



Reifenhäuser

BLOWN FILM


The Extrusioners

BLOWN FILM LINES

Clever Technologies for Profitable Blown Film Production

EVO-COOL

**MASTER EVERY BLOWN FILM
APPLICATION. ECONOMICALLY
AND SUSTAINABLY.**



As a producer of blown films, you must master several challenges at the same time. Convincing your customers with quality, reacting flexibly to market requirements, meeting the increasing demands for sustainability, and making as much money as possible in the process. With our technologies and know-how, we will help you master the balancing act and build up a blown film production line that is profitable for you.



Reifenhäuser Blown Film **TECHNOLOGIES TO COMBINE ECONOMIC SUCCESS AND SUSTAINABILITY**

Your application should define the technology - not the other way around. That's why we offer you the largest portfolio of blown film technologies on the market. Among them are many clever solutions for sustainable production and the manufacture of sustainable materials that will secure your future business success and help you turn challenges into opportunities. Benefit from our decades of experience, the Reifenhäuser Group's competence network, our know-how along the entire value chain and our pioneering spirit.

- > 50 years of experience
- > 7,500 projects
- > In-house manufacturing of all core components
- > Combination of standards & special mechanical engineering
- > Know-how from raw material to end product



OUR TECHNOLOGIES MAKE YOU:

Efficient

Flexible

Profitable

Sustainable

YOUR GUIDE THROUGH THIS BROCHURE

For easy and quick orientation, you will find different industry icons on the following overview pages, which identify Reifenhäuser's contents and solutions for industry-specific applications.



Consumer Goods



Industry



Hygiene & Medicine



Agriculture

Reifenhäuser

CONTENTS

Applications

Consumer Goods	08 – 09
Industry	10 – 11
Hygiene & Medicine	12 – 13
Agriculture	14 – 15

Technologies

Portfolio	16 – 19
Technology Highlights	20 – 25

Service & Advice

Sustainability	26 – 29
Digitalization	30 – 33
Service	34 – 35
Research & Development	36 – 37
Contact	38 – 39



CONSUMER GOODS

The demands placed on packaging are higher than ever:

Packaging should optimally protect the contents with a reliable barrier, while being as recyclable as possible and – best of all – be made from recyclates. Since consumers make their in-store purchasing decisions within milliseconds, packaging must also be visually appealing. Reconciling all of these requirements and realizing them economically is one of the greatest challenges facing the modern packaging industry.

Reifenhäuser lines support you in successfully manufacturing for the consumer segment. They deliver consistent and reproducible film quality, energy-efficient production, minimized start-up and product changeover times, and enable material savings – by downgauging, for example. We help you achieve the required film properties with less material and produce highly functional monomaterials for packaging that meet barrier requirements and are still fully recyclable.

The future belongs to highly functional, fully recyclable packaging made of monomaterial - mostly, as in the example on the right, made of a 20µm MDO PE film and a 50µm PE film as sealing layer. Ideally, packaging will be additionally traceable and clearly identifiable thanks to a digital product passport.



Stretching is the magic word for the production of modern, sustainable packaging solutions. With EVO Ultra Stretch, you can stretch your films up to 10 times. This saves material through downgauging and gives films completely new properties - the basic prerequisite for the substitution of materials that previously stood in the way of recycling. Thanks to stretching, you can replace PET films with PE films, for example, and thus enable fully recyclable monomaterial solutions. Thanks to stretching, you also reduce the EVOH content for the required barrier effect by half, thereby achieving a content of less than 5 percent - a prerequisite for full recyclability. At the same time, you save on raw materials that are difficult to obtain and expensive.

[» More on page 20](#)



Collation shrink film can now be made from 100 % recyclate thanks to EVO Fusion technology.



I INDUSTRY

Manufacture mass-produced goods economically and be less dependent on material availability.

In industry, blown films are a sought-after packaging solution. For example, when small packaging units need to be combined into larger units for transport or if bulk goods need to be packed securely and stably in bags. In these mass markets, where there is high competitive and price pressure, efficiency is everything, along with functionality. This means Formula 1-style change-over times for smaller orders and high output rates for large orders. In any case, manufacturing costs

must be minimized. In times of rising energy costs and fluctuating material availability, high energy efficiency and the reduction of scrap are therefore no longer pure sustainability goals. Producers who can process the widest variety of raw material qualities – including low-quality recyclates – into functional products will be less dependent on fluctuating raw material qualities in future. This capability will also give them a clear competitive advantage.

