

# What challenges will you explore with us at K 2019?

## Explore innovative prototypes at K 2019

By the end of this century, the earth will be home to another four billion people. Innovations in materials science will be key to finding better ways to **protect** all kinds of goods, **build** more effectively, **move** more efficiently and **care** for ourselves more holistically.

At K 2019, you can explore how we're working with a wide range of partners to develop sustainable and innovative solutions.

We'll be showcasing over 140 prototypes at our stand (Hall 8A, K48). You'll find an overview of innovations below, organised into four domains: **BUILD**, **CARE**, **MOVE** and **PROTECT**.

While you can get a general overview of our prototypes in this document, K 2019 will provide a perfect platform to explore them. Here you can meet our experts and ask challenging questions, exchange ideas and visions and forge new relationships. We'll be there to listen, learn, discuss and be inspired. What challenges will you explore with us at K 2019?

## Build

Prototype	Description
<b>PE-RT enabled pipes</b>	PE-RT pipes powered by DOWLEX™ can be used in all hot water and heat distribution applications. Easy to install, durable, cost efficient: pipe producers, plumbers, engineers and building owners have been relying on DOWLEX™ enabled PE-RT pipes to deliver excellent performance in pipe applications for more than 35 years.
<b>Halogen-free flame retardant cables</b>	Wires and cables used in enclosed spaces must usually be flame retardant but formulating polyolefins to achieve this can require high levels of additives. Through smart manipulation of additive and polymer technology, we've developed ENGAGE™ polyolefin elastomers which form high-quality halogen-free flame retardant (HFFR) polyolefin compounds.
<b>Fiber optic cables</b>	We're passionate about helping people stay connected. And that's exactly what fiber optic cables infused with AXELERON™ telecom cable compound do; whether buried underground, run through conduits or in cell towers. These cables combine high line speeds and production efficiency with excellent strength, durability, flexibility and consistency in the field to keep us connected.
<b>Extra-high voltage cable</b>	Customers require years of reliable, consistent service from their power transmission utilities. For transmission infrastructure, quality high voltage, extra high voltage, and high voltage discontinued current cables are paramount to achieving the reliability and longevity that utilities and customers demand. To meet these demands, talk to us about ENDURANCE™, our high-quality compounds for underground transmission cable systems.
<b>Artificial turf</b>	Dow solutions enable long-lasting and high-performance artificial turf systems, offering compatible combinations of raw materials for yarn, infill, backing and shock absorption, whether you require playing surfaces for football/soccer, golf, rugby, hockey, a multi-purpose school sports field or a town recreation ground.

**Build**

<b>Prototype</b>	<b>Description</b>
<b>All-polyolefin-based turf system</b>	Integrated artificial turf system with enhanced performance and recyclability attributes: polyethylene-based yarn resins offering the right combination of softness, resilience and mechanical durability; HYPOD™ polyolefin backing technology, for a sustainable solution that combines polyolefin performance with the benefits of water-based dispersion; an innovative and sustainable PE shockpad technology.
<b>Turf system featuring PU backing and enhanced tuft lock</b>	Functionalized polyethylene-based yarn combined with polyurethane-based elastomer backing for artificial turf systems, offering strong tuft lock and dimensional stability. Together, these factors extend pitch durability while creating a highly stable, predictable playing surface. Designed to enhance the productivity, facilitate the installation and improve the playing experience, even during the most intense gameplay.
<b>Washing machine gasket</b>	NORDEL™ EPDM provides improved yield, scrap reduction and unparalleled polymer cleanliness. Our expanded offering of NORDEL™ EPDM grades enables fast mixing and processing, faster curing, increased filler acceptance and high-quality Class A surfaces. NORDEL™ EPDM produced using Advanced Molecular Catalyst (AMC) technology not only outperforms traditional Ziegler-Natta grades, but is also produced more efficiently using 20–25% less energy.
<b>Carpet backing tiles</b>	With high-performing and recyclable raw materials for carpet backing, Dow offers an array of solutions for carpet manufacturing – enabling the formulation of ‘free-form’ flooring, helping reducing VOC levels, allowing reprocessability and ensuring durability and stability.
<b>Masking tape for painter’s grade</b>	Paper-masking tape is enabled by ROBOND™ PS-9006 adhesive, a ready-to-use aqueous acrylic pressure sensitive adhesive. It’s designed to have good qualitative tack, excellent UV resistance and clean removability after 14 days – all highly desirable attributes of a painter’s tape application.
<b>Tapes for automotive and construction</b>	With its low content of volatile compounds, ROBOND™ PS-6550 enables tapes for automotive and construction industries to be used on strictly regulated applications such as automotive interiors. Talk to us about ROBOND™ PS-6550 acrylic water-borne adhesive, which enables a distinct balance of peel adhesion, tack and shear resistance.
<b>Exhibition carpet</b>	The design, pattern and beauty of exhibition carpets can offer a great welcome that makes a real impact. With HYPOD™ polyolefin dispersions, carpet manufacturers can now develop a complete olefins-based components system, allowing for next-level sustainability. HYPOD™ enables mono-material carpet design, making it easier to recycle.
<b>Aluminum composite panel</b>	PE-aluminum adhesive performance is one of the most important requirements for aluminum composite building panels to remain attractive and trouble-free after installation. Dow offers several specially developed grades of BYNEL™ adhesive resins for use in laminating building panels. BYNEL™ resins are offered in high-performance grades that can be tailored to each manufacturer’s processing requirements.
<b>Composite building panel</b>	Dow offers a complete system for halogen-free flame retardant (HFFR) composite panel core layers including EVALOY™ AC base polymer, a technology license that can help protect your innovation, and complete technical support to tailor the composition to specific requirements.
<b>Yarn for high-performance sports (hockey)</b>	Dow solutions enable long-lasting and high-performance artificial turf systems, offering compatible combinations of raw materials for yarn, infill, backing and shock absorption, whether you require playing surfaces for football/soccer, golf, rugby, hockey, a multi-purpose school sports field or a town recreation ground.

