VISCOSE FROM KELHEIM.

Paving the way from a *fossil to a bio-based future*

Kelheim Fibres

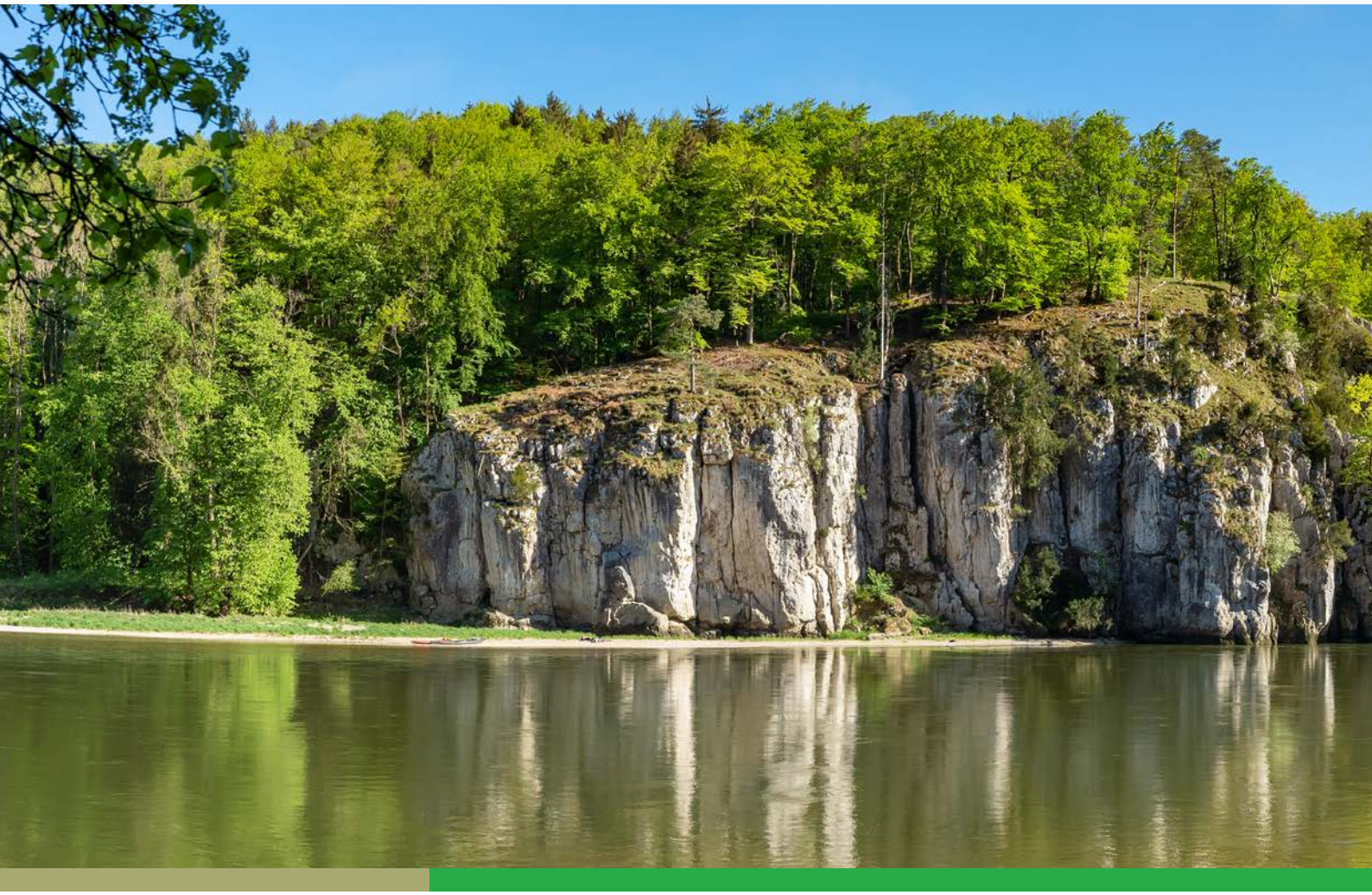
At a Glance: *Viscose from Kelheim.*

THE RAW MATERIAL CELLULOSE

- from the renewable raw material wood
- from sustainably managed woodlands (PEFC™ , FSC®, Canopy)
- the most common biopolymer found in nature
- no genetic manipulation, no use of high-quality agricultural land
- awarded with a Green Shirt in the Canopy Hot Button Ranking 2020

