

CASE STUDY

Borealis and value chain partners are enhancing the functionality and circularity of nonwoven hygiene products



In partnership with

 **FIBERTEX**
PERSONAL
CARE


Reifenhäuser

 **BOREALIS**

بروج
Borouge



As engineered fabrics made from fibres, nonwovens are designed for a variety of consumer and industrial applications. Nonwovens are flat sheets which are not in fact woven or knitted, but rather bonded directly from separate fibres. Tailorable properties like low basis weight, liquid repellence, silkiness, strength, and stretch have made nonwovens essential components of many hygiene products, including panty liners, incontinence pads as well as pants and baby diapers.

In many global markets, consumer demand for bulky and extremely soft ("high loft") nonwovens has increased steadily. Yet at the same time, converters and brand owners of these disposable hygiene products are seeking ways to make them more sustainable. How can fewer raw materials be used in production to create an end product with the same high functionality, but lighter and softer.

Two separate value chain collaborations have recently used Borealis polymer expertise, including the breakthrough **Borstar® Nextension Technology**, along with Reicofil's bicomponent (BiCo) spunbond technology to expand the realm of the possible for nonwovens across the range of absorbent hygiene products.



Success story one: Finding the perfect match for soft touch and high loft challenge

In this instance, three partners aimed to find the ideal polymers combination and innovative spunbond technology with which to produce high loft and softness in nonwoven solutions. Special focus was given to the crimping process, which produces a fibre waviness resulting in 3D-depth and softness. Borealis supplied the necessary polymer know-how to identify the right polymers combination. Reifenhäuser Reicofil, a leading global manufacturer of complete spunbond, meltblown, and composite lines, contributed the spunbond processing technology. Fibertex Personal Care, one of the world's largest manufacturers of premium nonwovens in the spunbond/spunmelt process, added their nonwovens expertise.



Result

A new soft, high-loft material was obtained thanks to the ideal polymers combination of polypropylene (PP) spunbond grades Borealis HG475FB and RH414FB. These grades were used in tandem with Reifenhäuser Reicofil's BiCo spunbond technology, in which fibres from two different raw materials are produced in a side-by-side formation. Fibertex used Reifenhäuser Reicofil machinery to produce the applications.

“Thanks to value chain collaboration, we’ve been able to move the boundaries of the possible in nonwovens. We’ve figured out how to fine-tune the crimping process in order to produce a superior high-loft solution, and to turn flat 2D materials into structured 3D nonwovens that are even softer.”

Morten Rise Hansen
Business Development Director, Fibertex Personal Care



Success story two: Reducing basis weight and the overall environmental footprint challenge

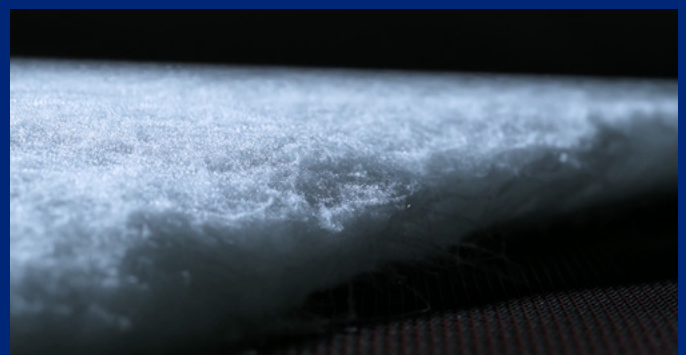
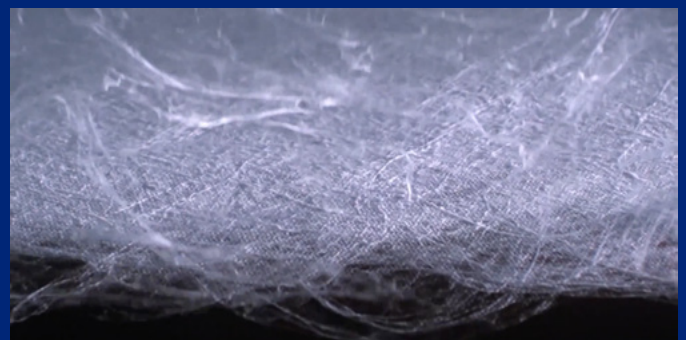
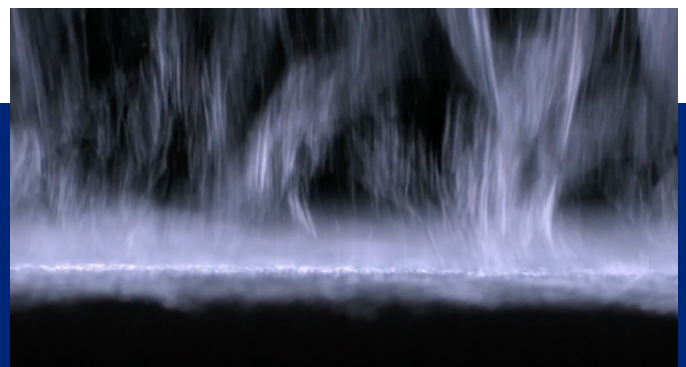
The goal of this collaboration between Borealis and Reifenhäuser Reicofil was to find a way to produce lighter-weight nonwoven products with finer yet stronger fibres capable of delivering the same high performance. Nonwovens with a low basis weight (mass per unit area of the product) are made using fewer raw materials, and thus boast a lower carbon footprint. Yet when reducing the amount of material fed into the web, tensile strength and mechanics, required for both smooth line production and the final product, must be maintained.