**Build**

<b>Prototype</b>	<b>Description</b>
<b>Yarn for high-performance sports (football/soccer)</b>	Designed to meet FIFA certified standards, this yarn provides the needed resiliency needed throughout busy competition schedules. With solutions developed in conjunction with our partners, this turf presents not only a resource efficient alternative to natural grass but also materials that improve processability and boost performance in terms of recycling and compatibilization.
<b>High-performance elastomeric infill</b>	Thermoplastic infill solutions for high-performance artificial turf systems. A more sustainable alternative to end of life tires (ELT), enabling an odorless surface and improved temperature control which contributes to an enhanced playing experience.
<b>Polyurethane coated styrene-butadiene rubber (SBR)</b>	The infill granules in an artificial turf system not only provide stability for the yarn but also contribute to energy absorption and have an effect on how the ball interacts with the playing surface. Effective infill is therefore fundamental in terms of achieving performance levels similar to natural turf.
<b>Precision pouring paint pouch</b>	PacXpert™ packaging technology offers a flexible and sustainable alternative to conventional paint containers. Lightweight, and optimized for easy handling and fast pouring, it eliminates spillage and reduces product wastage.
<b>Photovoltaics encapsulant film</b>	ENGAGE™ PV POE for photovoltaics encapsulant film is now widely used in bifacial modules. It could provide modules with longer service life and better reliability. ENGAGE™ PV POE can increase module power generation in the whole service lifetime, improve resistance to potential induced degradation (PID) – especially for high efficiency bifacial solar cells – and reduce the levelized cost of electricity (LCOE).
<b>EPDM roofing membrane</b>	Longevity, weather resistance, flexibility and low temperature toughness are the key strengths of EPDM roofing. As a longtime leader in EPDM technology, NORDEL™ resins set the pace. Now, a new generation of NORDEL™ EPDM is taking it up a notch with opportunities for improved mechanical performance, increased filler loading and better processability.
<b>TPO roofing membrane</b>	Our portfolio of materials for roofing membranes features advanced polymers for thermoplastic polyolefin (TPO) systems. With several advantages over incumbent materials, ENGAGE™ TR Polyolefin Elastomers (POEs) represent our current state-of-the-art for TPO-based membrane formulations.
<b>PVC roofing membrane</b>	To maintain the long-term flexibility and durability needed for roofing membrane, PVC-based systems require the use of a plasticizer. Unfortunately, traditional liquid plasticizers (LPs) tend to migrate out of the membrane, leading to drying and cracking over time. ELVALOY™ ketone ethylene ester (KEE) terpolymers, on the other hand, offer excellent performance as non-migrating plasticizers. By enhancing resistance to chemicals, microbes, and impact – as well as low temperature performance and service life – they help raise the bar for durability in PVC roofing.
<b>V PLUS PERFORM™ – next-generation insulation technology</b>	V PLUS PERFORM™ insulation technology helps create future-ready buildings by placing sustainability, energy efficiency and people at the heart of design. Developed in collaboration with panel manufacturers, architects and sustainability experts to create panels with an increased level of energy efficiency, more sustainable components and improved indoor air quality.