THE MANUFACTURING PROCESS

- production in Germany in compliance with the highest environmental standards
- EMAS-validated environmental management system
- closed-loop processes for the recovery of input materials
- meets ZDHC and BREF targets



THE LIFE CYCLE OF OUR FIBRES

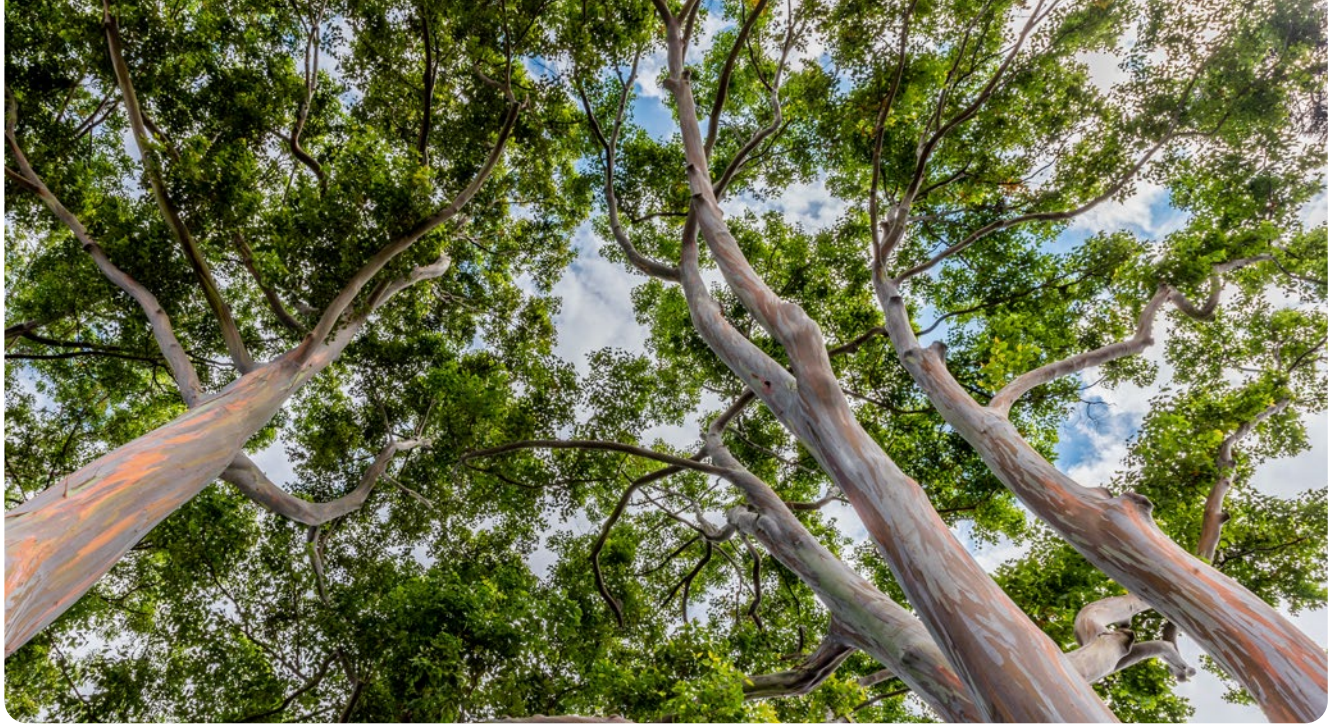
- simple and resource-efficient processing through flexible fibre technologies
- designed for purpose with specific functional properties
- completely biodegradable according to OECD 301 B1

Conserving *Resources.*

THE RENEWABLE RAW MATERIAL WOOD

The basis of the viscose fibres we produce in Kelheim is cellulose. Cellulose is a major constituent of the **renewable raw material wood**.

