workflow that makes it easy to go from the CAD model to a printed part. And its cloud connectivity enables the user to remotely monitor multiple printers from a single source, while material consumption and machine utilization can be automatically tracked.

Application expands from equipment to drug making

The three major application areas of 3D medical plastic products now are artificial tissues and organs, medical equipment and 3D-printed drugs. As far as artificial organs are concerned, applications include living tissues (printed blood vessels, cartilage tissues and so on) and artificial organs (artificial livers, hearts and so on).

With respect to medical equipment, the current applications of 3D medical plastic products include transfusion and infusion equipment, central catheters, cardiac catheters, syringes, peritoneal dialysis catheters, medical adhesives, as well as all kinds of medical catheters, medical membranes, wound dressing materials

HP sees great financial prospect in customized packaging

As the end consumers' behaviors, which closely affect how a product is packaged, are dramatically changing, the packaging market is having increasing demand for customized, multi-version and rapid time-to-market products.

However, packaging converters may not be able to meet today's needs for flexible, on-demand customized production as their existing lines are primarily designed for the mass production of single products. As a response, HP Inc. provides corresponding solutions to fulfill these needs.

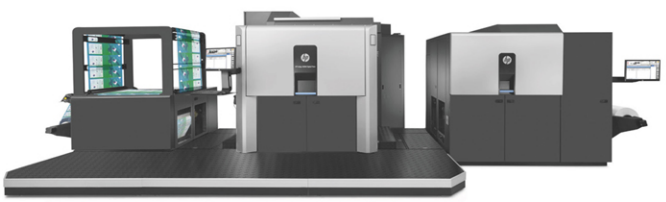
Presenting multiple printing possibilities

HP is bringing new ideas and ways to a traditional industry like packaging during CHINAPLAS 2019.

According to Eve Cai, China Market Development Manager of HP Inc., the company is displaying the HP Indigo 20000 digital press, a leader of its kind in China, at CHINAPLAS 2019. Presenting multiple printing possibilities, this machine enables packaging converters to deal with complicated market requirements with ease and high efficiency, such as short runs, varied SKUs, and customized campaigns.

"In future, it is certain that the 5G mobile development will lead the industry to develop towards the Internet of Everything (IoE), move Industry 4.0 forward, and achieve automated, on-demand production."

Eve Cai, China Market Development Manager of HP Inc.



HP Indigo 20000 digital printer.

The HP Indigo 20000 digital press is said to be built for all kinds of flexible packaging printing applications including food bags that meet EU and US-FDA guidelines. Applicable to all types of thin-film substrates, it allows for multi-color printing.

The digital press' maximum web width is 76cm (30 inches). It supports 7-color and ElectroInk White printing and can print on synthetic substrates with a thickness from 10-250 microns (0.4-10 pt.). In addition, its mid-web format makes it possible to freely produce any packaging and label application (including large labels, IML and shrink sleeves) as well as increasing the label production.

"The digital press fits flexible packaging and label printing production. It is a digital color printing process that matches gravure quality and is safe for primary food packaging. It makes small orders, short runs, and the printing production of customized packaging labels realistic. It speeds up lead times and reduces waste and carbon footprint by producing in a more environmentally friendly way," said Ms Cai.

Changes in the consumer market

In the market of China, as the middle class is trading up, the young generation is having different consumption habits, and mobile internet is up and coming, people's consumption behaviors and awareness are being rapidly changed.

Ms Cai stated that the popularity of the internet has promoted the development of PC-end internet, while the increasingly mature 3G/4G market has resulted in the birth of all kinds of mobile-end applications. These developments have changed people's living and consumption behaviors and habits. In future, it is certain that the 5G mobile development will lead the industry to develop towards the Internet of Everything (IoE), move Industry 4.0 forward, and achieve automated, on-demand production.

Applications of HP's digital printing packaging technology.

Meanwhile, according to HP's big data, in the five years between 2016 and 2021, the personalized gift market will grow by 55% to USD31 billion in value. In addition, 25% of consumers are willing to share their personal data in exchange for personalized experiences, 50% of the Z generation (born after mid-1990s and before 2010) wish to possess personalized products in order to satisfy their desire to express their own personality, and 70% of consumers are willing to pay 10% more money for personalized products.

"HP Indigo digital presses are always at the forefront of industrial development. Since several decades ago, we have been constructing equipment and platform processes that are fit for factories of the future. As the end consumer products market and the packaging market change, we will go on to provide high efficiency and innovative solutions," said Ms Cai.

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and so on. In future, plastic products that can tolerate a variety of disinfection methods, those that can improve blood compatibility and tissue compatibility, and those for new diagnoses, treatments, preventions, and healthcare, will become development trends.

Another direction in which 3D printing is developing is drugs. Polymers play a critical role in the research, development and production of modern pharmaceuticals as they perform significant functions in improving pharmaceutical quality and in the development of new drug delivery systems. Currently, pharmaceutical polymers are mainly used to improve dosage forms and drug release and targeting, synthesize new drugs, and so on.

Starting from the fast making of medical models to using 3D printing technology to directly make hearing aid housings, implants, complex surgical equipment, 3D-printed drugs and so on, and from non-living 3D-printed medical equipment to bioactive printed artificial tissues and organs, 3D printing has been more deeply and widely developing in the medical industry as a result of the continuous development of the technology and the growth in the demand for more precise and customized medical needs.

3D-printed pills.

eSUN introduced recently its 3D printing system for medical insoles, an originally developed new technology of China. Using an integrated scanning, designing and printing machine, this project is mainly targeted for use in the production of tailor-made diabetic foot insoles, flat foot insoles, and sports shoe insoles.

In particular, the iSUN3D FLX high-speed flexible printer is a double-station machine that can separately print two insoles concurrently. Being highly efficient, it is able to form a pair of adult insoles in 40-60 minutes. Its double E-axis motors help eliminate the problem of filament clogging while ensuring even and smooth extrusion of filaments. Besides, the use of high-precision imported parts makes it possible for the printer to produce smooth surfaces.

For material, eSun's eTPU-95A filaments are used. This material's high flexibility and resilience lead to a largely lowered permanent compression set rate, while its moisture permeability and hydrolysis resistance enable samples to be tolerant to working conditions such as being washed in clear water and warmth keeping. It is also environmentally friendly as it requires no heating base plate, can extrude filaments smoothly, and is free of odor and taste.

After getting a user's foot data by 3D scanning, the iSUN3D FLX printer can print a pair of insoles that fit the user's foot shape with the super-soft TPU filaments. Such insoles can set the foot rigidly in shoes and hence help maintain foot health.

The machine features a 3.5-inch high-resolution touch screen display and a "resume printing after power off" function.

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