## Build

Prototype	Description
<b>DOWSIL™ Membranes Facade System</b>	<p>A choice of two new high-performance EPDM membranes act as a vapor control, according to EN 13984, making them ideal for creating interior or exterior weather and air-tight seals for facades:</p> <ul style="list-style-type: none"> <li>– DOWSIL™ Membrane Dual</li> <li>– DOWSIL™ Membrane Outside</li> </ul> <p>Bonded and secured using DOWSIL™ 300 adhesive, DOWSIL™ membranes are easy to use and provide a safe, compatible and durable system package which complements the DOWSIL™ range of high-performance sealants.</p>

## Care

Prototype	Description
<b>All Dow Shoe</b>	<p>If you're looking for performance, comfort and durability in your footwear, we have the materials technology you need. Create solutions that look stylish, feel great and perform from heel to toe.</p>
<b>Differentiated products for nonwovens and fibers</b>	<p>When it comes to personal hygiene products, everyone wants the utmost in softness, breathability, light weight, discretion and protection. Which all adds up to comfort.</p> <p>Dow's resins can offer cloth-like aesthetics, cloud-like softness and much more to virtually any nonwoven or fiber application. We invite you to come and feel the difference.</p>
<b>3D-printable liquid silicone rubber (LSR)</b>	<p>IMAGIN3D™ printing technology is a portfolio of innovative products, created to give designers and manufacturers greater design freedom. They help reduce product development cycles and offer distinct benefits.</p> <p>SILASTIC™ 3D-printable LSRs are high-performing, long-lasting materials. They perform reliably in a variety of applications, enabling products that are safe, adaptable and more sustainable.</p>
<b>Low temperature cure liquid silicone rubber (LSR)</b>	<p>SILASTIC™ LTC 9400 Series LSRs are low-temperature curing elastomers. They enable increased design freedom and process efficiency for automotive components and consumer goods.</p>
<b>Perfume caps made with SURLYN™ ionomer</b>	<p>A range of perfume caps presenting a variety of decoration techniques with optimized transparency, chemical resistance. Perfume caps made with SURLYN™ can be recycled into cosmetics applications, but at K 2019 we also show alternative opportunities for recycled material.</p>
<b>La Victorie (perfume cap)</b>	<p>A thick cap made with SURLYN™ with effect of gold flakes floating inside, while keeping the desired transparency. The result is an innovative and sophisticated packaging concept which breaks the convention of the straight-line caps commonly produced in Brazil.</p>
<b>Le Tempo (perfume cap)</b>	<p>This innovative decoration was produced by combining the metallization process with SURLYN™ transparency, creating an incredible mirror effect.</p>
<b>Natural effects (perfume cap)</b>	<p>Besides the glass-like transparency of SURLYN™, we're aiming to showcase what else this material can add to perfume design in terms of colors and decoration effects – particularly when applied through unique molds. One important trend is the natural effect. SURLYN™ can create an effect closer to a stone than a plastic, making products appear more luxurious and natural.</p>

Care

Prototype	Description
<b>PUMPART – tubearless cosmetic tube</b>	PUMPART System's Tubairless® technology combines the simplicity of a tube with the performance of airless packaging. The technology allows for optimized (cream) evacuation rates of 95%.
<b>Proven solid silicone technology for reliable subsea insulation</b>	DOWSIL™ XTI-1003 RTV silicone rubber insulation helps achieve a more reliable, cost-efficient and lower-risk subsea wet insulation system for HP/HT equipment used in deep water production and tieback systems. It has potential advantages over syntactic urethanes, epoxies and silicones to help prevent flowline blockages and provide specified no-touch times for shutdowns.
<b>CoolComfort breathable pillow</b>	Pillows made with CoolComfort Breathable technology contain a unique porous material which lets heat and humidity escape. Addressing the growing need for temperature control in the sleep environment, it provides refreshing coolness all night long.
<b>InstantComfort pillow</b>	Pillows with CoolComfort Instant technology provide instant and lasting relieving coolness, helping people fall asleep and stay asleep. A velvety soft touch and excellent heat transfer creates an enhanced cooling sensation providing both immediate comfort and a long-lasting cooling effect.
<b>SustainableComfort foam</b>	High-resilience foam for bedding and domestic furniture made with VORAGUARD™ offer halogen-free, clean flame-retardant properties that help meet demanding regulations. This material is designed to self-extinguish enabling improved fire safety along with enhanced comfort and better indoor climate.
<b>CleanComfort washable pillow</b>	Pillows made with CleanComfort Washable technology are quick drying and machine washable, enabling a hygienic sleep environment. It combines a soft comforting feel with a robust foam core that can withstand washing and does not support microbial growth. These pillows provide constant support even with prolonged use, with no fluffing required.
<b>Breathable diaper</b>	A diaper that allows the skin to breathe, reducing skin irritation, while ensuring no leakage for maximum protection and confidence. Diapers made with ASPUN™ fiber grade resins and DOWLEX™ polyethylene resins for backsheets are easy to process and enable a cloth-like softness.
<b>Lighter and thinner pull-up diaper</b>	A super thin and lighter diaper made possible with the new blown machine direction orientation (MDO) breathable film powered by DOWLEX™ – an innovative formulation enabling downgauging while not compromising on protection and comfort.
<b>Extreme polyethylene diaper</b>	The extreme PE diaper delivers extreme softness, comfort and performance and enables easier to recycle end-of-life options with a step closer to a mono-material design. Made possible with the first PE resin for mono-spunbond lines ASPUN™ 6000 and the first PE resin for meltblown nonwovens ASPUN™ MB.
<b>Dow sandal</b>	This sandal combines comfort with high abrasion and traction performance and was made with Dow INFUSE™, ELVAX™ and ENGAGE™. INFUSE™ is a unique polyolefin block copolymer. It helps to give the sandal improved dimension stability, higher energy return, a lower compression set, a more comfortable feel and longer durability.