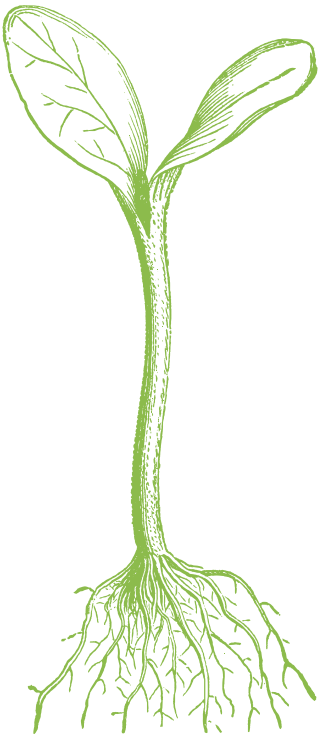
The **source of our cellulose is of particular importance** to us, and as a result we process either cellulose from sustainably managed plantations, which are reforested after harvesting, or cellulose from forest residues from European natural forests. Another specific advantage of wood as a raw material is that it also grows on low-quality land and does not therefore compete with food production, which requires high-quality agricultural land. No genetic manipulation is used in the cultivation of the wood.



CERTIFIED SUSTAINABILITY

Further important selection criteria for us are the **social and ecological circumstances of cultivation of wood**. To ensure that the wood from which our cellulose is extracted was not obtained illegally or in conflict with the regulations protecting man and nature, we only use cellulose with FSC® or PEFC™ certification.

And we go further – we are committed to protecting ancient and endangered forests as part of the CanopyStyle initiative. In the Canopy Hot Button ranking in 2020, we were awarded a Dark Green/ Green Shirt for our efforts.



FSC
www.fsc.org
FSC® C009583
The mark of responsible forestry

PEFC
Promoting Sustainable Forest Management
www.pefc.org

Preserving *Habitats*.

A CLEAN PLANET REQUIRES SUSTAINABLE SOLUTIONS

Around 10 million tonnes of waste end up in our oceans every year* – a number that is beyond comprehension. It is clear that the pollution of our oceans is one of the most pressing environmental problems of our time.

AVERAGE DEGRADATION TIME OF PRODUCTS

*Source:
plasticoceans.org

MICROPLASTICS HARM HUMANS AND NATURE

Oil-based materials are usually not biodegradable. Over time, they decompose into fragments due to the influence of physical factors such as UV radiation or friction. These fragments, however, persist in our environment for many, many years and can cause great damage depending on the degree of decomposition. Ultimately, they cause suffering not only to countless animals and plants, but inevitably these small particles also enter the human food chain.

OUR FIBRES ARE COMPLETELY BIODEGRADABLE

Our bio-based cellulose fibres offer a clean alternative. In contrast to fossil materials such as common single-use plastics or synthetic textile fibres, our fibres are completely biodegraded by microorganisms.

Carbon Dioxide Evolution Test

OECD 301 B

readily biodegradable

compostable
7W-0108

Protecting the *Environment.*

At our plant in Kelheim, our manufacturing processes are designed with a focus on sustainability and protecting future generations. We are dedicated to **conserving resources, minimising emissions and waste as well as to the energy-efficient operation of our systems**.
But how exactly do we achieve this?

In order to achieve circularity in our fibre production facility, we use **state-of-the-art recovery systems**. We have invested a total of 60 million Euros in operational environmental protection since 2005.

Our modern, **highly efficient power plant operates on natural gas and generates low emissions using the environmentally sound principle of co-generation**. This enables us to achieve an efficiency of over 90 %.

Our process water is processed in our **patented biological wastewater treatment plant** and then returned to the river Danube clean and unpolluted.