Blown film for form-fill-seal (FFS) bags must be stable, sealable and easily printable. Successful production in this market requires high productivity in favor of low manufacturing costs. The FFS sack on the right, which is made partly from recycled sacks, shows that it is possible to develop sustainable products despite competitive pressure.




We support you in the highly competitive industrial sector with technologies that make your production more efficient and cost-effective. Our high-performance cooling system EVO Ultra Cool 2.0 offers outputs that give you an unbeatable competitive edge in terms of productivity. Our intelligent assistance systems help you change products faster to avoid rejects. Our extruder solutions and line concepts enable you to process high recycle content and also make you less dependent on raw material qualities, so you can act flexibly and exploit new raw material sources.

>> [EVO Ultra Cool, page 20](#)
>> [EVO Fusion, page 17](#)



Films for industrial applications have to withstand a lot. For stretch hoods, the most important thing is a good thickness tolerance so that the film does not tear due to the high tension when the goods are packed.



HYGIENE & MEDICINE

Ensuring Safety and Serving Trends Flexibly.

Blown films ensure safety and well-being in hygiene and medical applications. The demand on their function is correspondingly high and it continues to increase due to various trends: Diapers today, depending on the region, should have different breathability, be lighter and thinner, and still meet high mechanical properties. Due to the aging population, we will need even larger quantities of such films in the future. High performance in production will therefore become even more important.

Reifenhäuser technologies ensure the consistently high quality that everyone in hygiene and medicine must be able to rely on - with high efficiency in production. With our stretching technologies, producers can react flexibly to different market trends, for example, by easily implementing different degrees of breathability and achieving the same functions with less material input.

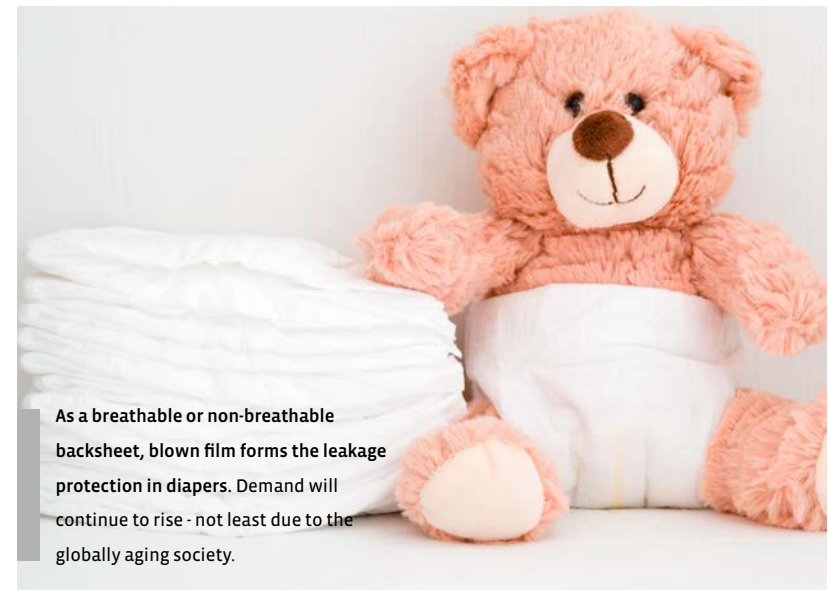
Excellent transparency, gloss, puncture resistance as well as thermoformability make water-cooled blown films the ideal material for infusion bags.

[» EVO Aquacool, page 18](#)



With EVO Ultra Stretch technology, you can produce breathable films that are used, for example, as backsheets in diapers. The degree of breathability can be specifically adjusted with this technology and you can always supply exactly the product that is currently in demand on the market.

[» EVO Ultra Stretch, page 22](#)



As a breathable or non-breathable backsheet, blown film forms the leakage protection in diapers. Demand will continue to rise - not least due to the globally aging society.



I AGRICULTURE

Large Dimensions for Large Tasks

Around eight billion people worldwide need to be supplied with food. Agricultural films make an important contribution to this. They accelerate crop growth, protect harvests and increase yields.

Because these films come into direct contact with the soil, demand is growing for biodegradable films that can be traced using digital markers. The use of recycled material will also continue to increase in favor of a lower product carbon footprint in the agricultural industry.