## Care

Prototype	Description
<b>Compression blow form bottles</b>	CONTINUUM™ DMDE-6620 HEALTH+™ Bimodal Polyethylene Resin is a 'game changing' HDPE product that enables weight reduction and enhanced barrier. One of our range of HEALTH+ resins which offer the high levels of quality, compliance, and commitment needed to meet the stringent requirements of healthcare, pharmaceutical, and nutritional applications.
<b>Bioprocessing bag</b>	Our bioprocessing film for the rapidly growing single-use systems for biopharmaceutical manufacturing that can be used in 2D and 3D rocker bags, media bags, and bioreactors. These disposable systems provide many advantages over stainless steel equipment including reduced downtime for cleaning leading to faster turnarounds and reduction of contamination risks.
<b>Ampoules</b>	Blow Fill Seal is a fully automated, customizable, aseptic filling process for medical products. Our HEALTH+™ resins are advantageous for specific ophthalmic and respiratory products where flexibility, squeezability, and clarity are important for administration.
<b>3D printed recycling bin</b>	This recycling bin was 3D printed using Dow IMAGIN3D™ printing technology. This 3D printed part is not only made from the world's first printable polyethylene-based resin, it can also be recycled, reprocessed into pellets, and reprinted without degradation to material properties. Leveraging the technology that enabled IMAGIN3D™ Polyethylene OBC – the world's first 3D-printable polyethylene – Dow is exploring how to incorporate post-consumer recycle streams in 3D printing to bring life to new, fully-recyclable parts.

## Move

Prototype	Description
<b>NORDEL™ EPDM for automotive applications</b>	Designed to help meet OEM requirements in lightweighting, passenger comfort and aesthetics, NORDEL™ EPDM grades enable faster processing, Class A surfaces and superior mechanical performance. NORDEL™ EPDM produced using advanced molecular catalyst (AMC) technology outperforms traditional Ziegler-Natta grades with ~50% less environmental impact. On display: sealing systems, hoses and belts.
<b>Oil bleed Si Elastomers for connector seals</b>	Oil bleed LRSs, such as SILASTIC™ 9202-50 LSR, are specifically developed for connectors in automotive applications. Silicone connectors need to work perfectly throughout the vehicle's lifetime. In the engine compartment, high temperatures, dirt, moisture and fuel vapors negatively affect power cables and connectors. Thanks to the oil bleed LSR, silicone connector seals have a microscopic film of water-repellent silicone fluid that additionally serves as lubricant during assembly.
<b>Moldable optical silicones</b>	Moldable optical silicones are designed for automotive and general lighting applications. Their viscosity and curing speed are optimized for the injection molding process of silicone rubber. This enables the production of optics with various hardness, including designs with negative draft angles. Their high light transmittance, together with low attenuation coefficient and low haze, enables lighting companies to design optics for luminaires with high lumen efficiency. Their high photothermal stability ensures the retaining of stable optical performances – even in harsh environments and with high power LED light sources. Highly white reflecting moldable optical silicones are also available for the design of reflectors and light mixing chambers.