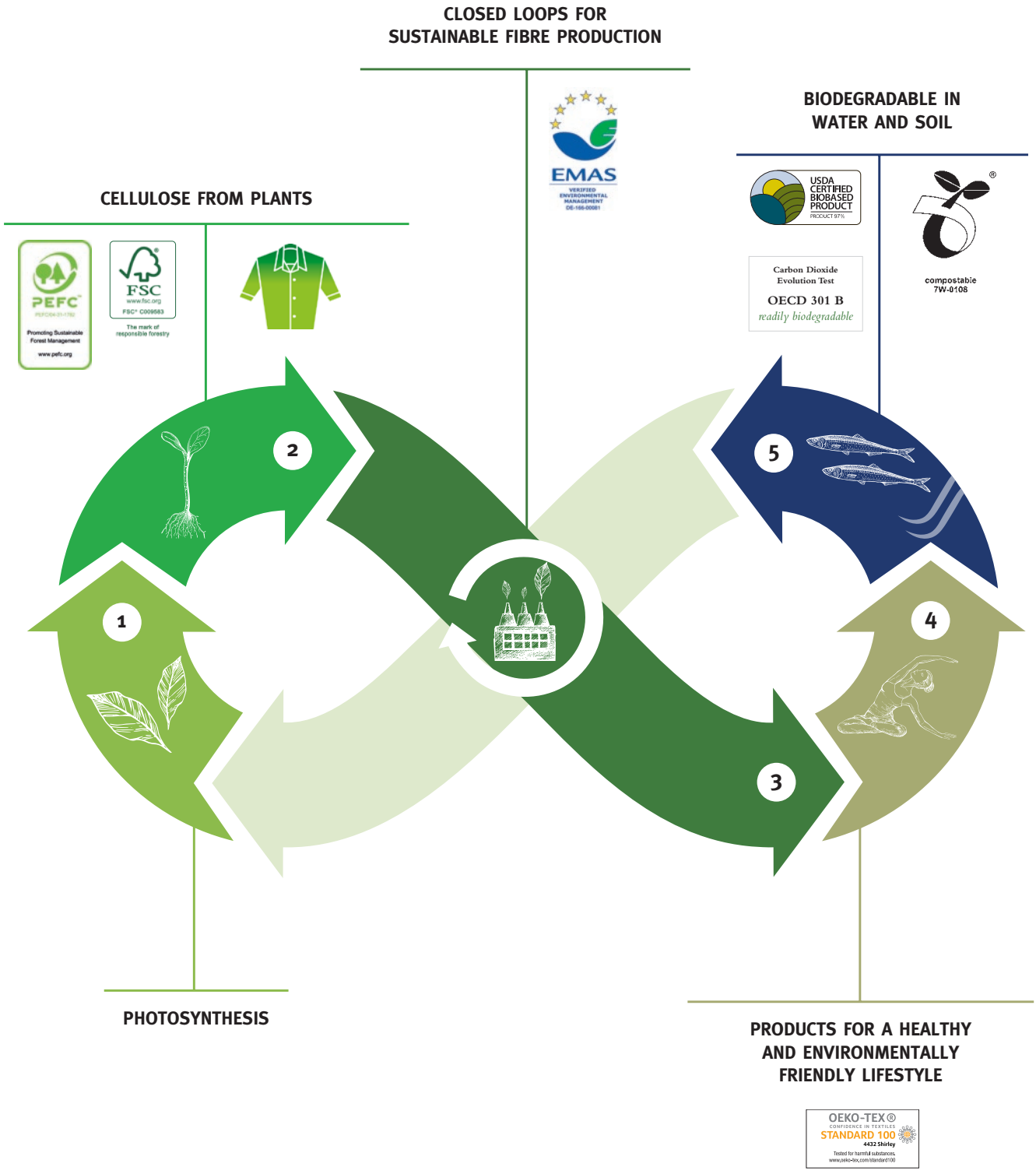
We are particularly proud of the fact that **we are the first viscose fibre manufacturer worldwide to be validated according to EMAS**. This comprehensive environmental management system was developed by the European Union and considers the entirety of a company's environmental performance.
It incorporates the globally applicable EN ISO 14001 and stands in particular for transparency and continuous improvement. As part of our certification under EMAS, details of our environmental data and improvement plans are made publically available.

ENVIRONMENTAL AWARENESS IN ALL AREAS

Kelheim Fibres is a member of the ZDHC's **"Roadmap to Zero"** programme, supporting the non-profit organisation's mission to completely eliminate harmful substances from the textile value chain.

We are also an official supporter of the **UN Global Compact programme**, the world's largest and most important initiative for responsible corporate governance.