Result

The key to success was combining the **Borstar® Nextension Technology**, a step change for PP performance, with Reifenhäuser Reicofil's latest RF5 machinery in the PP spunbond process. Using the Borstar Nextension grade Borealis HG485FB, the Reicofil BiCo technology, and optimal line settings resulted in very good web homogeneity as well as excellent machine direction (MD) and cross direction (CD) tensile strength. For converters, using a Borstar Nextension Technology-based grade like Borealis HG485FB results in thinner fibres and greater downgauging potential when compared to the use of conventional Ziegler Natta spunbond PP grades. Producers can use their material resources more efficiently while achieving the same high application functionality.

“Our RF5-BiCo technology enables producers to unlock the full potential of nonwovens. Matching BiCo with the right polymers helps attain properties – such as combined strength and fine fibers – which are not achievable with monocomponent fibres.”

Andreas Rösner
Strategic Product Development, Reifenhäuser Reicofil



Reifenhäuser

REICOFIL



“Grades based on our pioneering Borstar Nextension Technology enable our customers to produce the finer yet stronger fibres required for superior functionality while at the same time using fewer material inputs. Uniting excellent performance characteristics with greater circularity opens up new horizons for PP in nonwovens.”

Peter Voortmans

Global Commercial Director Consumer Products, Borealis

The **Borstar Nextension Technology** is setting new standards in nonwovens and other industry segments by allowing for easier material substitution in multilayer, multimaterial-based applications. It is driving plastics circularity by enabling downgauging and improved recyclability. What is more, Borstar Nextension Technology grades, including Borealis HG485FB, are also available as Borneables™ grades. Made using renewably-sourced feedstock, the Borneables are ISCC PLUS certified according to the mass balance method that allows the customer to track and quantify the renewable feedstock used at each manufacturing step.

