



Reifenhäuser

BLOWN FILM

The Extrusioneers



EVO Blown Film Lines

Technology portfolio for a broad range of
high-quality blown film products.

FLEXIBLE

The product should determine the choice of technology, not the other way round. For this reason, we have compiled a comprehensive portfolio for the production of blown films. This permits us to conduct neutral consulting based on requirements. As no portfolio is capable of catering for all special cases, we develop new, customized solutions if the product so requires. In the end, the customer receives what is best for him and not what is the most convenient for us.

Eugen Friedel
Sales Director

“For me, listening carefully to the customer is just the start of a good consultation. The decisive factor then is to react with flexibility. Our portfolio and the know-how within the Reifenhäuser Group that goes far beyond blown film give me the tools to do just that.”



RELIABILITY

Our lines have one thing in common with us: We are real workhorses. Once we start, we keep on going. Since we regard customers as true partners and we strive to set up long-term business relations with them, we are willing to go the extra mile to pursue a jointly agreed goal. And we stay the distance until the job is done. Always. That's our philosophy.

Ewald Hamm
Head of technology center

“For me and my colleagues, there is no alternative to bringing commissioning and service assignments to a successful completion. We provide our customers with support until they can start up production with certainty and as agreed. We walk the talk.”



INNOVATION

If there is one thing we do not shy away from, it is technical challenges. On the contrary. Setting new standards in blown film extrusion is what drives us from the start. And today is no difference. To create a genuine leading edge for our customers, we are prepared to think outside the box. We dare to break new ground, and we work closely with all the parties involved along the entire value chain. For technologies that give our customers the opportunity to take the next decisive step forward.

Dr. Christoph Lettowsky
Technical Director

“I develop new technologies for our customers with heart and soul. But just as much, I like to support their inhouse research and development. Fortunately, we can combine the two, thanks to our Technology Center and our know-how that ranges from the raw material through to the end product.”



REIFENHÄUSER BLOWN FILM

Reifenhäuser Blown Film is a business unit of the family-owned Reifenhäuser Group. As specialists for blown film technology, we have made it our task to develop technologies that ensure the success of our customers – by creating a distinctive leading edge when it comes to quality, flexibility, and cost-effectiveness. To achieve this, we manufacture all of our core components in-house. We apply our know-how to raw materials and machine technology and we enter into long-term collaboration with our customers and partners.

Ultra Outstanding technology.

There are good line features and very special line features. Features that upgrade a line significantly. The added value comes from quality, reproducibility, flexibility, and efficient energy or raw-material consumption. These are the only features that we then refer to as Ultra. It is a quality seal that stands for state-of-the-art technology. A quality seal that guarantees solutions that make a decisive difference on a highly competitive market.

