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Interview: S. Hulme, N. Keane, Ingevity

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POLYURETHANES MAGAZINE INTERNATIONAL



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“We develop, manufacture and bring to market solutions that help customers solve complex problems and make the world more sustainable.”

Interview with Steve Hulme and Norman Keane, Ingevity

In May 2016 Ingevity was formed as a company when it spun off from WestRock Company and acquired the Engineered Polymers Capa business from Perstorp Holdings AB in February 2019. The Capa business is managed globally out of the manufacturing site in Warrington, U.K. which houses the management team, production plant and laboratories. PU Magazine had the opportunity to speak with Steve Hulme and Norman Keane about benefits of the Capa product range for the polyurethane industry and their recent investments.

PU Magazine:

Would you please introduce yourself to our readers and tell us something about your career path to date?

Steve Hulme:

I joined Ingevity in November 2020 as vice president of Engineered Polymers, based in Warrington U.K. My career spans 35 years in the polyurethane industry with the majority of time spent working for Air Products and Chemicals PU additives business. I started my career in technology but transitioned into marketing and sales before eventually becoming vice president and general manager prior to the sale of the business to Evonik AG. After a short period with Evonik, I spent two years with Maysta to establish its international business operations before joining Ingevity. Throughout my career, I have had multiple international assignments in the U.S., China and Germany.

Norman Keane:

I joined Ingevity in January 2020 as director of innovation for the Engineered Polymers business, also based in Warrington, U.K. My career has consisted of both raw material producers and end users. I joined ICI (now Huntsman) in 1988, initially at its Wilton Materials Research Centre before moving to its PU business in Everberg, Belgium in 1991. I held senior R & D management roles for Elementis, Ansell and Weir Group in Malaysia and the U.S. from 1999 to 2016. I returned to the U.K. in 2017 spend-



Steve Hulme



Norman Keane

ing two years as chief technology officer for D30.

PU Magazine:

Can you give us a brief background about Ingevity?

Steve Hulme:

Ingevity provides products and technologies that purify, protect and enhance the world around us. We develop, manufacture and bring to market solutions that help customers solve complex problems and make the world more sustainable. We operate in two reporting segments: Performance Chemicals, which includes specialty chemicals and engineered polymers, and Performance Materials, which includes high-performance activated carbon.

These products are used in a variety of demanding applications, including asphalt paving, oil exploration and production, agrochemicals, adhesives, lubricants, publication inks, coatings, elastomers, bioplastics and automotive components that reduce gasoline vapor emissions. Headquartered in North Charleston, South Carolina, Ingevity operates from 25 locations around the world and employs approximately 1,850 people.

PU Magazine:

Can you provide an overview of the Engineered Polymers product lines and markets?

Steve Hulme:

Ingevity’s Engineered Polymers business is the global market leader in caprolactone

monomer and polycaprolactone derivative products. Our caprolactone derivative technologies are made possible through a unique ring opening polymerization process, whereby caprolactone monomer can be derivatized into proprietary, value-added polyols and thermoplastics.

The Capa caprolactone-based portfolio is comprised of three product families:

- Monomer: Main building block for internal and customer use
- Polyols: Range of polymers used in polyurethane coatings, adhesives, sealants and elastomers (CASE)
- Thermoplastics: Specialty polyester thermoplastics used in bioplastics, medical and adhesive applications

Capa products are developed for a diverse set of applications such as PU materials,

“Ingevity provides products and technologies that purify, protect and enhance the world around us.

PU Magazine:

Can you explain more about the advantages of the Capa polycaprolactone chemistry and products compared to other technologies?

Norman Keane:

The performance characteristics of the Capa chemistry provide unique properties in our targeted end-use markets that allow both ourselves and our customers to differentiate through innovation. Capa enables high-performing end-use products that are more flexible, tougher and more durable. They are resistant to water, chemicals and weather. In addition they exhibit high gloss and have im-

growth toward electric vehicles is increasing the demand for improved dynamic performance due to the additional weight of the automobile batteries, and Capa can help improve the performance of jounce bumpers. There is also an upward trend in the adoption of aliphatic thermoplastic polyurethane in paint protection films for automotive applications, and Capa can outperform other polyols typically used in this application.