## Move

Prototype	Description
<b>Fluorosilicone elastomers for turbocharger hose</b>	Turbocharger Hoses (TCH) typically consist of a multilayer structure of textile reinforced silicone rubber with an oil-resistant fluorinated-rubber inner liner. A key property requirement for TCHs is high temperature resistance combined with acid resistance, due to exhaust gas recirculation (EGR). This technology is mainly used in diesel engine production. FSR TCHs are also an enabler to the petrol hybrid drive train where lower engine size is required to reduce weight but a need for increased power still exists – which is why the turbocharger is needed.
<b>Acoustic solutions for mobility</b>	BETAFOAM™ and SPECFLEX™ technologies offer superior acoustic solutions for best-in-class interior, cavities and powertrain sound thermal insulation. These sound insulating materials and components have a broad density range and stiffness, with excellent fire resistance and ease of processing.
<b>TPO automotive parts for interior and exterior applications</b>	On display, you will find a range of interior/exterior automotive parts based on ENGAGE™ Polyolefin Elastomers (POE), including bumper fascia, rear closures and airbag covers. Our next generation ENGAGE™ POE grades are enabling further vehicle lightweighting and improved manufacturing efficiencies.
<b>Fluorosilicone elastomers seals and gaskets</b>	Fluorosilicone rubber compounds made with SILASTIC™ are effectively applied in o-rings and gaskets. These compounds enable products which are fuel resistant and flexible in both heat and cold. They provide good compression set resistance and stress relaxation properties. In addition, they create products with low swell and high tear strength.
<b>Precision pouring AdBlue pouch</b>	Durable and flexible PacXpert™ packaging, delivering AdBlue automotive solution. Providing optimal storage efficiency, PacXpert™ packaging reduces storage costs. Efficient handling and precision pouring ensure the AdBlue product empties faster.
<b>Reusable windshield cleaner kit</b>	Automotive windshield cleaner kit using reusable PacXpert™ flexible packaging. The consumer fills the pouch with fresh water, adds the supplied windshield tablets and shakes it to create the cleaning solution. The durability of PacXpert™ ensures the pouch can be reused multiple times without losing its strength. Lightweight and compact, the durability of PacXpert™ ensures it stores easily in any vehicle's glove box.
<b>Lightweight interior solutions</b>	Automotive seats and instrument panels utilizing SPECFLEX™, DOWLEX™, ENGAGE™ and NORDEL™ interior solutions improve fuel efficiency leading to lower CO <sub>2</sub> emissions. This technology creates thinner and lighter foams with high dynamic comfort and low VOC/FOG and odor emissions, achieving healthier vehicle interiors through the reduction of volatile and odor pollutants.
<b>TPO SUV tailgate</b>	SUVs are increasingly becoming the consumers' vehicle of choice due to comfort and space. With this trend, comes the opportunity to lightweight the tailgate. By developing a TPO tailgate module to replace metal tailgates, the overall vehicle weight can be reduced, which contributes to improved fuel efficiency in ICE vehicles and driving range in EVs.
<b>High heat resistant hose</b>	Higher heat resistance is critical for the under-the-hood parts, such as coolant hose, due to higher engine temperature. Longer service life and higher heat aging specification can be expected by using high temperature base resin solution. Dow NORDEL™ EPDM's value propositions include better long-term heat resistance in today's smaller, more powerful engine compartments, along with superior low temperature flexibility, longer hose lifetime, and balanced processability and physical properties.

## Move

Prototype	Description
<b>Air filter</b>	Air filters are cleaning devices that capture unwanted, sometimes harmful particles, such as dust, bacteria, molds and odors from the air. It promotes cleaner air circulating in buildings, cars and our home. Hot melt adhesives are widely used to fix the pleats in the air filter in order to increase the surface area contained within a given volume of space.
<b>Nylon cable tie</b>	Polyamide (PA) thermoplastic resins offer an excellent balance of processability and performance properties. Dow offers a strong product portfolio including multiple technologies, addressing various PA impact modification needs.
<b>Nylon fastener</b>	Polyamide (PA) thermoplastic resins offer an excellent balance of processability and performance properties. Dow offers a strong product portfolio including multiple technologies, addressing various PA impact modification needs.
<b>Foam integrated OBC bicycle tires</b>	The integrated OBC foamed tire is designed for the bike sharing industry. Its features include lightweighting, (20–30% lighter vs. PU tire and 30–40% lighter vs. pneumatic tire), good toughness/elasticity and heat resistance, puncture free, brilliant color, cost effectiveness, environmental friendly (FDA) and production efficiency.
<b>TPO foam for automotive applications</b>	Whether it's a conventional ICE vehicle or an EV, vehicle lightweighting will continue to be one of the key priorities to continue improving fuel efficiency and driving range. Foaming technology enable material lightweighting by incorporating air bubbles into the polymer matrix reducing the overall amount of material used while maintaining the performance required for the application.
<b>RTM lite technology</b>	VORAFORCE™ technology offers more than 50% weight reduction at possible cost equivalence to steel, coupled with reduced fuel consumption and emissions, while increasing the vehicles' load capacity. This higher strength durable technology enables excellent cycling loading performance, which combined with media resistance enables a prolonged lifetime and a reduced maintenance or repair interval.