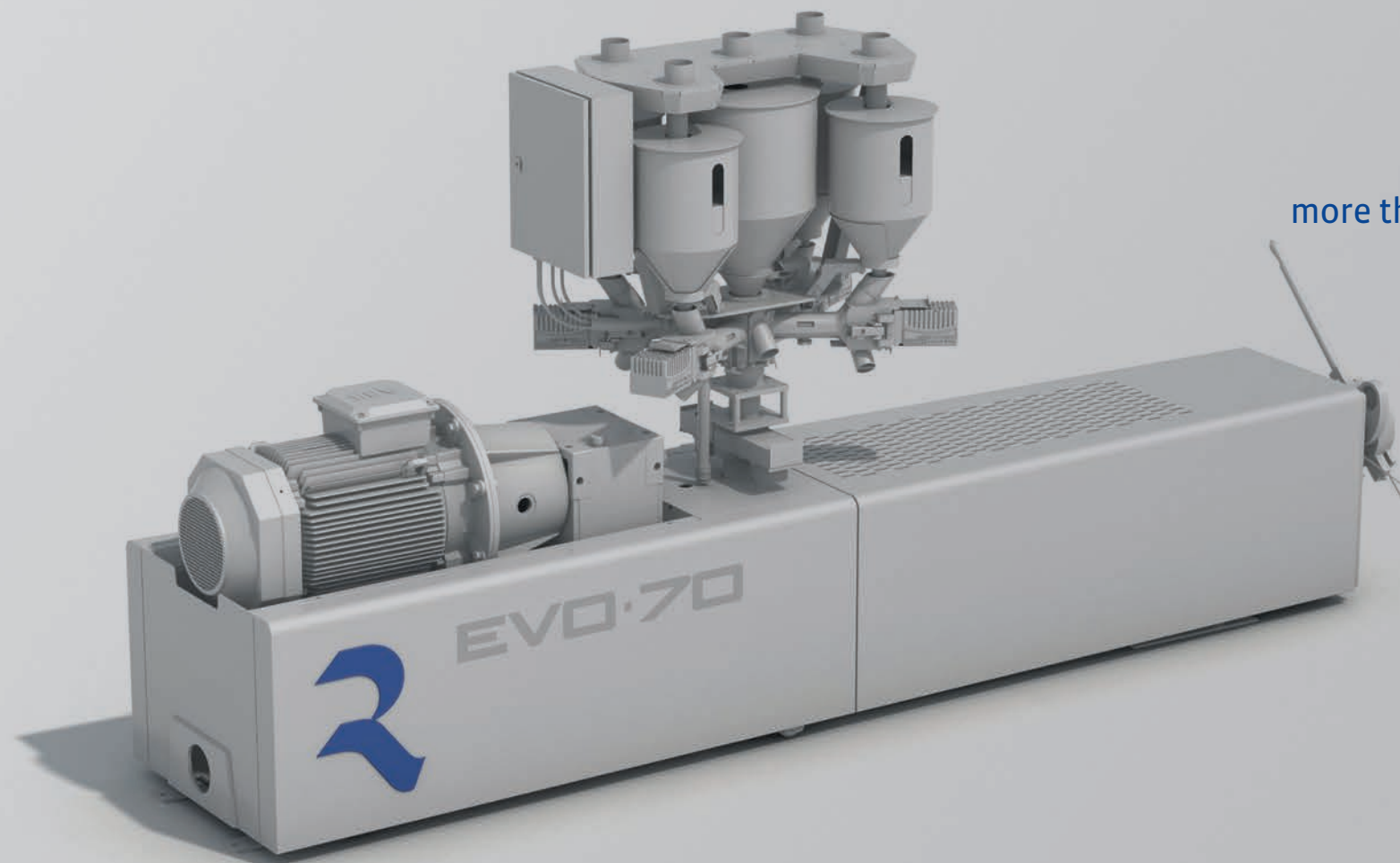
EVO Ultra Extruder

Processing all raw materials with only one extruder.

Our EVO Ultra Extruder combines maximum flexibility in film structure design at very high throughputs. This is all made possible by extrusion at low temperatures.

ALL RAW MATERIALS

LDPE, LLDPE, mLLDPE, MDPE, HDPE, EVA, PET, EVOH, PA6, CoPA, CoPP, PP, Adhesives, Ionomers, PS, PLA, etc.



High flexibility

Due to its wide temperature range in the feed zone from 20 to 250°C, EVO Ultra Extruders process an extremely wide variety of raw materials and additives.

Maximum productivity

Lines equipped with EVO Ultra Extruders achieve throughputs that are up to 20 percent higher – to provide a high level of cost-efficiency in production.

Long lifetime

EVO Ultra Extruders are designed for a long lifetime: The screws and bimetallic barrels fitted are manufactured from corrosion-resistant and high wear-resistant steel alloys by our wear protection experts Reifenhäuser Reiloy.

20%
more throughput

EVO Ultra Cool

Achieving high throughputs above a die factor of 2.

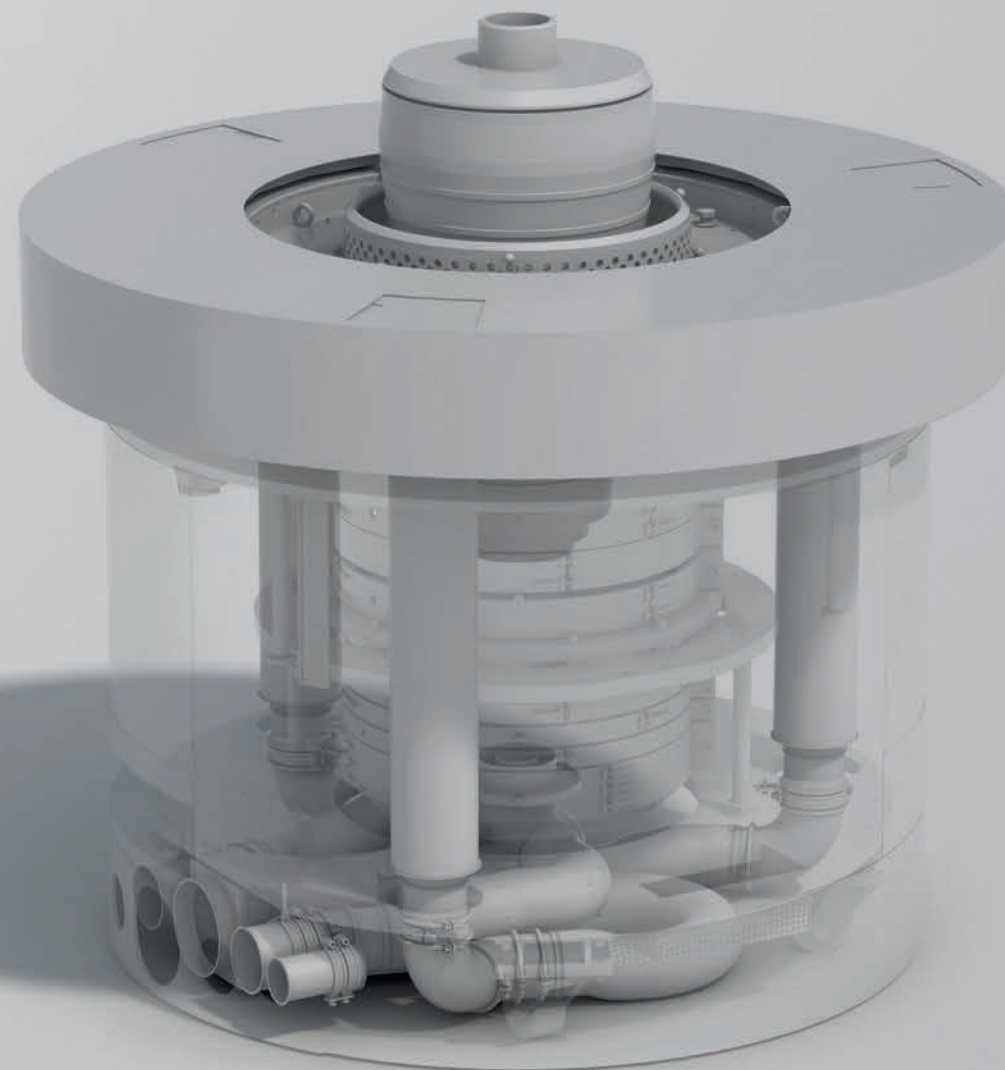
EVO Ultra Cool boosts productivity to a new high level: This high-performance cooling system doubles output while maintaining the high mechanical properties of the film.

