

# www.ChinaplasOnline.com 展报 SHOW DAILY **Internationa** 2019 · 5 · 22

# Myriad of pioneering technologies unveiled



PLAS 2019 opened yesterday, offering a grand platform for global plastics and rubber technologies.

CHINAPLAS 2019 has moved into the second day. Crowds of visitors flooded the 28 exhibition halls yesterday, enjoying the technology feast offered by the renowned mega show of the plastics and rubber industries.

Thanks to their high-performance properties, plastics are gaining wider applications in different sectors, yet opportunities do come with challenges, as producers and consumers require higher efficiency, quality and sustainability.

On such an efficient platform for showcase and sourcing in the industries, a wide spectrum of products and solutions, from machines to systems and materials. is presented at the fairground. Many of them are the latest high-tech inventions making their debut in China, Asia or globally.

#### **Fruitful concurrent events**

The concurrent events on the first day were successfully held with fruitful results. The live demonstrations of smart manufacturing, CMF inspiration walls, medical plastics showcase and technical forums were all crowd-pulling activities.

Let's waste no time and check out some of the exciting exhibit debuts and highlights this year, and don't forget to take part in the events and forums scheduled for today!

#### Smart manufacturing and 3D technologies on the fast lane

Industry 4.0 is now a widespread goal among enterprises in the plastics and rubber industries, and therefore, elite manufacturers are rolling out their latest smart manufacturing technologies, which are practical solutions freshly installed in high-tech factories around the world.



Visitor Count

Day 1 44,715

25.3%





Arburg, for example, has made digitalization transformation the theme of its participation in the show.

Apart from production efficiency enhancements, digitization also facilitates personalized customer service to improve user experience. At its company booth, Arburg presents the Chinese version of its new customer portal, which uses a cloud-based solution with various functions, such as checking important information of machines and ordering spare parts, etc.

Italian manufacturer Moretto shows its devices that contain an Industry 4.0 dimension. The company assures that equipment and software can be interconnected, so that constantly refreshed data are always available for achieving high efficiency.

Moretto offers its MOWIS supervising and management system, in which devices are interconnected to facilitate the total control of the entire automation chain in plastics processing plants. At its booth, the displayed exhibits are connected with the MOWIS.

Apart from Industry 4.0, the emerging 3D technologies also play a crucial role in the digitalization of manufacturing. For this reason, the scale of the 3D Technology Zone at CHINAPLAS continues to grow, with more exhibitors presenting their latest solutions in this designated area this year.

For instance, Autodesk showcases the 3D modeling software, Moldflow 2020. Moldflow injection molding analysis software helps users validate and improve plastic part design, injection mold design, and injection molding processes by predicting the procedures, mold temperature and resulted warpage. Results of the analysis can be shared with other parties along the supply chain to achieve smooth collaboration.

The 3D printing technologies, in particular, have been rapidly developed. LEHVOSS shows its new developments in the fields of high-temperature-resistant and reinforced materials, alongside the display of some new applications in 3D printing, including a sailing yacht, technical parts in automobile construction and mechanical engineering. The new tailor-made plastics from product lines LUVOSINT and LUVOCOM 3F are also presented.

CHINAPLAS boosts the promotion of Industry 4.0 by organizing the concurrent event, Industry 4.0 Factory of the Future, in which injection molding machines and auxiliary equipment builders and control systems suppliers share their experiences and demonstrate the operation of a smart factory.

The live demonstrations yesterday attracted crowds of visitors who are eager to understand the practical operation of smart factory. The operators at the scene explained in detail how control systems connect remote shop floors with smooth data transfer. The event will last till the end of the show, so make sure you go to check it out!



The live demonstrations of Industry 4.0 Factory of the Future attracted crowds of visitors.

# Automotive manufacturing: cutting-edge technologies under spotlight

The rapid emergence of electric, intelligent and networked vehicles is revolutionizing the automotive sector. At CHINAPLAS 2019, a series of high-tech solutions for this evolving sector are being shown, including materials and production technologies for interiors and exteriors of vehicles.