Specific to coatings applications, Capa products provide a high-quality finish, increased weather resistance and improved mechanical properties when used with aliphatic isocyanates. Capa polyols are designed for use in aerospace, automotive, industrial, marine and UV curable coatings. The low viscosity of Capa polyols can lead to the reduction and potential elimination of solvents for low volatile organic compound (VOC) solutions.

Specific to adhesives applications, Capa products can be used in hot-melt and reactive hot-melt adhesives, as well as 1K and 2K solvent-borne and solvent-free adhesive systems. Capa materials enable easier processing via lower viscosity, while providing flexibility and durability in humid environments. The wide range of Capa grades can be tuned to meet specific crystallinity requirements for various applications.

Specific to bioplastics applications, Ingevity offers a range of Capa thermoplastic materials of differing molecular weights and melt flow indices (MFIs) that can be optimized for bags and films, consumer packaging and utensils. Our Capa range of products are biodegradable into carbon dioxide and water in

“Ingevity’s Engineered Polymers business is the global market leader in caprolactone monomer and polycaprolactone derivative products.

adhesives and sealants, coatings, polymer additives and bioplastics that are used for end markets such as industrial equipment, automotive, footwear, consumer packaging, electronic and medical devices, and furniture. We focus on high-growth end-use applications where our technology can create added value.

One of our strategic pillars is to maintain a leadership position through strategic capital expenditure initiatives and we continue to provide access to caprolactone monomers to our customer base. Another strategic pillar is to prioritize polycaprolactone derivative products such as our range of Capa polyols and Capa thermoplastics. We recently announced a new investment in Deridder, Louisiana for polyol production which will increase global capacity by 40 %. Construction is underway and the new facility should be operational by the first quarter of 2022.

proved overall appearance and last but not least they are biodegradable.

PU Magazine:

Tell us a little bit more about the use of Capa in PU materials, coatings, adhesives and bioplastics ...

Norman Keane:

Capa is typically used in PU elastomer applications that require improved dynamic performance, such as wheels, seals and gaskets, rollers and mining screens. Capa also provides similar benefits in microcellular urethane applications such as automotive jounce bumpers and EV battery pads. For example, the

“One of our strategic pillars is to maintain a leadership position through strategic capital expenditure initiatives.

both domestic and industrial compostable standard conditions. We hold accreditations from both TUV Austria and GreenPla (Japan). Our bioplastic materials can be used to make various plastic articles as well as at an additive level alongside bioplastics, such as polylactic acid (PLA) and polyhydroxyalkanoates (PHA), to provide improved flexibility, toughness and ease of processing.

PU Magazine:

Ingevity acquired Perstorp's caprolactone business in 2019. How has the structure of the company developed since then? What has changed significantly?

Steve Hulme:

As expected, following an acquisition, the initial focus was on integration. Besides the standard functional integration, there was a

“The performance characteristics of the Capa chemistry provide unique properties in our targeted end-use markets

ness, we can directly add even greater value to our customer partnerships. The lab will expand the scope and service offerings we can provide and enable increased collaboration with our customers on research and development opportunities.

We are also growing our team by hiring an additional five technology-based positions to complement the existing 15-person staff in Warrington. We hope to broaden our technical service capabilities to the U.S. and China soon.

Norman Keane:

Broadly speaking, our technology platforms fall into categories including sustainability initiatives, pushing performance boundaries across our market segments, process improvements and addressing regulatory drivers. We recently announced the launch of the new Capa S polyol technology for soft thermoplastic polyurethane applications. A polyol technology that allows conventional production of soft TPUs without the use of plasticizers, the Capa S portfolio is designed for use in wearable devices – such as smart watches and fitness and GPS trackers – and automobile dashboards, seating and door panels, which are repeatedly exposed to heat, cold, moisture and ultraviolet rays. This new portfolio helps maintain softness and minimize cracking during a product's functional lifetime, simplifies formulations and lowers production costs.