The required film dimensions and formulations are diverse in this industry. Manufacturers usually produce to customer requirements and are therefore dependent on high flexibility in production and easy product changeover.

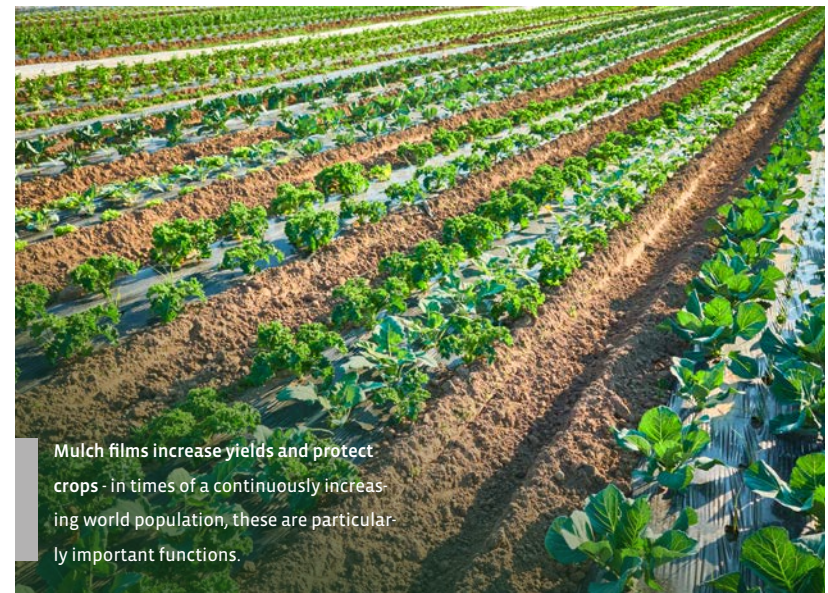
Silage stretch films are indispensable for the production of feed, such as straw.

To prevent birds and other animals from damaging the bales, the films must have particularly good puncture resistance.



EVO Agriculture lines give producers the flexibility that makes them successful in the agricultural market. The lines produce films with a bubble circumference of up to 24 meters, process many different raw materials and allow a design with up to seven layers.

[» EVO Agriculture, page 18](#)



Mulch films increase yields and protect crops - in times of a continuously increasing world population, these are particularly important functions.



Scan
the QR code
to learn more!



Portfolio

EVO BLOWN FILM LINES

EVO blown film lines are designed for the highest quality, resource efficiency and cost-effectiveness and continue to set new technological standards. Because evolution is our DNA. We adapt our modular lines to your requirements and thus help you to sustainably get the best out of your production.



Scan to learn more

EVO

Flexible, Reliable and Future-Proof

Process an enormous range of raw materials with ease and become a sought-after supplier for many different markets.

Applications: Industrial packaging, multimedia, structural engineering, roadbuilding, automotive, bedding, seating, protective film, housebuilding, food packaging, clothes packaging, transport packaging, trash bags, carrier bags, mulching film, silage film, TIV/VIF



Scan to learn more

EVO Micro

Efficient Research and Development

Ideal for narrow layflat widths: With EVO Micro, you combine economical laboratory tests and the production of sellable films in one system.

Applications: Industrial packaging, multimedia, structural engineering, roadbuilding, automotive, bedding, seating, protective film, housebuilding, food packaging, clothes packaging, transport packaging, carrier bags



Scan to learn more

EVO Fusion

Direct Processing of 100 % Recyclate

Circular Economy in perfection: Processing plastic waste into new film without energy and cost intensive pelletizing.

Applications: Industrial packaging, multimedia, structural engineering, roadbuilding, automotive, bedding, seating, protective film, housebuilding, food packaging, clothes packaging, transport packaging, trash bags, carrier bags, mulching film





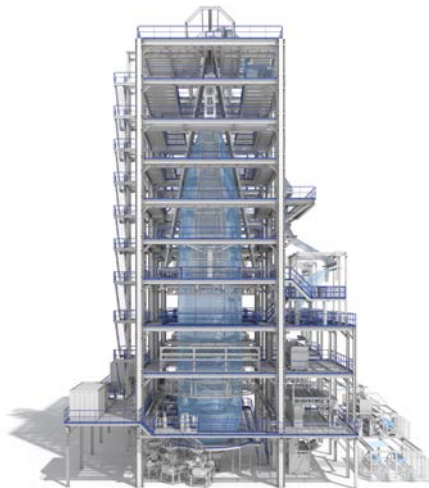
Scan to
learn more

EVO Agriculture

Large Films, Low Material Consumption

Produce multilayer agricultural films up to 24 meters in circumference for the best crop yields. Resource-efficient.