EXCELLENT COOLING

Uniform inside and outside

Optimized film quality

EVO Ultra Cool produces film with excellent mechanical properties, even in production situations with high die factors. This is ensured by the extremely homogeneous cooling of the film bubble on the internal and external sides.



High performance

EVO Ultra Cool achieves extremely high outputs for a broad range of blown film applications.

Flexible production

EVO Ultra Cool operates within a wide process window of die factors of 1 to 2.5 to achieve a high level of flexibility in production. It also permits rapid product changeover within this window. In any case, thickness tolerances are excellent due to the long film guide.

1–2.5
die factor

User-friendliness

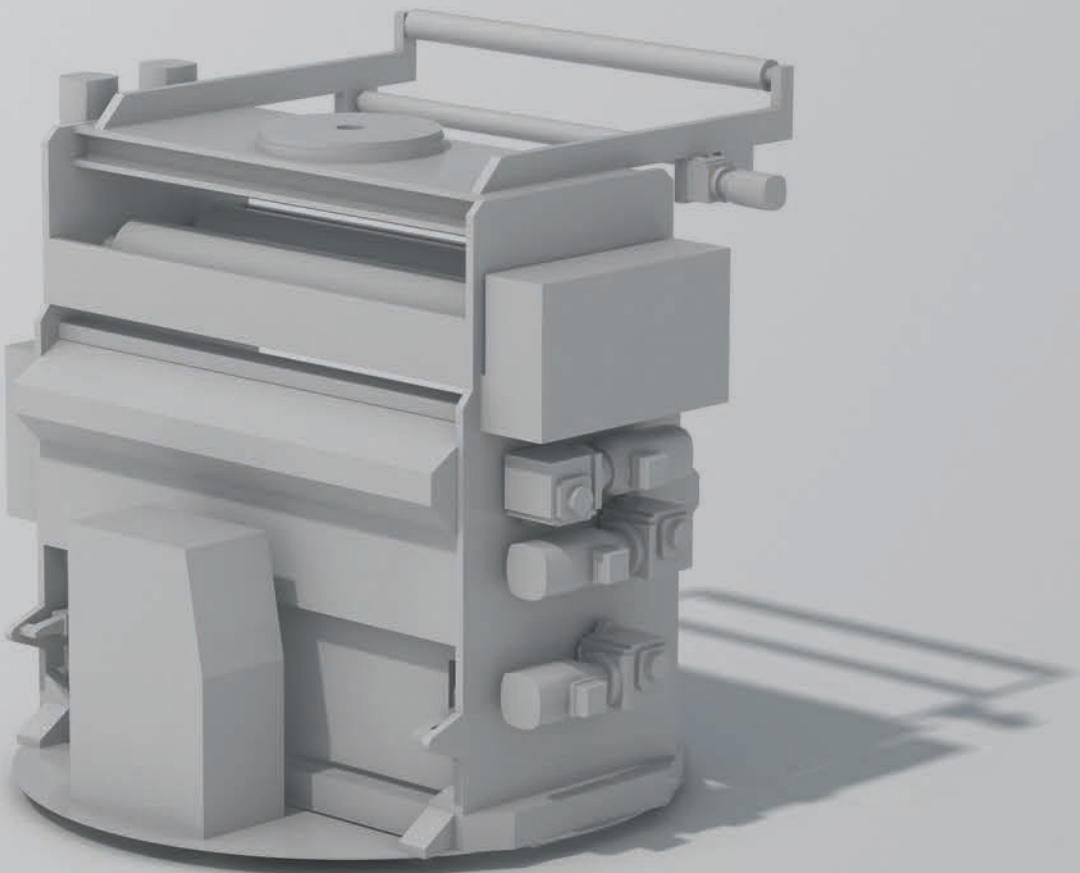
High-performance cooling need not be complicated. Starting the EVO Ultra Cool is very easy and it can be operated like a conventional cooling air ring. The operator is assisted by motorized height adjustment and full access to key components, such as cooling ring lips, die gap, and IBC.

EVO Ultra Flat

Converting film at high speed.

No more bagginess or camber: Our EVO Ultra Flat produces perfectly flat film at moderate stretching of maximum two percent. This permits rapid printing and film lamination without any problems. By the way, the EVO Ultra Flat is more efficient than any other system on the market.

**PERFECTLY
FLAT FILMS**
Minimized bagginess and camber



-30%

Glue

-20%

Ink

-10%

Raw material

More efficient converting

Flatter film is faster, better, and more efficient to convert. EVO Ultra Flat not only enhances the visual appearance of end products, it also reduces the consumption of the required glue, raw materials, and ink during film lamination or printing.

Measurably better film quality

EVO Ultra Flat significantly reduces the usual film camber and even partial bagginess. Film quality is objectively assessed by an integrated measuring system that measures film inline in production to maintain quality at a constant high level.

High energy efficiency

EVO Ultra Flat requires much less energy to flatten films than any comparable system on the market. We stretch from initial heat directly in the haul-off.