## Protect

Prototype	Description
<b>The PE based Spouted Pouch by Dow and Menshen</b>	The reverse spout sealing technology invented by Dow and Menshen enables efficient and robust incorporation of spouts into mono-material, PE or PP-based pouches with outstanding packaging quality, while the medium-to-high barrier properties of the pack are not compromised.
<b>Design for Recyclability: PHORMANTO™ film for chicken</b>	Based on polyethylene, PHORMANTO™ technology is transforming the market in fresh chicken through a disruptive change of packaging. It enables shelf life extension, ensuring freshness and quality for up to two weeks. Hermetic packaging gives consumers a new and better shopping experience.
<b>Design for Recyclability: PHORMANTO™ film for snacks</b>	How do you ensure that preservative-free and on-the-go snacks made from natural ingredients are packaged without compromising nutritional, crispness and taste? The answer is a flexible thermoformed package with PHORMANTO™ films, combined with modified (protective) atmosphere technology that prolongs shelf life. This packaging is also very versatile and offers innovative shelf appeal.

## Protect

Prototype	Description
<b>Ultra thin high-performance stretch film</b>	Despite a thickness of only 9 microns, the film provides excellent tear and puncture resistance, maintaining load stability and packaging integrity. The key performance characteristics are high wrapping efficiency on fully automated stretch wrappers and securing loads with the minimal amount of grams of stretch film per pallet.
<b>Heavy duty shipping sacks (HDSS) with 30% recycled polyethylene</b>	HDSS for industrial applications. The bag integrates 30% recycled polyethylene. The amount of virgin material used in the structure was not increased but the bag maintains its mechanical properties and performance, and meets regulatory and industry standards.
<b>Refrigerated cabinet</b>	Refrigerated cabinets insulated with Dow VORATEC™ and VORACOR™ technology enable enhanced thermal insulation and energy efficiency, which helps meet stringent energy and environmental regulations. These low global warming potential (GWP) solutions enable compliance with European F-gas regulation and international environmental protocols.
<b>Premium optics collation shrink</b>	A downgauged 35 microns collation shrink film for consumer packaging applications with outstanding transparency and gloss for better brand recognition and shelf appeal. Excellent holding force for enhanced package integrity and protection during transportation. Optimized balance between stiffness and toughness, ensuring high performance on the packing line.
<b>Hot melt adhesives for food packaging</b>	When it comes to hot melt adhesives in packaging, consumers want high performance and manufacturers need easy-to-process and cost-effective solutions. The AFFINITY™ polyolefin elastomers product portfolio can help.
<b>PE films-based stand up pouch by Dow and Mespac</b>	Dow and Mespac work together to create best practices in PE-based, mono-material packaging production. This packaging solution shows how a PET/PE laminate can be replaced with PE/PE based laminate structure, allowing to produce mono-material pouches in an efficient and economical manner. Most suitable for detergent and dry food packaging.
<b>Barrier Machine Direction Oriented PE Pouch by Dow/ALPINE/BOBST/ELBA</b>	Designed for recyclability: thanks to high stiffness and great optics these MDO-PE films can replace current BOPET or BOPP structures. The MDO-PE film provides the barrier needed for excellent food preservation, while combining it with conventional blown film PE offers a complete, sustainable solution for medium-to-high barrier applications.
<b>Lighter vacuum skin packaging for meat by Dow, W&amp;H and ESI</b>	Our solutions enhance vacuum skin packaging performance to keep products such as meat, fish, cheese and processed meat fresh for longer. They enable very good seal through contamination, exceptional seal integrity, and improved liquid retention for better protection. They also allow for easy opening and an improved skin effect.
<b>High-performing barrier shrink bags by Dow and Kuhne</b>	Our broad resin portfolio enables the design of high-performance barrier shrink bags to keep products like meat and cheese fresh for longer. With high puncture and tear resistance these bags ensure good pack integrity and enable superior meat adhesion and seal integrity, resulting in packaging that protects and looks good.
<b>PA-free thermoformed vacuum package</b>	This new solution is polyamide-free, designed for recyclability barrier thermoformed package. It can be applied to create fresh food packaging for products such as cheese. It has good thermoformability, toughness and puncture resistance, offering packaging efficiency and good content protection.