Applications: *Mulching film, silage film, greenhouse film, container liner, TIV/VIF*



Scan to
learn more

EVO Aquacool

Maximum Transparency through Rapid Cooling

For the highest optical demands: Produce extremely puncture- and tear-resistant thermoformable films with unbeatable transparency and impressive gloss for special applications.

Applications: *Industrial packaging, food packaging, blood bags, infusion bags, dialysis bags*



Scan to
learn more

EVO FFS

Highest Output Rates with Best Film Quality

The special line for form-fill-seal sack applications ensures high output rates coupled with top film quality - the key to success in a tough competitive market.

Applications: *FFS - Heavy duty bags for the food industry, petrochemical industry, and agricultural industry*





TECHNOLOGY HIGHLIGHTS

☆
20 %
more
throughput

Ultra Extruder

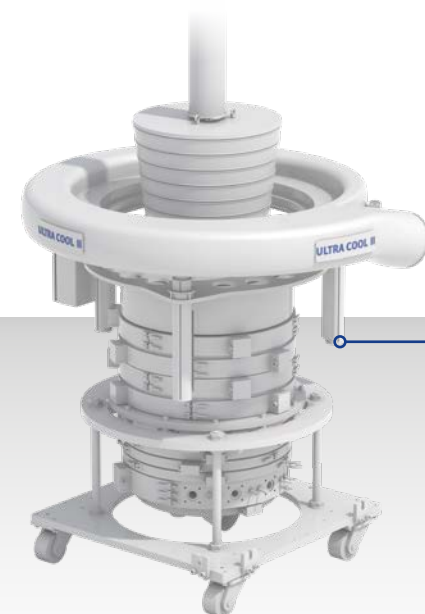
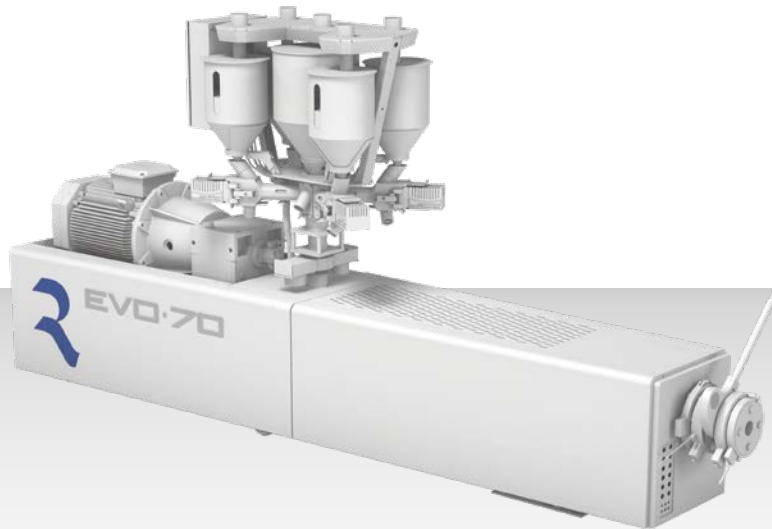
Swap raw materials without any change to the hardware and process recycle as any other raw material.



Scan to
learn more

Ultra Cool 2.0

Easily achieve output rates beyond 600 kg/h with a 175 mm die while maintaining good film properties.



EVO ULTRA COOL 2.0

Scores With:

- › **Highest output** beyond 600 kg/h (depending on the recipe)
- › Approx. 20 % more **cooling capacity** than standard systems in the market
- › Consistently **best film properties**
- › Easy **system operation** and **process reliability**
- › **Suitability** for all commercially available recipes
- › **High-precision, flow-optimized** components

★ Outstanding Cooling Performance

Ultra Quench

Produce highly transparent films with water cooling.



★ Energy Efficient Stretching

from first Heat.



Scan to
learn more

Ultra Stretch

Improving film properties at maximum process stability and efficiency.