**A quality seal
for perfect films:** We
certify all customers
producing on lines
with EVO Ultra Flat-
technology.



EVO Ultra Flat Plus

The practical way to combine flattening and stretching.

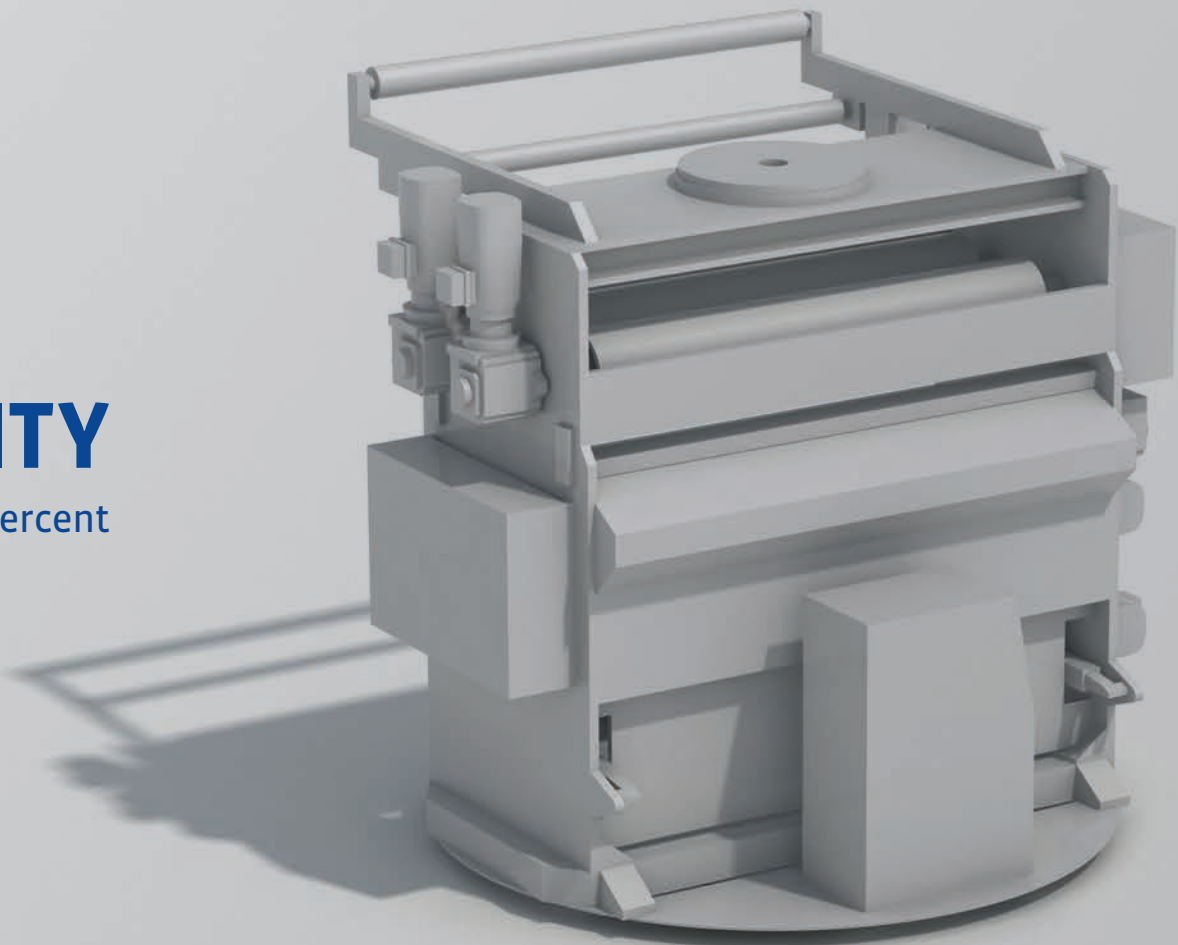
Moderate stretching for film flattening, or stretching up to 100 percent to enhance specific mechanical properties: Both options are possible with EVO Ultra Flat Plus – and whatever the application, everything is extremely energy-efficient.

HIGH FLEXIBILITY

Stretching rates from 1 to 100 percent

Easy handling

Ultra Flat Plus is integrated in the line control and is easy to operate by touchscreen. The recipe memory makes production 100% reproducible.



High film quality

Enhanced flatness and greater stiffness: EVO Ultra Flat Plus significantly upgrades conversion and mechanical film properties.

Reduced raw material consumption

Due to their higher quality, EVO Ultra Flat Plus films achieve the required properties at reduced thicknesses. This results in much lower raw material consumption – and production is more cost-efficient and sustainable.

Rapid conversion

Laminating, printing, and converting at high speed – this is achieved by perfect film flatness and excellent reel quality.

Top energy efficiency

Compared to conventional MDO systems, EVO Ultra Flat Plus requires 63 percent less energy. Thanks to its ideal positioning, we stretch at the ideal time from initial heat.

63%
lower energy requirements

EVO Ultra Die

Producing multilayer films efficiently.

Compared to other blown film die heads on the market, our patented, compact EVO Ultra Die blown film die heads operate at higher speeds. The production of multilayer barrier films is then highly energy-efficient and comes with reduced raw material consumption.

High energy and raw material efficiency

Smaller melt volumes and short heating paths shorten heating phases at startup or when the raw material is changed. This saves energy and reduces the change-over time to lower the required raw-material consumption.