The AKXY concept electric vehicle (EV) presented by Asahi Kasei catches the eyes of many visitors. The AKXY, meaning "Asahi Kasei x You (customers)", was designed based on the platform of EV manufacturer GLM. The concept EV uses a wide variety of Asahi Kasei materials, products and integrated systems, numbering 27 products in all. Most of them are available for adoption in massproduced vehicles, such as engineering plastics to replace metal and enable weight reduction.

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The two-seat concept EVs developed by BASF in collaboration with the Research and Development Center of Guangzhou Automobile Group Co. Ltd. are attractions as well. These models adopt several of BASF's innovative materials and solutions, have a futuristic design, and are tailor-made for Chinese car owners with diversified



The concept EVs showcased by BASF are eye-catchers of the show.

#### lifestyles.

The adoption of more intelligent networks is changing the very nature of automotive interiors, posing higher aesthetic and functional requirements, which encompass a combination of conventional accessories and electronic parts.

Graphene is one of the best conductive materials available, yet manufacturing challenges remain, such as ensuring even dispersion when the graphene is mixed with polymers. At the show, some exhibitors present their approaches to solve this problem.

Wuxi JuWang Plastic Material Co., Ltd. has made a technological breakthrough regarding the conductivity of graphene in polymer materials, by which the original properties of the polymer can be maintained while good conductivity is achieved.

The Graphene Polymer Composites R&D Center of Shandong Lutai Holding Group has developed an advanced graphene/PVC composite, in which graphene is grafted to the surface of PVC resin, achieving dispersion on the nanoscale for improved conductivity.

Another challenge faced by the automotive sector is how to seamlessly integrate electronic components

into surface decorative parts. Kurz Group has put forward a solution which uses its In-Mold Decoration (IMD) films and transparent, conductive PolyTC films to produce exquisite and metallic-looking touchscreens that can be hidden when they are in standby mode.

For production technologies of exteriors, ENGEL demonstrates how its integrated solution can contribute to cost-effective production of sophisticated LED lenses. Lenses for LED headlamps with a highly demanding geometry are produced on a tie-bar-less ENGEL e-victory injection molding machine, with an integrated ENGEL viper 40 linear robot, in a two-cavity mould by ACH-Solution.

Guangdong Yizumi Precision Machinery Co., Ltd.'s ReactPro+Hybrid Manufacture System cleverly combines polyurethane (PU) and injection

molding materials, improving productivity with a one-shot process. The system can produce thinner PU products at a lower cost, and those components have better appearance and touch, higher scratch resistance, and even some selfhealing properties.

Innovative solutions for new energy vehicles and lightweighting were also discussed in the concurrent event Tech Talk held yesterday. TEDERIC Machinery Co., Ltd. discussed the developments of large tonnage multi-component injection molding technology and their impacts on automotive structural parts production. COPERION also shared how its extrusion technology can benefit the production of lithium-ion battery. Meanwhile, LANXESS introduced its engineering plastics solutions for innovative and sustainable new mobility, and KRAIBURG TPE unveiled its innovations for the automotive sector.

# High-tech medical plastics unlock market potential

As the medical plastics market continues to grow and develop, more key suppliers of silicone rubber, bio-safe resins and new polymers that offer high-grade properties and biocompatibility are on show, reflecting the market potential.

> The ViviOn Cyclic Block Copolymers (CBCs) from USI Corporation are fully hydrogenated polymers based on styrene and conjugated dienes manufactured via anionic polymerization. They are applicable in optical, medical, bio-diagnostic, food container, deep ultraviolet (UVC), electronic products, etc.

These novel CBCs are medical grade plastics which have superb purity, superior UV-Vis transmittance, remarkable thermal stability, excellent UV durability, high chemical resistance, low water absorption and low density. They passed US Pharmacopeia<88> Class VI and <661>, as well as JP Pharmacopeia 7.02, and selected chapters of ISO10993 biocompatibility. They are also registered in the FDA Type III Drug Master File.

Supported by advancements in injection molding technology, the use of liquid silicone rubber (LSR) has been increasingly popular in recent years, with medical being one of the notably applications.