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT
DE-166-00081


CLOSED LOOPS FOR
SUSTAINABLE FIBRE PRODUCTION
EMAS
CELLULOSE FROM PLANTS
PEFC
FSC
BIODEGRADABLE IN
WATER AND SOIL
USDA CERTIFIED BIOBASED PRODUCT
Carbon Dioxide Evolution Test
OECD 301 B
readily biodegradable
compostable
7W-0108
1
2
3
4
5
PHOTOSYNTHESIS
PRODUCTS FOR A HEALTHY
AND ENVIRONMENTALLY
FRIENDLY LIFESTYLE
OEKO-TEX
STANDARD 100

Combining *Nature & Performance.*

PERFORMANCE WITHOUT COMPROMISE

But what exactly makes the speciality fibres from Kelheim so unique?

Unlike natural fibres, which are already found in the final fibre form and which can only be topically treated to modify their properties, our production processes allow very specific modifications:
We are able to precisely control the dimensions and cross-sections of our fibres and permanently incorporate functional additives into the structure of the fibre. The result is **individual fibres that are precisely tailored to meet the needs of the end product and the wishes of our customers.**

Our speciality fibres thus combine two fundamental features: Sustainability and functionality.

FIBRES FOR A SUSTAINABLE AND HEALTHY LIFESTYLE

"Flushable" wet wipes

Our short cut fibres allow the production of soft and highly absorbent wet wipes. These can be easily disposed of via the toilet without clogging the sewage system.

Biodegradable AHP

Our Femtech fibres are the perfect basis for absorbent hygiene products such as sanitary towels. They allow the production of skin-friendly and fully biodegradable AHPs that are comparable in performance with their synthetic alternatives.

Another advantage of our hygiene fibres is their high absorbency, which means that fewer fibres are needed to achieve the same level of performance. In this way we conserve material and resources.

Environmentally friendly textiles

Our spun-dyed fibres for textiles also score points in terms of sustainability and functionality: they eliminate the need for subsequent dyeing processes and thus save water, energy and chemicals. At the same time, the colour is permanently integrated into the fibre and does not wash out even after many washing cycles.