Protect

Prototype	Description
<b>PE film based pet food bag</b>	This solution shows how PET/PE laminate can be replaced with monopoly PE-based film structure. OPULUX™ optical finishes are included for high gloss and increased thermal resistance. INNATE™ and ELITE™ resins create an outstanding stiffness/toughness balance and pack integrity. Most suitable for non-laminate, surface print pack designs.
<b>Dishwasher tablets pack enabled by Polyethylene</b>	This commercially available stand up pouch was designed for recyclability. Its PE-based structure has replaced PET/PE design, while maintaining excellent packaging performance while using existing production equipment. The pouch includes a zipper for re-sealing and a laser notch for enhanced consumer convenience.
<b>Machine direction oriented PE enabled Pouches</b>	These 'RECYCLE ME' pouches are the answer to the current market drive for recyclability. Replacing PET/PE or BOPP/PE laminates, this MDO-PE/PE pouch provides excellent gloss, transparency and haptics. It also offers dimensional stability, strength, stiffness, excellent machinability and exceptional sealability.
<b>X-ENVIRO MDO-PE Pouches</b>	Created by Berry bpi group in collaboration with Dow, these pouches are the proof that OPET and OPP can be replaced in flexible packaging. Designed for recyclability, this MDO-PE/PE pouch delivers excellent pack performance, has a good seal window and a premium look. Suitable for food, hygienic and other flexible packaging.
<b>PE film-based cereal pouches by Dow, Kellogg's and Berry</b>	This PE-based barrier Pouch was created with the primary target to maintain premium look with good packaging run rates and design for recyclability. High-performance Dow resins were selected to drive stiffness and ability to stand on the store shelf. Zipper technology, matte finish and a see-through window complete the structure.
<b>Renewable cardboard brick bio-based PE enabled</b>	This liquid carton is made with Dow's LDPE renewable resins produced from tall oil, a residue from paper production and one of our contributions to the circular economy. Our bio-based polymers produce less carbon emissions than fossil-PE resins and reduce the use of non-renewable raw materials.
<b>Downgauged lamitube for toothpaste by Dow and Essel</b>	Downgauging leads to less plastic in packaging, which contributes to sustainability. Working with Essel, we developed a new structure based on our innovative resin combination. Dow's performance resins and copolymers achieve a 12% thickness reduction while keeping excellent lamitube performance.
<b>Ultra-fast packaging lamination</b>	SYMBIEX™ solventless adhesive is Dow's ultra-fast curing adhesive. It is globally established as one of the most efficient innovations in the production of barrier laminates. Running on the Nordmeccanica's Duplex SL One Shot™ lamination line, it allows for equipment simplification, boosts productivity, and enables inventory reductions, as well as increasing efficiency and material savings.
<b>Sensory packaging by Dow, IMMER Group and Reicofil</b>	Dow's unique POUCHUG™ sensory packaging technology gives brand owners a broad variety of designs and shapes that elevate packaging to new levels. Benefits include a natural look and feel for outstanding shelf appeal, and extraordinary haptics for product differentiation with sustainability in mind. Collaboration with IMMER Group and Reicofil.
<b>Labels for food packaging</b>	Dow's water-based acrylic adhesive provides efficient and multipurpose solutions to a broad range of filmic label challenges – from food and beverages, to home and personal care products, and durable goods. INVISU™ is specifically designed for self-adhesive labelstock producers who are targeting the growing market of film-based labels.