At CHINAPLAS 2019, Haitian International shows its ZHAFIR electrical LSR injection molding technology. The ZHAFIR LSR system based on full-electric injection molding technology not only provides high-precision single-component LSR products, but also ensures the precision of high-quality embedded parts or multicomponent self-adhesive products.

The special designed injection improves the qualified rate of self-adhesive, while the system can prevent surface burns, bubbles and flash of products which are easy to appear in the process of LSR forming.

At the same time, Foshan Yuen Gen Plastic Extrusion (Continues on P6)

#### 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 - Design Forum

#### **Time: 0**9:45 - 12:15

**Venue:** Outside Hall 4.1 on Pearl Promenade, Zone A **Theme:** Design for Recycling & Sustainability

Time: 14:00 - 17:00 Venue: Booth 11.3R21 in Zone B Theme: CMF Design

#### Medical Plastics Connect - Medical Plastics Forum

**Time:** 10:00 - 12:15 **Venue:** Booth 11.3R21 in Zone B

#### Tech Talk

#### **Time:** 13:00 - 16:00

**Venue:** Outside Hall 4.1 on Pearl Promenade, Zone A **Topics:** 3D Printing, Long Fiber Injection Molding, Hip Lifestyle with Plastics

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> Hall 7.1 D21 Hall 10.1 J17



04 Snapshots

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Everyone is happy to welcome the much-anticipated CHINAPLAS 2019.

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4.2 馆 D01 智能工

Located in 4.2D01, the Smart Factory exhibition area has live demonstration of one worker controlling an operation system.

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# First day of CHINAPLAS 2019 brings colors and excitement

Mobile

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On the first day of CHINAPLAS 2019, various exhibitors demonstrate their extraordinary products and technologies to compete for the attention of visitors. Let's take a look at some highlights on the spot.

With the 5G era approaching, the appearance of mobile phones will just be smarter and smarter.

Automatic technologies help manufacturers save time and manpower.

The unique display at LG's exhibition area.

The amazing visitor streams of CHINAPLAS are always a subject for photography.

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# Moretto showcases energy-saving and intelligent auxiliary systems

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At the booth of Italian leading auxiliary equipment manufacturer Moretto, the innovative solutions that take center stage are the result of a continuous investment on technological development. They are distinguished by being efficient and low energy consumption machines, conceived with the criteria of Industry 4.0 and based on the respect for environmental needs.

One of those on display at CHINAPLAS 2019 is the



Moisture Meter Manager is equipped with the sensor MM CROWN for measuring the moisture of the granule.

Moisture Meter Manager, a real excellence in Moretto's drving range. This revolutionary device reads in-line the moisture content of the granule, manages and controls in close loop the drying process, guaranteeing product certification and energy savings.

Moisture Meter Manager is equipped with the sensor MM CROWN for measuring the moisture of the granule. When it enters the hopper, this detection allows the system to accurately predict the drying process that the drver must handle.

The dried material exiting by the hopper is further analyzed by the MM BOX sensor that, thanks to the exclusive Power-Peak technology, measures with an extraordinary precision the exact content of water present in the polymer (from 3000 up to 15 ppm, with a temperature range of 20-180°C).

levels allows Moisture Meter Manager to automatically manage the dryer working conditions and to maximize process performances only using the strictly necessary energy. This creates a perfect close loop that integrates the drver into a fully automatic adaptive system.

At the show, Moretto also showcases some "mini dryers" proposals. The X Comb range, thanks to its powerful turbocompressors, zeolite technology, dew point equalizer (up to -60°C) and exclusive OTX hopper, is suitable for drying small quantities of material (hourly production from 1 to 20 Kg/h) in the medical sector.

wufi MM// Chinaplas® 2010

Maximum efficiency and auto calibration are strategic factors for an optimal transport of plastic materials. For this area, the company presents EXA, a flexible conveying system able to manage up to 6 Kasko receivers, including powerful suction units with side channels VS E, cyclone filter FC suitable for the transport of large quantities of granules or dusty regrinds.