Borstar® Nextension Technology



Powered by Borstar®
**Nextension
Technology**

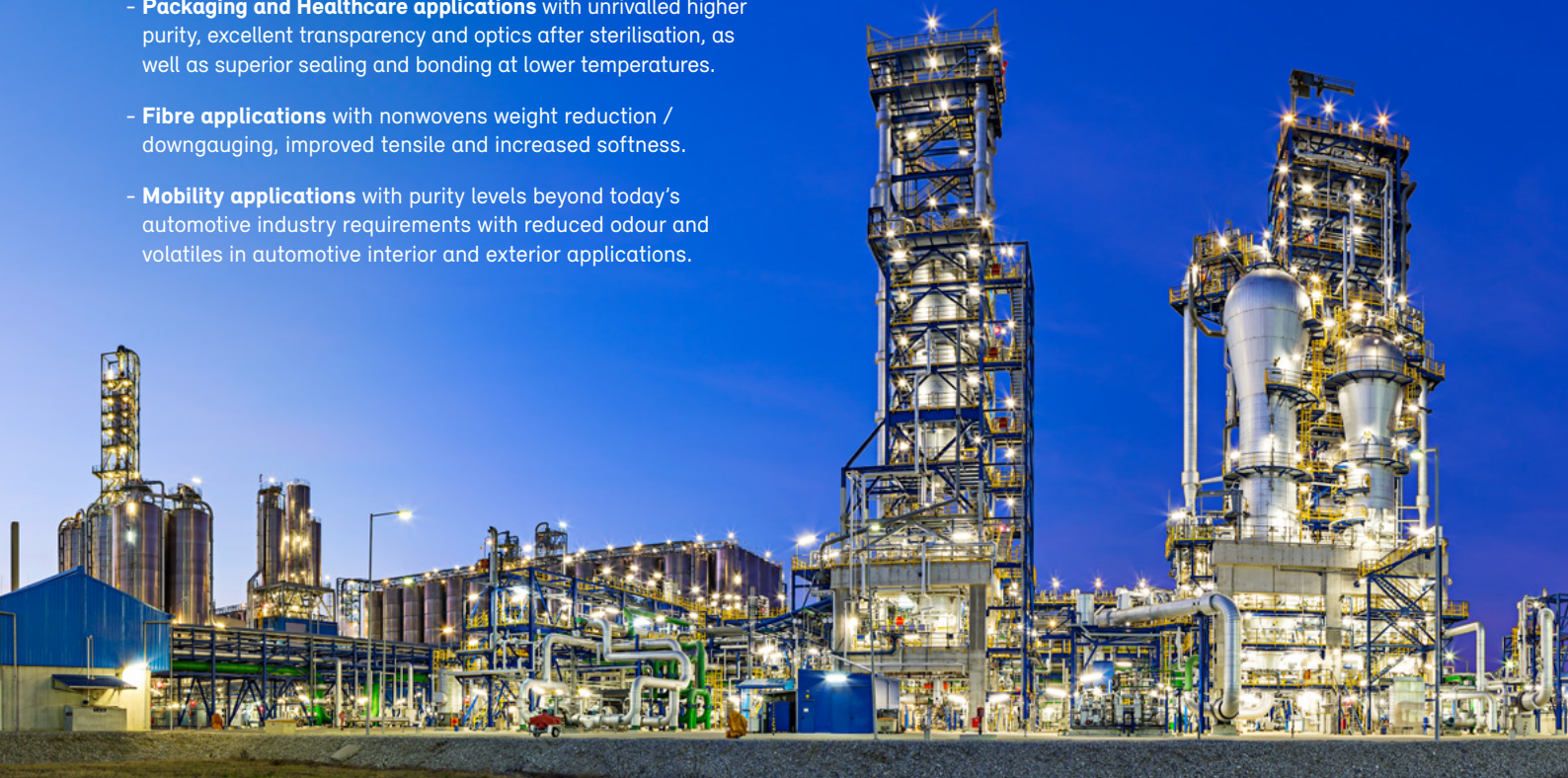
The Borstar® Nextension Technology is a breakthrough innovation achieving a step change for polypropylene (PP) performance. It yields synergistic effects resulting from the combination of proven Borstar performance based on multimodality and the controlled incorporation of the comonomer and the novel, single-site Borstar Nextension catalysts.

The technology broadens the range of PP properties thanks to its ability to tailor polymers for:

- **Packaging and Healthcare applications** with unrivalled higher purity, excellent transparency and optics after sterilisation, as well as superior sealing and bonding at lower temperatures.
- **Fibre applications** with nonwovens weight reduction / downgauging, improved tensile and increased softness.
- **Mobility applications** with purity levels beyond today's automotive industry requirements with reduced odour and volatiles in automotive interior and exterior applications.

In addition, the groundbreaking proprietary technology drives plastics circularity by simplifying **Design for Recycling (DfR)**. It sets new standards by enabling material substitution in multilayer, multimaterial-based applications in a range of industries.

For customers, the Borstar Nextension Technology opens exciting new horizons for PP by uniting outstanding performance characteristics with enhanced circularity.



Borealis and Borouge consumer products solutions are making everyday life easier

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Borealis is one of the world's leading providers of advanced and circular polyolefin solutions and a European market leader in base chemicals, fertilizers and the mechanical recycling of plastics. We leverage our polymers expertise and decades of experience to offer value adding, innovative and circular material solutions for key industries. In re-inventing for more sustainable living, we build on our commitment to safety, our people and excellence as we accelerate the transformation to a circular economy and expand our geographical footprint.

With head offices in Vienna, Austria, Borealis employs 6,900 employees and operates in over 120 countries. In 2021, Borealis generated total sales and other income of EUR 10,153 million and a net profit of EUR 1,396 million. OMV, the Austria-based international oil and gas company, owns 75% of Borealis, while the remaining 25% is owned by a holding company of the Abu-Dhabi based Mubadala. We supply services and products to customers around the globe through Borealis and two important joint ventures: Borouge (with the Abu Dhabi National Oil Company, or ADNOC, based in UAE); and Baystar™ (with TotalEnergies, based in the US).

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