Shaping the *Future together.*

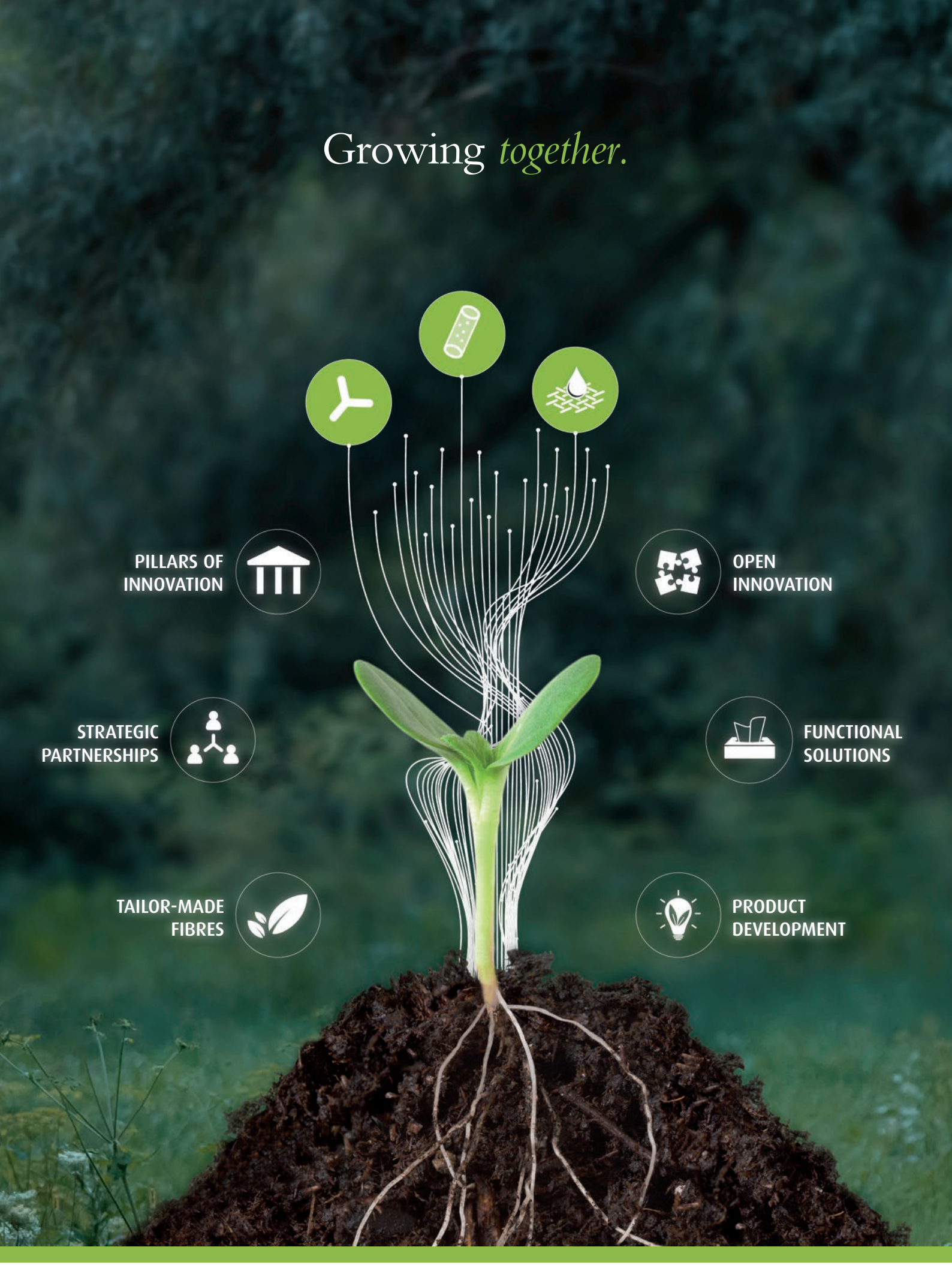
EXPERIENCE AND INNOVATION

Highest quality is created where experience and innovation meet. We have been operating as a medium-sized company in Kelheim for more than 85 years and are firmly anchored in the community. The parents and grandparents of many of today's employees spent their working lives at the factory, known locally as the "Zellwolle". This not only testifies to a wealth of experience, but also to the trust and deep commitment of our employees to the company. **And that always with a focus on the future.**

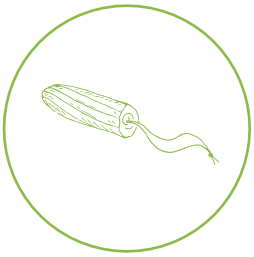
FIT FOR THE FUTURE

We are proud that over the years we have been a major driver of innovation in our industry, and we continue to be so. **Our approach to open innovation pulls together expertise from all along the value chain.** Combining passion and an innovative spirit, we develop future-oriented concepts that offer answers to yet unmet needs.