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The system is connected with MOWIS, Moretto's supervising system and is manageable by portable devices Master K key pad and Master 300 touch view. The EXA system is complete equipment which ensures high control, performance and great flexibility in case of expansion of the system.

In the process of transformation of plastic materials, dosing is a matter of precision, but also of control and monitoring. Moretto displays its new loss-in-weight dosing unit DPK, the gravimetric dosing unit DGM Gravix and DBK Gramixo, which are excellent for extrusion. These devices allow high precision dosing, modularity, reaction speed, connectivity and remote control.

Te-Ko temperature controllers complete the displayed range of products. They ensure absolute efficiency and precision in the automatic temperature control both in the molds of the injection molding machines and in the cylinders and rollers of the extruders.

Booth: 4.1C45

#### (Continues from P2)



The Medical Plastics Forum discussed hot technology and market trends.

Machinery Factory debuts its whole stainless steel precise extrusion line for medical tubes production. As introduced, the new line's production speed is increased

by 30% and realizes fully digital control with simpler operation. It uses a closed-loop automatic control to achieve correction of product error.

The Medical Plastics Forum has proved insightful yesterday. Participated by experts from leading suppliers, the forum discussed technology and market trends along with hot topics in the medical sector.

Visitors can also check out the Medical Plastics Popup Kiosk, which highlights selected medical products offered by exhibitors.

#### Innovative materials sought after in areener construction market

The booming construction industries in China, India and Southeast Asia are expected to boost the share of Asia Pacific in the global building and construction plastics market owing to increasing urbanization.

At CHINAPLAS, Jiangsu Top Polymer Enterprise Ltd introduces its Topolymer 9 series, which is heatstabilized PP/EPDM based thermoplastic vulcanizate (TPV). The series can be widely used in various applications including construction seals and other parts where softness and conformity are needed. The products are designed for injection molding, extrusion and blow molding. They are completely recyclable.

As for production lines, Qingdao Sanyi Plastic Machinery Co. Ltd world premieres its automatic large capacity SPC flooring extrusion line. The advanced system features the advantages of stable running control system, energy saving and environmentally friendly. With capacity of about 1.5T/H, the whole line adopts the international first-class level of safety protection. The full set of electrics is made with SIEMENS.

#### Multifaceted forums inspire visitors

A series of forums at the show continues to shed lights on current trends in different sectors. For example, in the Tech Talk being held today in the afternoon, 3D Printing, Hip Lifestyle with Plastics and Long Fiber Injection Molding are the main focuses.

NatureWorks is to introduce the biomaterial solutions for 3D printing. In order to demonstrate the wider applications of plastics in daily lives, Huntsman presents the application of polyurethane (PU) for footwear.

In the area of long fiber injection molding, KraussMaffei is to explain the one-stop process combining mixing and injection molding, while Nordson will share cases showing solutions for long glass fibers, among others.

At the Medical Plastics Forum, Momentive is to present "Innovated Self-Lubricated LSR and The Advantage in Needle-free Access Valve", while LEHVOSS will discuss the topic of "LUVOCOM High-Performance Compounds in Medical Technology". PolyOne will introduce polymer solutions for medical consumables, and Lubrizol will present its medical TPU for high-risk medical device applications

Last but not least, the much-anticipated Design Forum is to kick off today. In addition to presenting new ideas of CMF design, the forum also provides an opportunity for participants to gain insights on the current design trends of plastics recycling and sustainability. A new networking activity, CHINAPLAS Designers' Night, will also be held at Langham Place Guangzhou tonight.











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### Striving for a sustainable planet through innovation



According to John Shipley, Business Unit Director of KM Packaging, the past year has been very interesting for plastic packaging: "We've seen a significant shift in attitudes following the airing of BBC TV's Blue Planet. There has been a mass conscious awakening and re-evaluation not only about the use of plastic in our everyday lives, but also an increased awareness of what happens to the plastic after we have used it.'

