



CHINAPLAS 2020

Plastics – The Great Healthcare Enabler



Plastics save lives. Pure and simple. What often gets lost in the demonization of plastics due to their waste-related challenges is the fact that modern healthcare is heavily reliant on the material and, in fact, could barely function without it. Even those detractors who long have argued against the use of PVC, or vinyl, in various healthcare applications due to concerns over the material's use of phthalates, have failed to deter the healthcare sector's use of PVC for one simple reason – there is no alternative that can cost-effectively deliver the same level of performance. It is simply the best material for the job.

Similarly, while efforts continue to find ways to reduce plastic-related waste by increasing the reusability and sterilization of various medical items, the cost/benefit/safety analysis of using plastics in numerous healthcare applications makes it tough to beat.

Last October, National Geographic magazine ran a story titled 'Can Medical Care Exist Without Plastic?', and noted that 'Single-use plastic can be an attractive option for hospitals – cheap, durable, and easily tossed out – and each new fresh plastic container or covering offers a newly sterile environment. That's why clinicians cover themselves and everything they use in plastic.'

Various types of plastics and elastomeric materials serve countless uses in the medical and healthcare arena – from basic items such as gloves, tubing, eyeglasses, blood bags and disposable syringes, to high-tech, bio-compatible applications such as heart valves, joint replacements and 3D-printed prosthetic limbs.

Ultra-high molecular weight polyethylene (UHMWPE), for example, is excellent for use in prosthetics, while polypropylene's high-heat properties make it ideal for applications where autoclave sterilization and radiation stabilization processes are required, according to global materials supplier Trinseo (formerly known as Styron).

Various forms of chemical-resistant plastics also play a key role in combatting so-called 'hospital-acquired infections,' or HAIs, which kill tens of thousands of patients every year. Lightweight, durable polymers are often the material of choice for the fast-growing application of 'wearable' devices used as fitness trackers and health monitors. Sterile plastic packaging, meanwhile, helps to keep vital medical components and devices safe and protected.

And none of these account for the overwhelming use of plastics in medical equipment, ranging from MRI scanners and dialysis machines to hospital beds and sophisticated test equipment.

Companies such as Jabil-owned Nypro Healthcare also delve deeply into the engineering aspects of medical devices. Nypro focuses heavily on mechatronics, a design process that involves integrating mechanical

and electrical hardware with software processes, thereby enabling device designers to deliver highly sophisticated mechatronic functionality.

'One of the major healthcare trends affecting mechatronics technology is miniaturization,' notes Nypro. 'Ever-smaller instruments, devices, and equipment are being developed to enable less-invasive surgical techniques that enable faster recovery.' The use of micro-actuators and micro-sensors is driving the development of tiny mechatronics designs for everything from scientific instruments for DNA sequencing to micro-pumps and auto-injectors for drug-delivery products.

Additive manufacturing also is playing an increasing role in healthcare delivery. Germany's Evonik Industries AG, for instance, recently invested in Meditool, a Chinese 3D printing start-up specialized in implants for neuro and spinal surgeries. Using 3D models generated by Meditool's own software, Evonik can print implants using its high-performance polyetheretherketone (PEEK) polymers.

Other materials suppliers are striving to make plastics more resistant to the harsh cleaning chemicals often encountered in hospitals and operating rooms. Minnesota-based compounder RTP Company has developed a proprietary alloy technology designed to maintain strength, functionality, and integrity, even with repeated exposure to hospital cleaners used to disinfect medical devices. The firm says these thermoplastic compounds, known as the RTP 2000 HC series, 'can help solve cracking issues in existing devices and open a new realm of possibilities for the design of hospital equipment and plastic housings that require frequent disinfection, such as mobile ultrasound and x-ray machines, enteral feeding devices, drug infusion pumps, blood filtration equipment, and more.'

RTP also supplied a glass fiber-reinforced PC/ABS alloy compound known as the RTP 2500 Series, to Novare Surgical Systems to use in its RealHand line of minimally invasive surgical instruments. Novare has integrated its RealHand HD technology into a series of endo-laparoscopic instruments such as graspers, dissectors, scissors, and needle drivers.

Kraiburg TPE, meanwhile, recently launched a new line of thermoplastic elastomers that not only hold certifications for healthcare applications in accordance with European Union and U.S. Food and Drug Administration standards but can also be combined directly with polyamides – including transparent PA12. The compounds are fully certified and suitable for a variety of attractive medical devices, including those used for in vitro diagnostics.