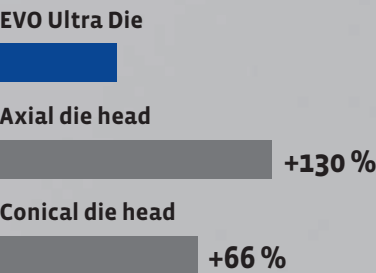
up to
12
layers



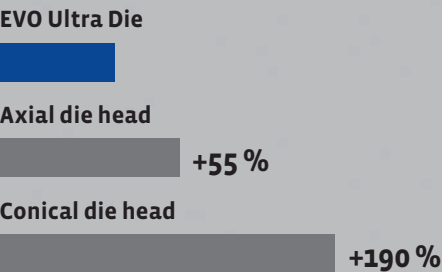
Excellent film appearance

EVO Ultra Die produces films with excellent appearance – for symmetric and asymmetric film structures.

Short heat-up phase due to compact design



Rapid product changeover times due to short heating zones



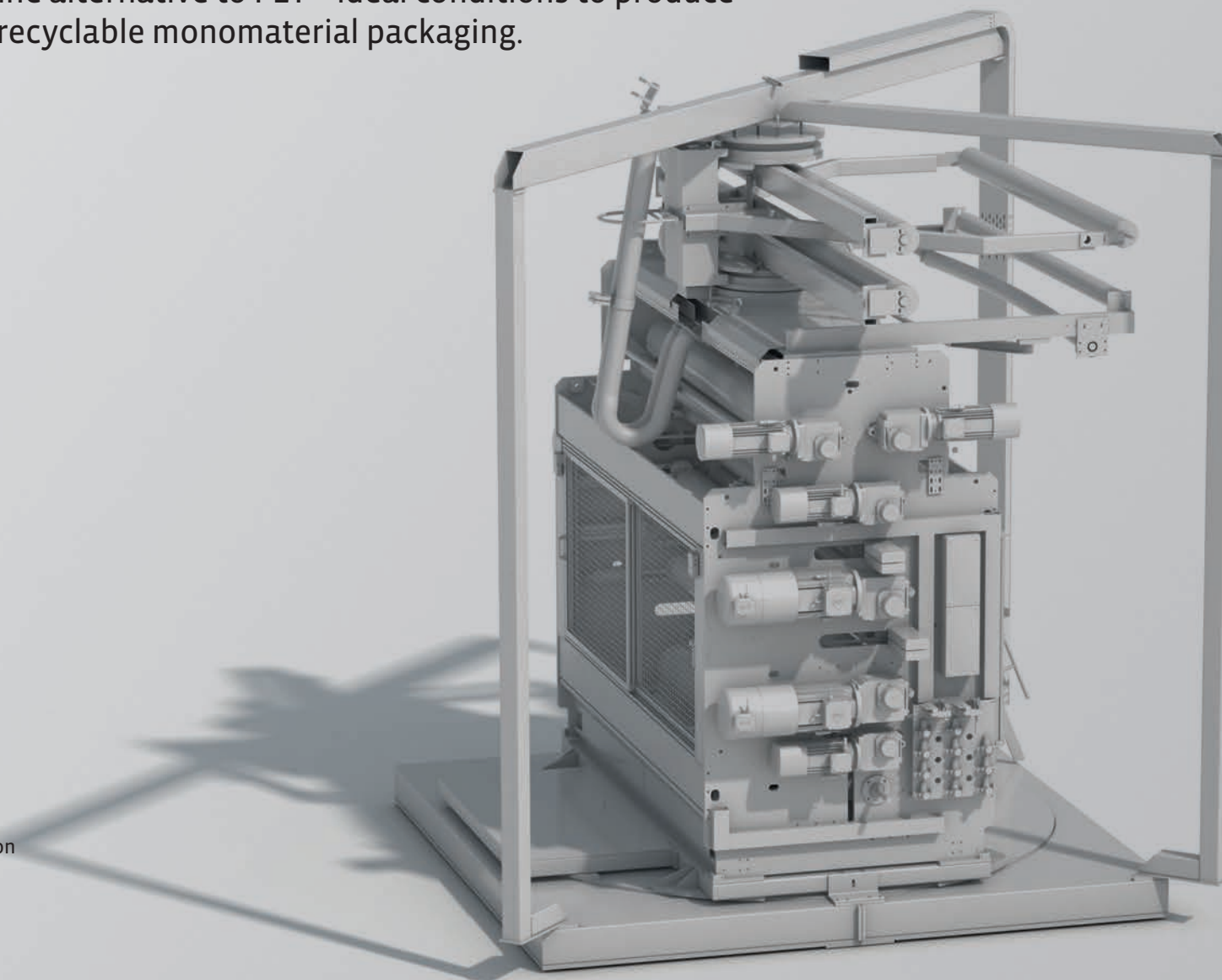
EVO Ultra Stretch

Producing fully recyclable packaging using standard PE.

Our EVO Ultra Stretch unit reaches new levels with a maximum stretching rate of 1:10 to upgrade the mechanical properties of the film. Even standard PE then becomes a genuine alternative to PET – ideal conditions to produce fully recyclable monomaterial packaging.

Enhanced film properties

High stiffness and strength, excellent heat-sealing property, good flatness, and perfect printability. EVO Ultra Stretch produces excellent film properties that have positive effects on film shrinkage – thanks to the long cooling phase.