FULLY RECYCLABLE BARRIER POUCH

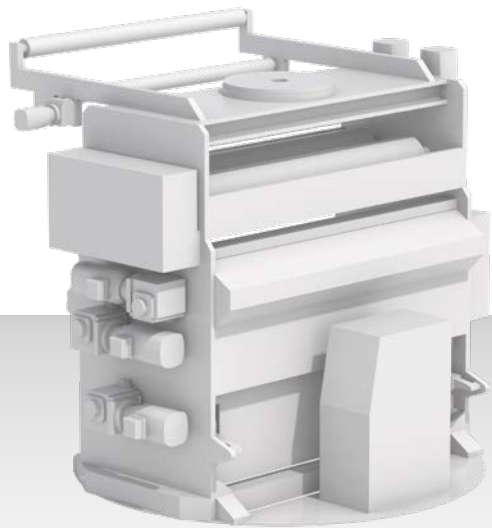
Reifenhäuser EVO Ultra Stretch enables the production of fully recyclable PE pouches with barrier effect against oxygen and water vapor, suitable for food packaging. Thanks to a maximum stretch rate of 1:10, PET can be replaced by PE and the barrier effect of EVOH is doubled. The EVOH content can thus be reduced to less than five percent while maintaining the same barrier effect - a basic requirement for the recyclability of flexible packaging.



Scan to
learn more

Ultra Flat / Flat +

Produce perfectly flat blown film and
earn more money in converting.



★ Enhance
Film Flatness
by up to
40 %.



EVO Fusion

TURN WASTE INTO SELLABLE FILM

EVO Fusion makes you independent of highly fluctuating recyclate qualities and even enables you to process previously unusable, lowest-quality recyclates into high-performance blown films.



Skip pelletizing and accelerate production

Save up to 40 % Energy

Recycle even heavy printed films

Become independent of input quality variances

Don't worry about recycling cheap resin anymore

Recycle higher quality PE film directly

Scan to read a customer success story



What kind of
recyclate would
you like to
process?



PE-based
sticky surface
protection film
becomes trash
bags



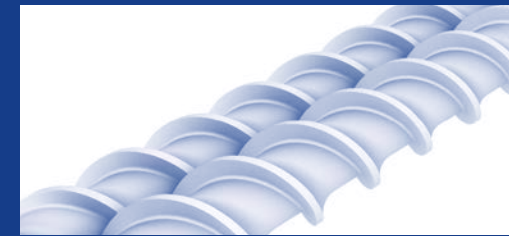
PCR fluff from
selective
collections
become collation
shrink film



PCR granules
of lowest quality
become mailing
bags

ENERGY EFFICIENT DIRECT EXTRUSION

EVO Fusion relies on direct extrusion, which eliminates the need for energy- and cost-intensive regranulation of the raw material. This means that fluff (film shreds), all types of production waste and PCR material can also be processed directly.



This is made possible by the twin-screw technology, which homogenizes the melt better and thus ensures a stable process. In addition you can degas the system very easily and effectively, removing unwanted components in the recyclate.



Scan
to watch an
animation



R-Cycle

MAKE YOUR PRODUCTS IDENTIFIABLE FOR RECYCLING

Give your product a digital identity with readable, recycling-related information so that it can be properly sorted and recycled at the end of its life – for the benefit of a functioning circular economy and the recovery of high-quality recyclates. The cross-company R-Cycle initiative launched by Reifenhäuser provides an open, globally applicable traceability standard for this purpose.

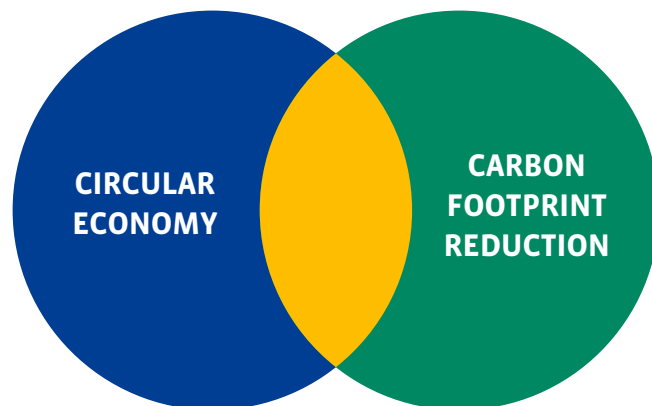


www.r-cycle.org

We only have one planet.
Therefore, it is our task to preserve the
livelihoods of future generations.