PolyOne Corp. also supplies a number of materials for use in healthcare applications, including for catheters and tubing, and various medical devices. Recently, though, it tackled a slightly different challenge – helping a nonprofit charity called Global Vision 2020 to create a simple, effective way to bring clear eyesight to people living in extreme poverty. The resulting diagnostic device, called USee™, allows minimally trained practitioners in the field to accurately test the eyesight of people in impoverished areas. PolyOne's IQ Design unit helped design the device and provided the medical-grade polycarbonate for the rectangular lenses used to help diagnose the patient's prescription vision needs.

Another materials firm, Germany's Covestro, worked closely with Ohio-based medical equipment maker Enable Injections to create a new, on-body drug-delivery system to help patients who need biologic drugs derived from organic sources to treat cancer, diabetes and other diseases.

Biologics need to be injected or infused. Typically, this has required inconvenient visits to specialty healthcare facilities or painful self-injections of high-viscosity medications. Now, patients can wear this Enable device and easily self-administer the doses they need, when they need them. The new system – made with Covestro's Makrolon® Rx1805 polycarbonate in

a purple tint, and its Bayblend® M850 XF PC/ABS blend – provides the necessary safety, durability and bio-compatibility while being aesthetically pleasing.

And nowhere is plastics more prevalent in healthcare than in packaging. Most drugs are dispensed in some sort of plastic bottle, container or foil-backed blister pack, and packagers increasingly are adding 'smart' technologies to such products to improve safety while also helping users to keep track of the medications they are taking.

Austrian packaging group Alpla, for example, recently introduced CRC justONE, a very light, childproof closure, manufactured in just a single injection molding process with straightforward assembly. Normally, there are three parts to a childproof closure with a tamper-evident band that can only be opened by simultaneously pushing and turning the closure. And these parts typically are produced in three separate production steps and assembled later. This new production process from AL-PLA Pharma, Alpla's newly consolidated healthcare brand, has now streamlined this into a sig-

nificantly more efficient workflow. National Geographic asked the right question recently. And, in short, the current answer is, 'No, safe, efficient medical care today cannot exist without plastic.'

Come to CHINAPLAS 2020 in Shanghai this April 21-24 to see first-hand some of the amazing technologies that are helping to enable modern medicine. For more information about CHINAPLAS 2020, please visit the official show website at www.ChinaplasOnline.com.

CHINAPLAS 2020 is organized by Adsale Exhibition Services Ltd., Beijing Yazhan Exhibition Services Ltd., and Adsale Exhibition Services (Shanghai) Ltd. and co-organized by China National Light Industry Council – China Plastics Processing Industry Association, China Plastics Machinery Industry Association, The Plastic Trade Association of Shanghai, Messe Düsseldorf China Ltd. The event is also supported by various plastics and rubber associations in China and abroad. First introduced in 1983, CHINAPLAS has been approved by UFI (The Global Association of the Exhibition Industry) since 2006. CHINAPLAS is exclusively sponsored by the Europe's Association for Plastics and Rubber Machinery Manufacturers (EUROMAP) in China for the 31st time. CHINAPLAS is currently Asia's leading plastics and rubber trade fair.

EcoVadis ESG-rating

Metalloinvest improves its indicators

Metalloinvest, a leading global iron ore and HBI producer and supplier, and one of the regional producers of high-quality steel, announces the positive dynamics in the sustainable development indicators, which have been reflected in the score of the independent international rating agency EcoVadis.

Based on the actualisation of the Corporate Social Responsibility (CSR) rating in 2019 Metalloinvest has been awarded a 'Silver' rating. Metalloinvest's rating improved by 3 points year-on-year to 60 points in 2019, while the average industry rating was 43 points.

Metalloinvest was ranked in the top 12% of companies rated by EcoVadis globally. At the same time, the Company featured in the top 8% of the 'Environment' category and in the top 4% in 'Labor and Human Rights' category among the producers in the manufacture of basic iron and steel industry.

Andrey Varichev, CEO of Management Company Metalloinvest, commented: 'We constantly improve our standards and practices in the field of employees' life and health protection, we take care of environment and well-being of local residents in the towns where the Company operates. Sustainable development has become a key pillar in our Company's strategy for long-term leadership and corporate culture. Our custom-

ers and investors enhance attention in ecological and social aspects of the business. An independent assessment of the company's progress in this sphere is important to them.'

Based on the results of its assessment, EcoVadis identified areas where Metalloinvest can improve CSR practices in order to achieve an even better rating in 2020.