He adopts a positive view that change brings innovation and challenges bring opportunities, which means that this is an

John Shipley, Business Unit Director of KM Packaging

"Recyclability of plastic will be essential and as plastic must form part of the long-term solution to tackle reducing food waste."

exciting time for the plastics industry. "Across the globe, we are seeing movement towards the circularity of the plastics economy, viewing plastic waste as a resource and, in doing so, ensuring we are able to optimally reduce, reuse and recycle plastic," he said.

#### **Reducing plastics footprint**

To KM Packaging, a supplier of flexible packaging to leading food manufacturers around the world, plastic has its benefits: its versatility and functional capabilities mean it is suitable for a variety of applications, and the positive role that plastic plays in reducing food waste should not be overlooked.

To meet evolving global market demands, the company has reduced its plastic packaging footprint and ensuring cost savings both in packaging and distribution, greatly benefiting food manufacturers, meat and seafood processors, fresh produce growers and packers

For example, a change from 100% rigid plastic clamshell pack to pulp/fibre tray with top sealed plastic lidding film can reduce plastic weight by over 95%, K Peel lidding film suits many tray types whilst also providing safe, tamper-evident pack, which is easy for consumers to open.



Looking ahead, he stressed that keeping abreast of legislation surrounding packaging and food contact status is key. Meanwhile, keeping updated of the changing demands of retailers such as supermarkets to reduce their use of plastic and ensure the recyclability of plastic packaging is also important.

"Recyclability of plastic will be essential and as plastic must form part of the longterm solution to tackle reducing food waste. We as an industry must continue to innovate. whilst our governments need to make necessary investments in infrastructure to collect and recycle plastics more effectively," he reiterated.

#### Lidding film technology in action

KM Packaging is presenting its specialist lidding film range to the Chinese market, along with its regional partner XILE Net Solutions, who are distributors of Proseal in-line tray sealing machinery. On display is a GT0s, which is a state-of-the-art automatic, mediumcapacity, high-speed in-line tray sealing system. It combines high throughput with rapid tool-changing and space-saving compact design, using KM Packaging's leading-edge K Peel lidding film.

He pointed out that this combined technical solution can suit a variety of tray types. including CPET, APET, RPET, PP, Pulp, Paperboard and Aluminium foil. Its film range includes mono-polymer solutions for recyclability and non-plastic lidding film solutions that can be composted after use.

This new film technology comes in response to a major shift towards chilled and fresh produce. "As world economies grow, we become ever more time-poor, increasing the demand for pre-prepared ready meals, convenience and fruit and vegetables," he observed.

He expects food manufacturers and processors as well as fresh produce growers and packers will benefit from tray sealing technology and materials. Companies that supply the food industry with flexible packaging materials will also benefit from a comprehensive range of solutions, which can also be supplied to local converters for further conversion such as printing, lamination and perforation.

**Booth: 9.2E61** 

### **Exhibits**

## Arburg's Chinese version of new customer portal presented for the first time

Arburg presents the digital future of plastics processing at CHINAPLAS with several relevant topics: the new customer portal, the potential of augmented reality (AR) for service purposes, as well as digital assistance systems.

Meanwhile, the application highlight is a complex turnkey system that produces ready-to-use LSR/LSR wristwatches within the injection molding cycle.

Other exhibits are an electric Allrounder from the Golden Electric series for medical application and a Freeformer 200-3X for industrial additive manufacturing. The three exhibited machines are networked via the Arburg ALS host computer system.

#### Setting the course for the digital future

Arburg's portfolio for IT-networked and production-efficient plastic parts production ranges from digital assistance packages, predictive maintenance and remote service to the new customer portal and Arburg's own MES, the ALS host computer system.

As a central component of Industry 4.0, ALS enables online data exchange across production facilities and locations (horizontal integration) as well as with a PPC/ERP



The new Arburg customer portal provides a variety of services via a cloud-based solution. The Shop app for ordering spare parts is an important feature.

system (vertical integration). At the fairgrounds, all machine exhibits are networked via ALS. The new customer portal, which is being presented in Guangzhou for the first time in a Chinese version, provides a variety of services in a clear and well-coordinated manner using a cloud-based solution.