Growing *together.*



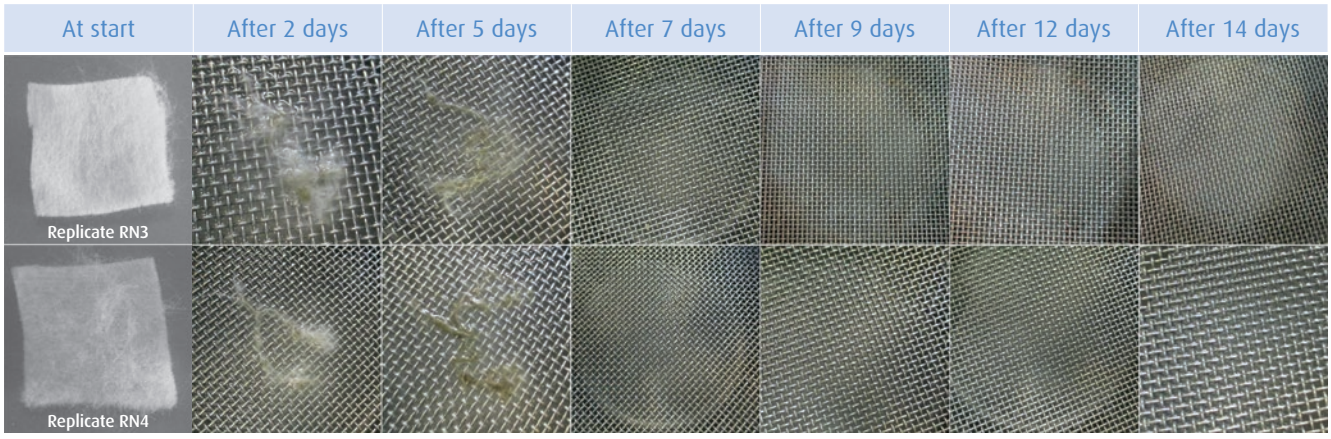
Proof of *Concept.*



BIODEGRADABILITY OF OUR HYGIENE FIBRES

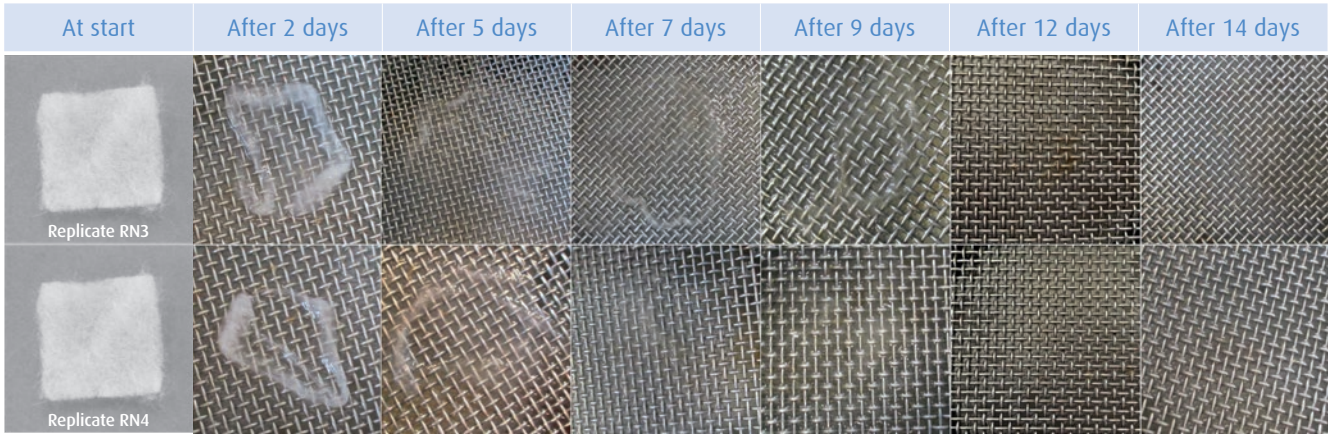
The biodegradability of our fibres was tested according to the "aqueous aerobic disintegration test"*. The DANUFIL®, Galaxy® and Olea fibres used in the test disintegrated completely after 14 days.

Biodegradability of DANUFIL



Visual presentation of the test object DANUFIL during 14 days of incubation.

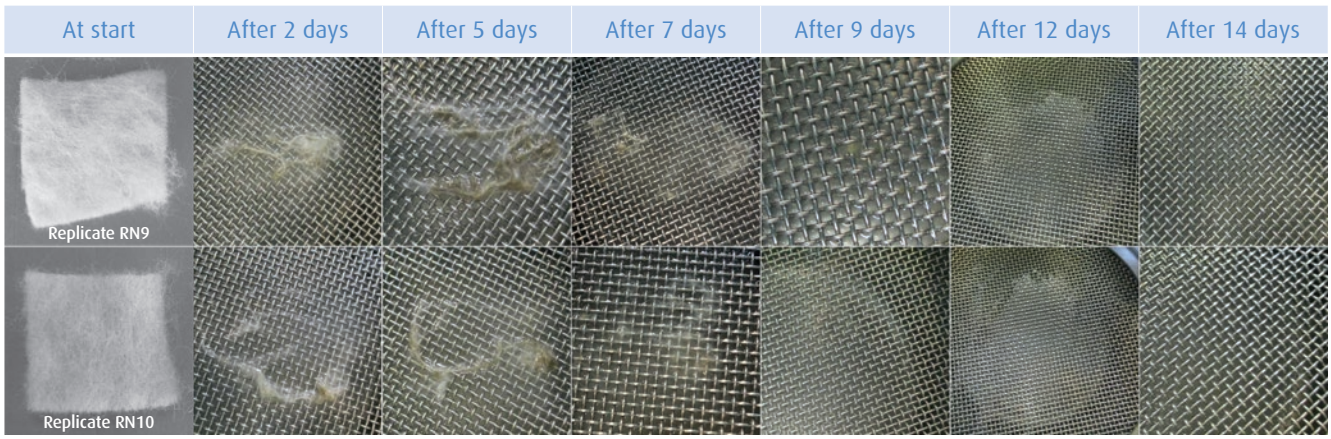
Biodegradability of Galaxy



Visual presentation of the test object Galaxy during 14 days of incubation.