MAXIMUM STRETCHING

up to 1:10



Application Example: ALL-PE Pouches

PET gives conventional packaging made from different material its stiffness and basic barrier properties. On the downside, it restricts the recyclability of the packaging as the materials cannot be separated after use. Stretched PE using EVO Ultra Stretch can completely replace PET. The film meets all the requirements for high-performance packaging and can be further optimally processed on existing conversion lines.

High energy efficiency

EVO Ultra Stretch requires less energy compared to other systems on the market. We stretch from initial heat with great efficiency due to the patented position in the line.

Stable production process

Stretching need not be complicated. EVO Ultra Stretch ensures high process stability since the film is stretched when it is the simplest – in heat and at low crystallization.

EVO Ultra Quench

Producing highly transparent films with water cooling.

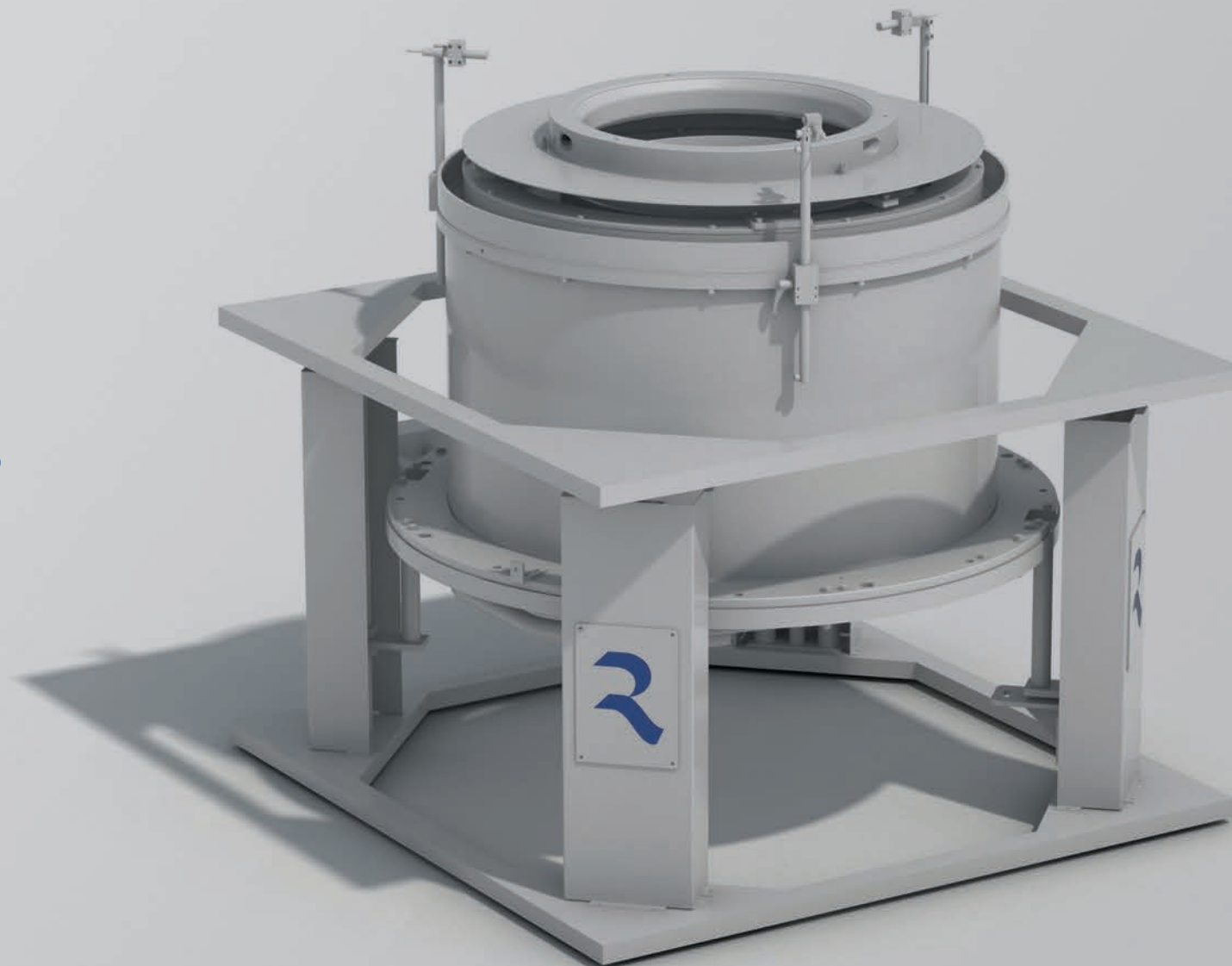
If high transparency, formability and puncture resistance are required, water-cooled film is unbeatable. Our EVO Ultra Quench high-performance water cooling and calibration unit has a very high performance and process stability in film production.

MONO UP TO 11 LAYERS

Using the stable top-down process

Stable process

Lines with EVO Ultra Quench technologies are genuine high-efficiency machines. Due to the top-down extrusion with vacuum calibration they operate with high stability and reliability – independent from the processed material and melt flow index.



HIGH COOLING RATES

For excellent appearance, formability and strength

Optimized film properties

EVO Ultra Quench produces films that are perfectly suited to food packaging due to their excellent appearance and mechanical properties, such as shrink film, sausage film, thermoforming film, and packaging for medical products.