In addition, visitors have the opportunity to find out more about the six digital Arburg assistance packages for starting, setting up, optimizing, producing, monitoring and servicing Allrounder injection molding machines

#### Complex production of LSR wristwatches under spotlight

Production of LSR/LSR wristwatches is showcased at the company's booth as an application highlight and as a benchmark for what is currently possible using LSR processing

A hydraulic two-component Allrounder 570 S with a clamping force of 2,200 kN and size 400 and 70 injection units is arranged in an L-configuration, fully automatically producing two bicolour wrist straps made from the LSR materials Silopren 2670 (hardness 70 Shore A) and 2630 (hardness 30 Shore A) in a cycle time of 70 seconds.

#### Electric Allrounder produces respiratory masks made from PC

In addition, an automated Allrounder 370 E Golden Electric is used at the show to demonstrate that the Golden Electric series is suitable for the precise production of medical technology parts.

The exhibit with a clamping force of 600 kN produces breathing masks for babies using a single-cavity mould from Mehow. The 2.98 gram molded parts made from PC are removed and set down by a Multilift Select linear robotic system. The cycle time is around 15 seconds.

#### Freeformer presented for industrial additive manufacturing

The open Arburg Plastic Freeforming (APF) system offers great freedom in terms of materials. Users can process their own original materials and optimize droplet size as well as process control themselves. The process is based on qualified plastics in the form of inexpensive granulates, which are also used in injection molding.

Arburg has also added the large Freeformer 300-3X to its portfolio. This threecomponent machine can additively produce complex and resilient functional components in hard/soft combinations, made from two plastic components plus support material.

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![](_page_8_Picture_18.jpeg)

ZL-Machinery Co., Ltd. has successfully developed and produced high-speed cast film machines, cast breathable film production lines, multi-layer co-extrusion cast film machines, perforated film lines, laminating composite machines, geo-membrance/ laminating lines, cast film and waterproof sheet production lines, EVA solar cell encapsulant film production lines, testing use cast film/laminating machines, etc. by accumulating over 20 years of experience in plastic machines. Our company is technically cooperating with scientific research organizations as well as large and medium-sized institutions, having rich experience and strong executive ability. Our machinery is with stable and reliable quality, advanced performance and high flexibility, obtaining wide recognition and high praise from worldwide clients.

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# 5G era is here! New materials and technologies drive consumer electronics to boom again

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The rise in economic standards and the upgrade of consumption in recent years are promoting the standards of electronics and electrical products in multiple dimensions including material, appearance and user experience. At the same time, these products are also being developed to become higher-end, smarter, more customized, more differentiated, more lightweight, more materially durable, more energy-efficient, greener and eco-friendlier, more protective to consumers, and so on. Profound changes have been brought to people's life and work as a result. Through the use of new materials, designs and technologies, many companies are striving to improve the performance and appearance of electronic and electrical products with the aim to achieve continuous product innovation and improvement.

#### Opportunities on materials arising in 5G and foldable display era

For some electronics and electrical appliances companies, particularly those in the keenly contested mobile phone industry, an ultimate way to break through homogeneous competition is to seek new developments through new materials.

While the global smartphone market consumption slid in 2018, the 5G technology is viewed as the last life-saving straw. Analysis foresees a wave to replace existing phones with their 5G counterparts in 2020. Because higher performance is demanded for a mobile phone to implement the 5G technology, higher challenges and performance requirements are in place for mobile phone materials. The 5G technology is not only changing the mobile phone industry, but also opening up an era of opportunities for new materials. Among the new materials with a very positive outlook are liquid crystal polymers (LCPs) for mobile phone antennae.

![](_page_9_Picture_7.jpeg)

For a mobile phone to implement the 5G technology, higher phone performance is demanded and hence higher challenges and performance requirements on phone materials are in place.