SUSTAINABILITY

In the plastics industry, we have focused for too long on product functionality and placed too little emphasis on their sustainability. Yet plastics possess all the prerequisites for establishing a circular economy and reducing our carbon footprint. A potential that should benefit the environment and your economic success. We therefore provide you with technical solutions and proven end-use applications that will equip you for current and future requirements.



We offer technologies that help you contribute to the circular economy and reduce your product carbon footprint.

Combining sustainability and profitability: Learn about your fields of activity and specific solutions.



Manufacture recyclable products



Manufacture products from recycle



Downgauging



Process bio-based raw materials



Reduce scrap



Save energy

An aerial photograph of a recycling facility. A large blue excavator is positioned on the right side, working on a massive pile of multi-colored waste. In the center, a yellow conveyor belt system is visible, transporting material across the site. The ground is covered in a dense layer of plastic, paper, and other debris.

Interview

"WE MAKE CUSTOMERS 'READY FOR RECYCLING'"

stories.reifenhauser.com

Fluctuating input material quality is one of the biggest challenges when processing recycled material. Dr. Christoph Lettowsky, Senior Product Manager at Reifenhäuser Blown Film, explains in an interview why EVO Fusion twin-screw technology makes blown film producers less dependent on the input quality - and why they were even able to dispense with energy- and cost-intensive granulation of the input material.

Christoph, recycled content in films is more in demand than ever. Why is the processing of recyclate still often considered unprofitable?

Customers very often tell us that they have great difficulty in obtaining consistent recyclate quality. The first batch is good, after that it fluctuates and they have to react in production, for example adding more virgin material or even expensive additives to make the process stable at all. Maintenance and cleaning intervals are also shorter when processing recyclate.

The quality of recyclates is out of your hands, but what answers does Reifenhäuser as a machine manufacturer have to these challenges?

We in the Reifenhäuser Group have a wide range of technology and service offerings to help - we make customers 'ready for recycling', so to speak. With our EVO Fusion twin-screw blown film line, for example,

we make producers more independent of the input quality of the recyclate they process.

In what way? How do producers benefit from the twin screw during recyclate processing?

When you want to recycle film waste from the production chain - from extrusion to printing, laminating, etc. into finished packaging - it is usually dirty or printed, there are adhesive residues. All these residues are contained in the recyclate and interfere when you want to further process the recyclate into a film. With our twin-screw technology, we achieve a better mixing effect of the raw material - both in terms of splitting and distribution. This is because the melted plastic is not a homogeneous mass but, especially in the case of recyclates, a mishmash of very different hydrocarbon chains. We can also degas the system very easily and effectively. And that's the exciting thing: We can remove

the components in the recyclate that interfere with the process via degassing.



"If the focus is no longer on appearance but above all on function, new fields of application will open up in the medium term for films with a high recycled content beyond trash bags, the construction industry and industrial packaging."

Dr. Christoph Lettowsky

Does this still work with heavily contaminated and mixed film waste from the post-consumer sector, which we are often still unable to recycle today?



Scan to read the answer and the full story online



MACHINE HEALTH

Detect, store and historically trace the condition of all connected assets and optimally set them up based on the insights gained. This allows you to optimize your processes along the entire production chain.

PRODUCTION COMPLIANCE

Monitor and document your production processes to prove compliance with key thresholds on the basis of data. This enables you to act fast and significantly reduce errors and customer complaints.

DEFECT ANALYTICS

Gain transparency on defects that occurred – for each roll produced. Monitor all your defect specific KPIs at all times, so you can trace and analyze your defect occurrence efficiently and reduce scrap.

DIGITALIZATION



Scan to learn more
about digitalization
with Reifenhäuser.

All film producers – regardless of size – should benefit from the enormous potential of digitalization without becoming dependent on specialists, specific systems or vendors – don't you think? We have therefore created an ecosystem that allows you to connect any equipment in your production, regardless of the manufacturer, in order to create a universally valid, correct database that helps you to increase the efficiency of your entire production simply, securely and independently.