“We recently announced the launch of the new Capa S polyol technology for soft thermoplastic polyurethane applications.

need to establish certain functions, such as a customer service organization in U.K., and bolster the sales organizations in areas that were previous shared resources with Perstorp. These were completed early on and the general integration into Ingevity has gone smoothly.

Norman Keane:

With a continued investment in capacity, R & D and personnel to further drive innovation and enable growth, Ingevity recently announced that it will open the Capa Innovation Centre in Warrington, U.K. This laboratory will be dedicated to accelerating innovation and application development for our suite of Capa polycaprolactone technologies for use in CASE and bioplastic applications. Located adjacent to Ingevity's existing laboratory building in Warrington, the facility will house state-of-the-art equipment and application testing capabilities and is expected to be operational by the winter of 2021. By enhancing and increasing the overall laboratory space for our engineered polymers busi-

PU Magazine:

What are Ingevity's main areas of innovation and what new products do you offer to the market?

Steve Hulme:

As we invest in people and hardware at the innovation centre, we expect to launch more

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|  | <p>3. Good Health and Well-being: Capa TP products are already used in medical devices in oncology. In the bioplastics segment, the thermoplastic products are readily biodegradable in industrial or home compostable conditions.</p> |
|  | <p>7. Affordable and clean energy: Capa polyols can be used in the formulation of coatings for wind turbine blades allowing lower maintenance demands for the blades due to the enhanced durability that our products provide.</p> |
|  | <p>9. Industry, innovation and infrastructure: Ingevity is constantly on the cutting edge of innovation with customers, developing in new areas that continue to push the boundaries of polyurethane technology and end markets.</p> |
|  | <p>12. Responsible consumption and production: Capa lactide polyol technology contains renewable content, and Ingevity is working on several projects to convert our waste streams into marketable products to reduce the environmental impact of our product platform.</p> |
|  | <p>13. Climate action: Capa thermoplastic grades are biodegradable and can be used in combination with renewable bioplastics to deliver an enhanced end of life profile for consumable goods.</p> |
|  | <p>14. Life below water: Capa biodegradable thermoplastic grades are part of a larger bioplastics initiative to address the vast amount of plastics that litter our oceans today and pose a significant threat to life below water.</p> |

Source: Ingevity

At Ingevity, we integrate responsible economic, environmental and social principles into our global business strategy and decision making.

products to the wider market without losing sight of the valuable collaborative efforts driven with specific customers. We invite customers to continue to challenge us to innovate.

PU Magazine:

The debate about sustainability is an ongoing key issue. How does Ingevity view the subject and what initiatives are underway in its Engineered Polymers business?

Steve Hulme:

At Ingevity, we integrate responsible economic, environmental and social principles into our global business strategy and decision making. Our objective is to create value for the company and its stakeholders by purifying, protecting and enhancing the world around us, today and well into the future. We currently aim to be in the top quartile of all ratings we prioritize (Ecovadis and Sustainalytics). Specific to the Engineered Polymers business, sustainability is a core part of the innovation strategy and we strive to align our innovation pipeline to the United Nations Sustainable Development Goals. In addition to the innovation projects, many existing products already align with these goals.

PU Magazine:

Where do you see the largest challenges for the PU industry in the next years?

Steve Hulme:

The largest challenge we have as an industry is to advance sustainability without adding significant costs. Advancing this quickly will be difficult in a world where we have differing end-use market application pull, diverse regional desire for change and varying legislative drivers. It is up to us to do our bit and make progress toward the desired future state.

PU Magazine:

Where can our readers learn more about Ingevity's Capa portfolio?

Steve Hulme:

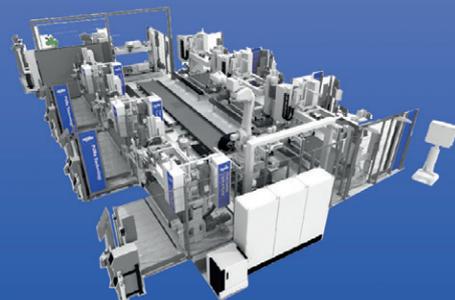
Ingevity will showcase its Capa caprolactone technology at Utech Europe from Nov. 16-18, 2021. The team will be on-site at booth #H26 during the exhibition.

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