LCPs are aromatic thermoplastic polyesters. They are available in two types, one of which being lyotropic liquid crystals, which display liquid crystal characteristics when dissolved in solvents. The other type is thermotropic liquid crystals, which have liquid crystal characteristics when melted. At present, thermotropic LCPs are mainly used in the electronics industry because LCPs have outstanding performance for small electronic devices and are mainly suitable for injection molding in mass production. Among those commercialized engineering plastics, LCPs are exceptionally fluid, can fill small and thinwalled products, and have high thermal stability and excellent environmentally friendly flame retardancy in the lead-free reflow process. Also, they possess characteristics such as extremely low water absorption, short molding cycles and low shrinkage rates.

The rapid development of the electronics industry has placed many new requirements on LCPs. Dielectric performance is one of these requirements because LCPs are known for

Material	Dielectric Constant
LCP, glass fiber reinforced	3.00-4.00
PA 12, glass fiber reinforced	3.00-9.00
PA46, 30% glass fiber reinforced	4.00-4.60
PA66, 30% glass fiber reinforced	3.50-5.60
PPA, 33% glass fiber reinforced	4.40-4.60
PPS, 40% glass fiber reinforced	4.00
PTFE, 25% glass fiber reinforced	3.00

The dielectric constants of traditional glass fiber reinforced engineering plastics.

having a low dielectric constant intrinsically. Nowadays, as the communication speed is ever increasing and the 5G technology transmits in the high frequency range (1-20GHz), device materials are required to be low in dielectric constant and dielectric loss while having good processing properties to allow for the manufacture of parts with complex designs. Despite a lower dielectric constant, most LCP grades do not meet

industry standards for the specification of low dielectric constant. To meet industry needs, Shenzhen Wote Advanced Materials Co Ltd, a significant enterprise in the research and manufacture of special performance polymer materials in China, has already developed several new grades to cover the required range of dielectric constants. The dielectric constants of these new grades at 10GHz fall in the range from 2.5 to 8.0, whereas those of most conventional LCPs are between 3.7 and 4.5.

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The coming of the 5G era and the rapid penetration of all-screen displays will lead to a further increase in the demand for LCP soft board antennae as a solution to the demand of smart end-products for high speed and high frequency transmission, and lightweighting.

Also going viral on WeChat's Moments page like the 5G technology are "foldable displays". Samsung, Huawei, Royole and Nubia have all rolled out foldable phones. This has brought "foldable displays" from concept into application. 2019 will be the first year of the boom of foldable phones, following which a number of parts and components sectors will benefit. In particular, the colorless polyimide (CPI) film segment, which has association with plastic processing, will encounter new development opportunities.

The cover window of foldable phones has to be both foldable and able to guarantee scratch resistance. On one hand, glass, the original material for making phone cover windows, will eventually be eliminated because it fails to satisfy the requirement of being foldable. On the other hand, films made of CPI, which is a kind of flexible and colorless plastic, are expected to be an ideal material for making the cover window of foldable displays. The

production of CPI requires the coating of a several dozen micron thick layer of a mixed material. say siloxane, on the surface to give CPI a glass-like feel as well as a higher tensile strength. Currently. manufacturers that can mass produce CPI films mainly include Kolon Industries from Korea, Sumitomo Chemical from Japan, and SKC from Korea.

![](_page_9_Picture_19.jpeg)

In, Similar to the 5G technology, "foldable displays" also go viral on
 WeChat's Moments page.

#### Innovative, trend-catching processing technologies

In the electronics and electrical appliances industry, there are trends to use plastics for the sake of aesthetics, wall-thinning, energy saving and environmental friendliness, metal replacement, lightweighting, and so on. But without the support of innovative equipment and processes, it is not possible for the industry to use plastics innovatively.

In the modern consumer electronics segment, minimal wall thicknesses, perfect shapes or a glossy finish are the highest requirements that can be placed on the housing of a product. The variomelt from the Austrian ENGEL company is a kind of injection molding technology with controlled temperature variation (variothermal injection molding technology). Its basic working principle is to heat up the mold cavity before melt injection, and after it is fully filled by the melt, the mold cavity is cooled down. As this increases the contact temperature between the melt and the cavity wall, the solidification of the surface layer is slowed down, resulting in a high-gloss finish without wrinkles or flow marks.