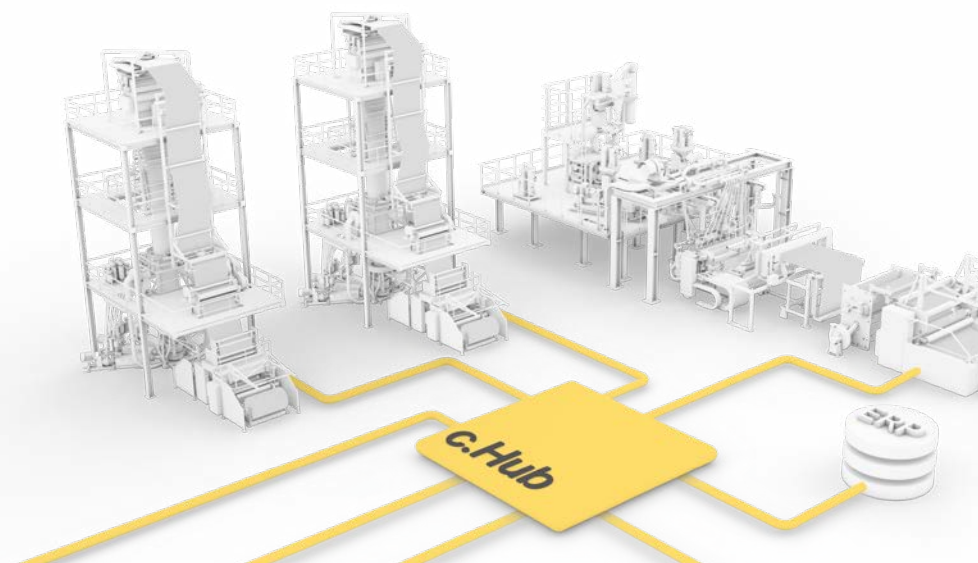
We will support you with:

c.Hub

Core platform that allows you to digitally connect your shopfloor, as well as monitor, manage, store, and analyze your process data with intuitive and user-friendly applications and dashboards. Also included: Out-of-the-box connectors for the major industry protocols, that allow for easy integration of Reifenhäuser machinery via “plug & play”.

ExtrusionOS Suite

Our digital products help you to solve the most common challenges in film production with a wide range of different features. These enable you to sustainably increase the quality, performance and availability of your production. A new dimension of transparency of your data will support you in troubleshooting and makes your data secure and easy to track.



Interview

"DIGITALIZATION IS A JOURNEY, NOT A DESTINATION"

Daniel Kajan, Director Product & Operation, RE: GmbH

Do producers of films and nonwovens really know whether their production is running at optimum efficiency? Many could be more productive if they leveraged the enormous potential offered by digitalization to the full extent. Reifenhäuser has therefore launched a digital campaign with its corporate start-up RE:.

A discussion about the concept and the added value in practice between Daniel Kajan, Director Product & Operations at RE:, Mark Schuster, PET Product Manager at Reifenhäuser Cast Sheet Coating GmbH, and Eugen Friedel, Vice President Sales and Marketing of the Reifenhäuser Group.





"At Reifenhäuser, we offer expertise in mechanical engineering, extrusion technology, and software development from a single source."

Eugen Friedel, Vice President Sales and Marketing, Reifenhäuser Group

Reifenhäuser intends to provide plastics extrusion companies all over the world with an easy entry into digitalization from which they can profit sustainably - regardless of company size. Reifenhäuser bases its solution on a cross-manufacturer approach that is the first to connect all installed lines and machines in a production facility.

Mr. Kajan, what is RE: and what support does it provide producers of film and nonwovens?

Kajan: We develop digital products that enable producers of films and nonwovens to optimize their assets based on data and thus increase production efficiency. Here, we not only integrate lines manufactured by Reifenhäuser but also those of other vendors as well as all additional equipment used along the way to the end product.

RE: works closely with Reifenhäuser business units. What added value does digitalization bring, specifically to film and nonwovens production?

Kajan: The potential of data is greater than ever before! Companies with access to all production data can quickly make processes more efficient and boost the quality of their products - a huge competitive advantage.

Friedel: Actually, the calculation is very simple. Every producer knows the price per kilo of his raw materials and how many tons of material pass through his production line every year. And he knows the power consumption of his line and the cost of each kilowatt hour. If he only increases his OEE by one percent using our digital solution, he already saves several thousand euros a year.

Schuster: Data acquisition and documentation is also essential for proof of compliance, for example, for medical products or food packaging.

If, for example, a food company complains that a product packaged in film is spoiling prematurely, it is a great advantage if the film producer can seamlessly document from the first to the last meter that he has complied with all agreed quality parameters during production. With our solution, the roll can be virtually taken apart. Customers are able to inspect the production parameters

as well as quality KPIs down to the meter.