The Company has improved its positions in the number of ratings in sustainable development for 2019. In the WWF's (World Wide Fund for Nature) rating Metalloinvest took 4th place compared to 6th in the previous year, showing the best result out of all companies in the ferrous metallurgy industry. Also, the Company received the highest rating in the 'Information Disclosure' category.

The Company took 45th place in Interfax-ERA's Fundamental Efficiency (environmental and energy) rating. The rating covers the largest top-150 companies in Russia and Kazakhstan. Moreover, Metalloinvest ranked second among the top-5

steel companies in terms of steel production.

Metalloinvest uses the best available technologies in production as well as directly reduced iron and steel casting in the electric furnace, enabling the Company to minimize its environmental footprint. Between 2007-2018 total dust emissions into the atmosphere from Company enterprises declined by 24%.

The Company increases the output of high-quality products (such as HBI and premium quality pellets), the use of which allows customers to reduce gas emissions during steel production. The total expenses of Company in the field of environmental protection were 44 bn roubles in 2013-2018.

Metalloinvest has been supporting UN global initiatives, including pursuing 17 UN Sustainable Development Goals (UN SDGs). In 2019, Metalloinvest has joined the United Nations Global Compact (UNGC), an international initiative centered on corporate sustainability and social responsibility.

In 2019 Metalloinvest became the first private company in Russia to sign a loan agreement with ING Bank in the amount of up to USD 100 mn, the interest rate of which depends on the ESG rating.



Metalloinvest is a leading global iron ore and merchant HBI producer and supplier, and one of the regional producers of high-quality steel. The Company has the world's second-largest measured iron ore reserve base and is one of the lowest-cost iron ore producers. Metalloinvest is wholly owned by Holding Company USM LLC. Alisher Usmanov is the major beneficiary of Holding Company USM LLC (49%).

EcoVadis is an international rating platform that evaluates the management system for corporate and social responsibility of business. The EcoVadis methodology is based on international CSR standards including the Global reporting initiative, the UN Global compact and ISO 26000. EcoVadis evaluates companies in 4 groups: environment, labour & human rights, ethics and sustainable procurement. In 2018, Metalloinvest received the 'Silver' CSR rating from EcoVadis.

For the 'metroSNAP'

HARTING interface supplies Power, Data and Signals

Swiss automobile manufacturer Rinspeed is presenting its new 'metroSNAP' concept vehicle at the Consumer Electronics Show (CES) this January 7-10, 2020 in Las Vegas. Rinspeed AG is once again using innovative HARTING technology. This time, the technology group is providing a specially designed interface that supplies the vehicle with power, data and signals.

HARTING is taking the next step in the direction of the mobility concepts of tomorrow with the Rinspeed 'metroSNAP'. Whether passenger transport or freight logistics, the metroSNAP can be used in highly versatile manner. The HARTING module helps the driver use the vehicle for a wide range of tasks in a fast, flexible manner. Like its predecessors – the «SNAP» and «microSNAP» – the vehicle is

divided into two elements. On the one hand, there is the Skateboard that serves as an optimised electric vehicle, and on the other there is the 'Pod', which can be switched out in flexible manner to accommodate different tasks. Communication, signal transmission and the power supply must all work smoothly between these two elements. Connectivity between them is automatically established as soon as the Pod and the skate-

board are securely connected. With considerations to the special requirements for mechanical plugging, the power, signals and data begin to flow.

Rinspeed has relied on HARTING's reliable solutions in recent years. Both of the past two years have seen Rinspeed go with a Fast-Charging solution from subsidiary HARTING Automotive. HARTING Automotive has long been at home in the automotive supplier industry and recently saw a sharp increase in demand for e-mobility solutions. The company leverages its decades of experience in the field of connection and transmission technology to develop and produce charging equipment for electric and plug-in hybrid vehicles.

Rinspeed and HARTING have been working together successfully since 2016. The MICA, which garnered HARTING the prestigious HERMES AWARD at the HANNOVER MESSE in April 2016, was integrated into the «EtoS» vehicle for autonomous emission and condition monitoring. In 2017, HARTING used its miniMICA – another component from the evolutionary MICA ecosystem – to support Rinspeed's «Oasis» car. In 2018, HARTING provided the fast-charging technology for the «SNAP». Last year, the «microSNAP» was charged using the fast-charging push, with HARTING thereby living up to its ambition to be an innovative driver of technological development.

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