Extraordinary performance

Our EVO Ultra Quench achieves extremely high cooling rates compared to conventional production methods in blown film and cast film technology. This is made possible by using cold water to cool down the melt by intensive contact.

High efficiency

There is no need for complex film post-drying with EVO Ultra Quench. This is due to the efficient vacuum calibration used. The almost closed cooling circuit also ensures low energy and water consumption.

EVO Lines for blown film production.

EVO. That is the name we give to all blown film lines from Reifenhäuser. It stands for both simple and highly complex solutions. All EVO lines have several things in common: They are designed for very high quality, efficiency, cost-effectiveness, and they incorporate the continuous development of the technology. Of course, we only develop the best solution to configure product requirements. Here, we are backed by a comprehensive portfolio of lines based on modular design. EVO – this means lines that are adapted to customer requirements, not the other way round.

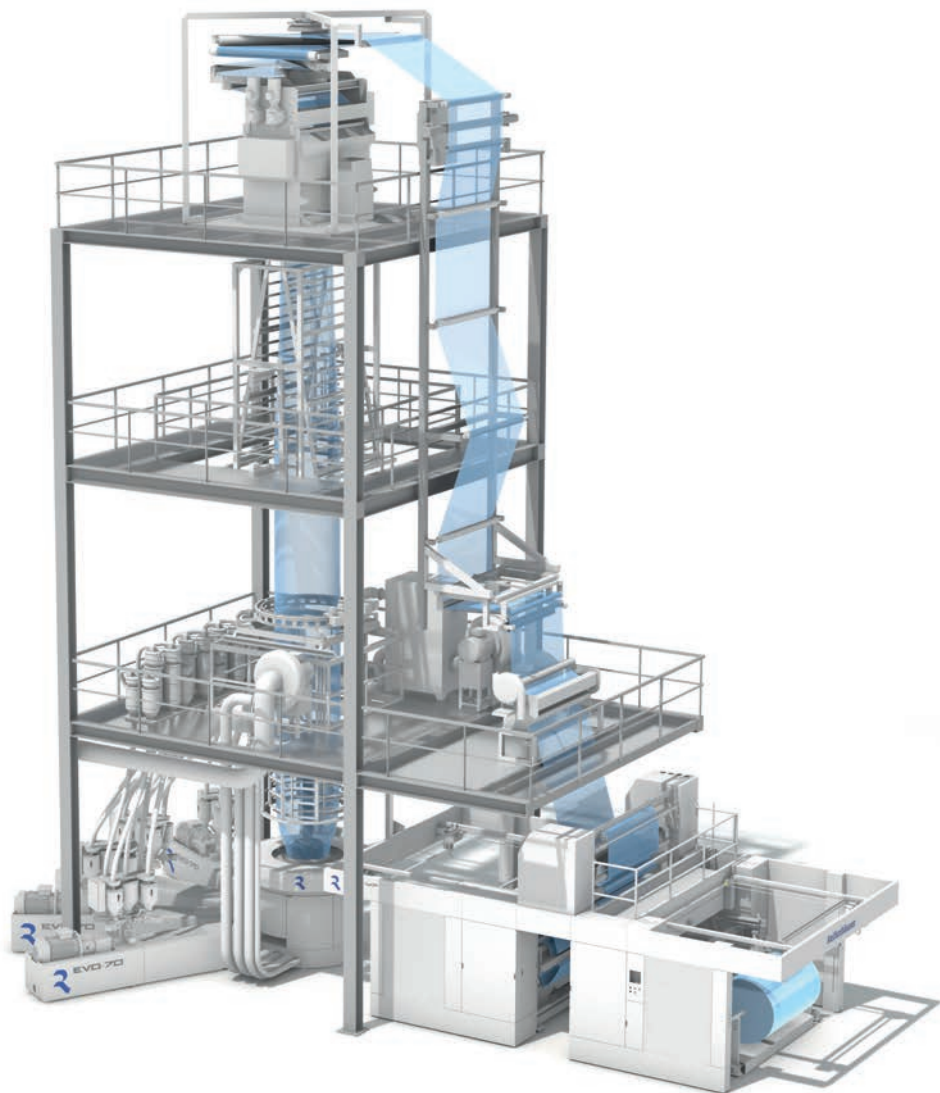
EVO

Standard lines for many applications.

Flexible, reliable, and future-proof: Our EVO lines cover a wide range of raw materials with standard applications that are also adaptable to many special applications. We have equipped the EVO series with a high level of digitization and automation to simplify their integration in an Industry 4.0 production environment.

Applications

- Flexible packaging film
- Collation shrink film
- Compression bag film
- Lamination film
- Tube lamination film
- Film for frozen food packaging
- Label film
- Surface protection film
- Barrier film
- Biodegradable film
- And others



Contact

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Extruders

Flexible, long service life

Our EVO extruders are designed to process a very wide range of materials. Thanks to Reiloy screws and barrels, they are extremely wear-resistant and long-lasting.

Operation

Highly automated

We have made the operation of EVO lines extremely user-friendly by integrating intelligent features, such as recipe memory, start-up assistant, fully automated product changeover, and troubleshooting assistant.

Blown film die head

Process-optimized

All our blown film die heads are compact and are designed for short residence times and high film quality. We select the best variant from our broad portfolio for every customer.

Winders

Tuned to perfection

We have the right winder for all applications. All models have one thing in common: simple handling and perfect, wrinkle-free winding results.