That sounds convincing. Why do some plastics converters still shy away from taking the first step?

Kajan: Because the market for digital applications is extremely diverse. Many producers find it difficult to pick out what they really need from the sheer mass of options. In a survey of our customers, 31 % stated that they needed help in making their choice.

And how can Reifenhäuser provide support here?



Scan
to read the answer
online in the full story

DIE HEAD CLEANING

We clean your die head and production tools effectively and with care. Benefit from a quick service, avoid early impairments of your film production and increase the service life of your die head.



Scan to
learn more



SERVICE

With outstanding equipment, you create the foundation for successful, economical production. So that you can build on this foundation, we have established a comprehensive range of services for you that guarantees you fast help when you need it, keeps your equipment performing efficiently for decades, makes you fit for new challenges, and provides your employees with the best possible qualifications so that you can continue to manufacture blown films highly productively and successfully in the future.



Scan
to discover our
service products

PROFIT FROM:



Technical Support

for fast help when you need it.



After Sales Service

to ensure line availability that contributes to your success.



Original Spare Parts

for quality that enhances the performance of your line.



Research & Development

for support that secures your future



ARDEL Akademie

for employees who become boosters of your productivity.

FACTS RESEARCH AND DEVELOPMENT

- ✓ **Modernized**
2017 - 2019
- ✓ **Equipment**
Up to 10 high-tech lines
with the latest line
generation for the
production of blown
film, cast film, sheets,
and nonwovens
- ✓ Meeting and training
rooms
- ✓ 2 laboratories
- ✓ **Total area**
About 5,000 square
meters
- ✓ **IoT**
Connection of all lines



Scan
to learn more



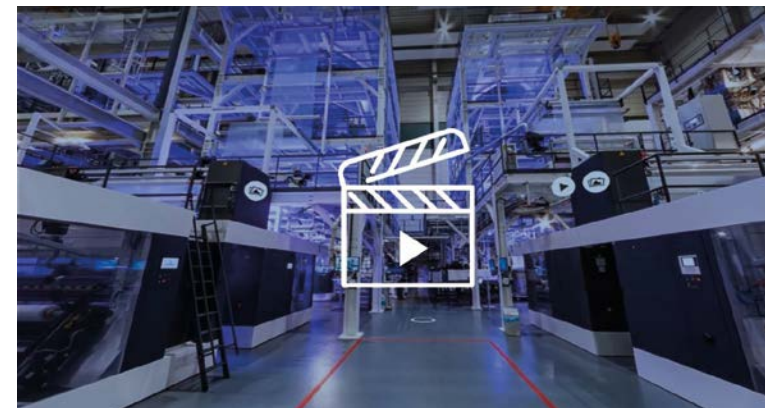
RESEARCH & DEVELOPMENT

You're probably also aware of the following dilemma: You are developing future products but face the choice of blocking production capacities to do so, or continuing to process orders that generate revenue? As a Reifenhäuser customer, you no longer have to decide between current business and preparing for future success. You will have access to our state-of-the-art Research and Development Center which houses high-tech facilities and testing laboratories. Our team of experts will be pleased to support you on request. They will ensure successful test planning, test execution and evaluation, to ensure you can design your future in peace without interrupting your in-house production.

How you benefit:

- Undertake research while you continue to earn money
- Learn about state-of-the-art technology and discover your potential
- Transfer the results directly to your production for a fast return on investment
- Gain knowledge thanks to state-of-the-art laboratory measurement equipment
- Obtain support for test planning, execution and evaluation for less stressful development of your future business
- Make the most of the Reifenhäuser experts' advice and save yourself time
- Start exclusive development cooperations and stand out from the crowd.

Visit Our Virtual Technology Center



Scan
to make an appointment

LET'S TALK ABOUT YOUR GOALS

Your Contact

Sales

T +49 6241 902-0
info@reifenhauser.com

Service

T +49 6241 902-500
aftersales-bf@reifenhauser.com



Follow us!



/reifenhausergroup



Reifenhäuser
BLOWN FILM
Johannes Kamps

Reifenhäuser Blown Film GmbH
Herzstraße 12
53844 Troisdorf, Germany
T +49 228 96 390-0
info@reifenhauser.com

www.reifenhauser.com