## Protect

Prototype	Description
<b>Reusable windshield cleaner kit</b>	Automotive windshield cleaner kit using reusable PacXpert™ flexible packaging. The consumer fills the pouch with fresh water, adds the supplied windshield tablets and shakes it to create the cleaning solution. PacXpert™'s durability ensures the pouch can be reused multiple times without losing its strength. Lightweight and compact, it stores easily in any vehicle's glove box.
<b>Recyclable flexible packaging</b>	Recyclable flexible packaging suitable for multiple applications. PacXpert™ technology combined with innovative polyethylene delivers packaging that is designed for recyclability. It is light weight and transports more efficiently than conventional containers, ultimately reducing CO <sub>2</sub> emissions and fuel consumption.
<b>Pouch made with recycled materials</b>	Versatile design of this PacXpert™ pouch enables the use of post-consumer recycle in the film structure.
<b>Downgauged Heavy duty shipping sacks (HDSS)</b>	100 microns HDSS for industrial applications providing a cost-effective packaging solution that enables high product protection. Enabled by Dow's innovative polymers solutions.
<b>Tenter-frame BOPE</b>	Tenter-frame BOPE film is developed to replace standard OPP, OPA or OPET materials in multilayer flexible packaging, enabling the packaging value chain to design PE-rich structures for pouches, printing films and other packaging elements. The films, based on INNATE™ resins, deliver excellent mechanical properties, great puncture and impact resistance, performing well in low temperature environments and have outstanding optics. It's available in both glossy and matt versions.
<b>Recyclable Barrier Film for Liquid Packaging</b>	Indian Plastic Waste Management rules – implemented in 2018 and driven by local government – are driving brand owners to use mono-material PE laminate which can feed the well-established PE recycling stream. Dow is leading the initiative to develop PE/PE laminate solution for blown film, which can replace existing PET/PE laminates.
<b>PE films-based stand up pouch by Dow, Totani and Accredo</b>	This solution shows how OPET/PE laminates can be replaced with PE/PE-based laminate structures. Dow's INNATE™ and ELITE™ performance resins create an outstanding stiffness-toughness balance and pack integrity, while AFFINITY™ sealants provide seal integrity and hermeticity in all PE structures. Most suitable for detergent and dry food packaging.
<b>Agricultural film incorporating 65% of PCR</b>	A 30μ stretch film with outstanding optics, while incorporating 65% of recycled material, enabled by ELITE™ 5100G. This semi-forced, non-thermic film is used to boost the growth of corn salad on the fields. Being collected after use, recycled, and used again in the same application, it exemplifies a closed loop of circular economy.
<b>PIR-based thermoformed cheese package by Dow and Vizelpas</b>	This barrier polyamide/PE recycled industrial film incorporates up to 10% in both lidding and bottom web films, using Dow's compatibilizers to maintain good optics and mechanical properties. It is a new solution that allows converters to reduce their industrial barrier scrap with clear cost and sustainability benefits.
<b>Shopping bag with recycled barrier films from cheese packaging by Dow and Vizelpas</b>	Barrier PA-EVOH-PE films for food packages can have a second life using Dow's compatibilizers to enhance the quality of PE films incorporating this recycle. This shopping bag has been produced with up to 70% of recycled barrier films from former thermoformed cheese trays.

Protect

Prototype	Description
<b>Design for recyclability: PA-free thermoformed tray package</b>	This new solution is Polyamide-free, designed for recyclability barrier thermoformed package. It can be applied to create fresh food packaging for products such as cheese, sliced ham. It has good thermoformability, toughness and puncture resistance, offering packaging efficiency and good content protection.
<b>VP30: impact resistant rice packaging</b>	VIDEPLAST VP30 film for rice packaging is made with high-performance resins. This results in 20% thinner packages with 2x more impact resistance, greater transparency, brightness and better print quality – all important aspects for packaging differentiation. In addition, this film improves brand owners' productivity up to 35%, resulting in more cost efficiency.
<b>PE-based stand-up pouch by Dow and Plasbel</b>	This mono-material stand up pouch has been redesigned with our partner Plasbel to increase recyclability and minimize packaging materials use. MDO PE film, produced with Dow performance resins, maximizes stiffness and optics for a good final packaging appearance and machinability like non-recyclable PET/PE laminates.
<b>Durable pouch for camping</b>	Lightweight and highly durable flexible packaging for camping activities. Easy to use and puncture resistant, stores flat when empty, making it an ideal solution for outdoor activities.
<b>Ketchup stand up pouch with high-solids adhesive by Dow</b>	This PET/ALU/PE structure contains ADCOTE™ adhesive for high speed metal lamination. It offers good wettability on aluminum and metallized films and enables high lamination speed up to 400m/min. It also demonstrates excellent solvent release and chemical/thermal resistance. In addition, the structure uses DOWLEX™ sealant which offers great cost-to-value.
<b>Pillow pouch enabled by superfast solventless adhesive by Dow</b>	MOR-FREE™ L Plus adhesives achieve high line speed for more efficient packaging production: PAA decay and cross linking enable full cure in two to five days, bond development allows for faster slitting time for production wheel optimization. They also deliver improved optics on semi-barrier structures, easy and reduced cleaning frequency.
<b>Pillow pouch enabled by efficient solventless adhesive by Dow</b>	MOR-FREE™ L 75-300 solventless adhesive enables high speed lamination for more efficient packaging production at 400mpm, providing excellent wettability and comfortable pot life stability. Faster PAA decay than standard general performance adhesives is achieved. It is easy to process, handle and clean.
<b>Designed for Recyclability Barrier Pouch by Dow, Reifenhäuser and HP</b>	Replacing incumbent PET/PE or BOPP/PE laminates, this PE/PE blown-film-based pouch provides excellent gloss, transparency and haptics. It also offers dimensional stability, strength, stiffness, excellent machinability and exceptional sealability. Dow sealants provide a low seal temperature and a good operating window on the packaging line.
<b>Caps and closures</b>	The outstanding performance of EVERCAP™ resins addresses packaging industry megatrends and issues that impact lives throughout the world. Reduced removal torque allows containers to open and close more easily. Improved shelf life helps reduce food waste too. This solution also delivers consistent, reliable tamper evidence systems that offer safety and security for consumers and manufacturers.

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