Through such controlled temperature variation to optimize the surface, PC-ABS can be perfectly injection molded with pre-molded organic sheets. The result is extremely smooth surfaces despite different shrinkage rates, very thin wall thicknesses and robust housings, which are perfect enough to fulfill market needs. The variomelt injection molding technology is suitable for modern consumer electronic products including light guide panels, lenses, styling parts, and so on.

![](_page_9_Picture_25.jpeg)

Products produced by variomelt, a variothermal injection molding technology from Austria.

What people require for electronics and electrical products change forever. Therefore, the market is always after new materials and processing technologies that are highly reliably and cost-efficient.

# Wood Plastic Composite: a fully recyclable solution

![](_page_10_Picture_5.jpeg)

Alfeo Bonato and Marco Meneghello, Sales Managers of Bausano

"At Bausano, we want to promote the maximum sustainability for the plastic life cycle with new ideas to recycle plastic waste and save energy consumption."

The plastic pollution problem has taken the world by storm with powerful images of oceans full of floating plastic debris. The solution to save the environment, however, is not just to eliminate plastic completely, but also to create new materials.

"At Bausano, we want to promote the maximum sustainability for the plastic life cycle with new ideas to recycle plastic waste and save energy consumption," said Alfeo Bonato, Sales Manager of Bausano & Figli S.p.A, a leading extrusion line designer and producer from Italy founded in 1946.

The company is tackling this problem with wood-plastic composite (WPC), utilizing the inherent characteristics of natural wood aesthetics combined with the tenacity to endure harsh outdoor conditions. This results in a long lifespan unusual for natural wood, even with regular maintenance.

#### China: world's second largest WPC producer

Why WPC? "Construction and demolition waste is one of the largest waste sources in the EU. The EC Waste Directive 2008/98 targets a more sustainable construction industry, recovering 70% by weight of its non-hazardous construction and demolition waste by 2020. To meet this objective, new solutions must be found to achieve an efficient material recovery from demolition waste," explained Marco Meneghello, Sales Manager of Bausano.

Currently, the United States produces almost half of the total WPC global market share, with China the second largest producer in the world. "Today's major production growth rates of WPC can be found in China's WPC-extrusion (25% per annum) and China's demand

for WPC is growing," he added. Other rapidly emerging WPC markets include South East Asia, Russia, South America and India.

#### Longer life, lower cost

WPC is a family of products that encompass profiles, boards and granules. It is produced with a mixture of polymers (PVC, PE, PLA or PP) and vegetable components, mainly wood dust, but also rice husks, almond shells, etc. Cheap, resistant and versatile, it represents a new frontier in the field of building and industrial materials.

The advantage of WPC is numerous. WPC can be used over large areas, is resistant to fire, moisture and mould, is smooth yet non-slip and is pleasant to walk barefoot.

Thanks to these features, WPC is ideal for eco-friendly flooring, exterior cladding in private and public spaces, fencing, profiles and finishes, sunscreens, self-locking tiles, beach decking, parks and gardens, decorative items such as planters, railings, gazebos, piers and non-slip steps and countless other uses.

#### Advanced production technology

Bonato pointed out that Bausano's POLYWOOD is WPC composed of waste from other processes such as renewable raw materials and recovered polymers. "POLYWOOD is one of the few environmentally friendly materials with negligible environmental impact. Unlike mineral rubble that requires an expensive disposal process, WPC is 100% recyclable and can be re-transformed into a new product at low cost," he noted.

Bausano POLYWOOD technology can obtain profiles composed of wood powder up to 80%, with features that make them better than wood in terms of reliability, performance and production costs.

In this context, Bausano has produced innovative extrusion lines suitable for the production of WPC granules with high-quality mechanical features, starting from renewable raw materials selected for environmental protection. They are also fully customizable and highly efficient at any production output. "Our MD Plus extruders feature ease of use and time saving on maintenance and cleaning, which are always our goals during the study and design of our granulation lines," he stressed.

**Booth: 4.1L61** 

![](_page_10_Picture_24.jpeg)

Wood Plastic Composite is 100% recyclable

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Automation by innovation.

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