*test number DIN-53/4; DIN CERTCO / OWS

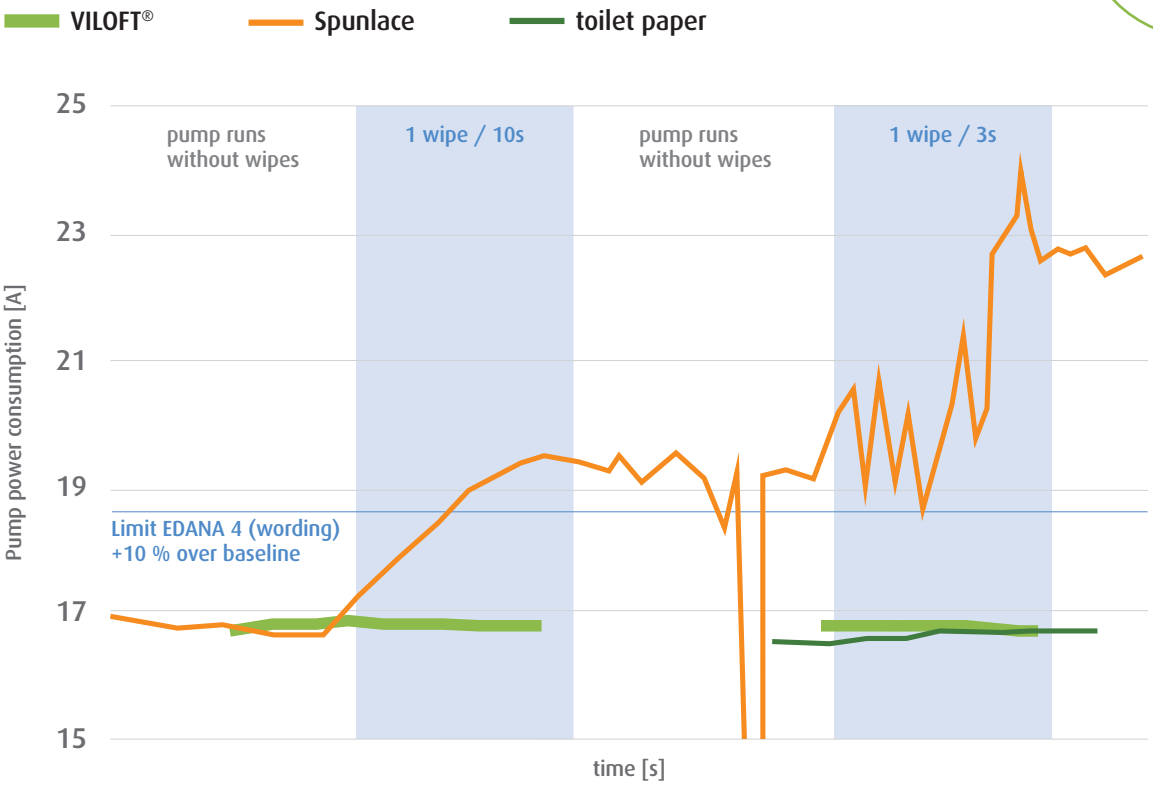
Biodegradability of Olea



Visual presentation of the test object Olea during 14 days of incubation.

"FLUSHABILITY" OF OUR SHORT CUT FIBRES COMPARABLE WITH TOILET PAPER

Conventional fibres used for wet wipes usually cause severe blockages of the wastewater pumps. High power consumption is an indicator that the pump is becoming blocked. Flushable VILOFT® products on the other hand have a similar negligible impact to toilet paper on commercial wastewater pumps. They disperse completely and are 100 % biodegradable.



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