EVO

Modular production lines

Our modular EVO blown film lines are designed to work very productive and to cover a wide range of applications. We adapt each line to specific customer requirements as we have a wide range of components at our disposal – a variety of extruders, winders, cooling systems, haul-off units, etc.

Layflat widths	1000–3600 mm
Extruder diameter	50–180 mm
Number of layers	1–12
Die diameters	120–800 mm

EVO Micro

Laboratory lines with production capabilities

Our EVO Micro lines are designed for conducting tests and trials. However, they are also ideal for small production jobs. Their upscaling capabilities permit the simple transfer of test results and process parameters to larger production lines – Micro lines have the same design as larger lines.

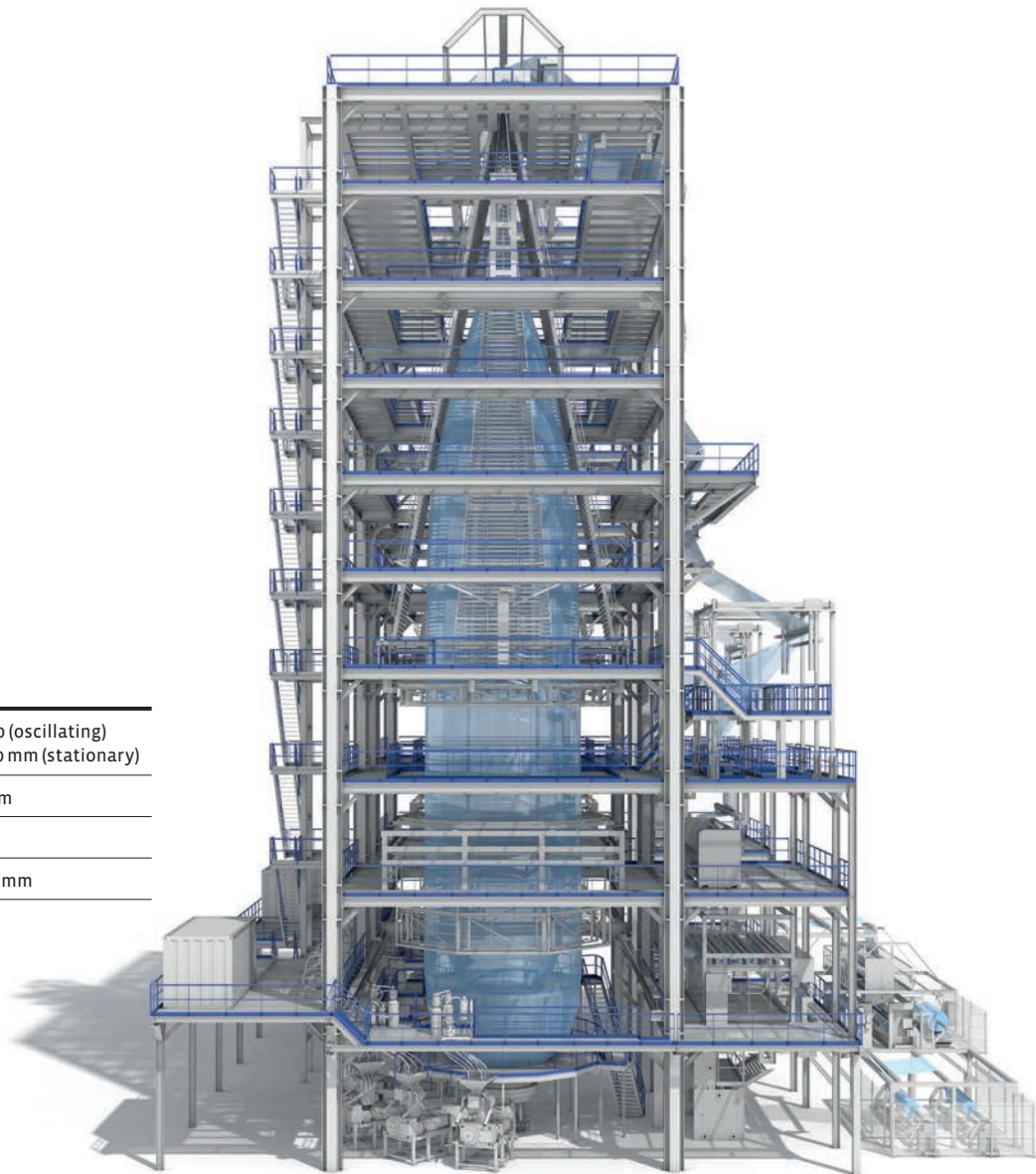
Layflat widths	300–1000 mm
Extruder diameter	30–80 mm
Number of layers	1–9
Die diameters	40–200 mm

EVO Agriculture

Large multilayer films for high crop yields.

Our EVO Agriculture lines help to significantly increase crop yields in agriculture. To this end, we have transferred our multilayer technology to large film dimensions – for highly functional agricultural products that perform better than it often has been the case in the past.

Layflat widths	up to 4300 (oscillating) up to 7400 mm (stationary)
Extruder diameter	70–200 mm
Number of layers	3–7
Die diameters	600–2500 mm



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Raw-material efficiency

Reducing material consumption

This reduces raw material consumption while maintaining product properties. The multilayer configuration distributes film functions to several, thinner layers.

Throughput

Raising productivity

The productivity of the entire line is increased – by up to 20 percent. This is made possible by our extruders equipped with Reiloy low-temperature screws.

Bubble diameter

Meeting product requirements

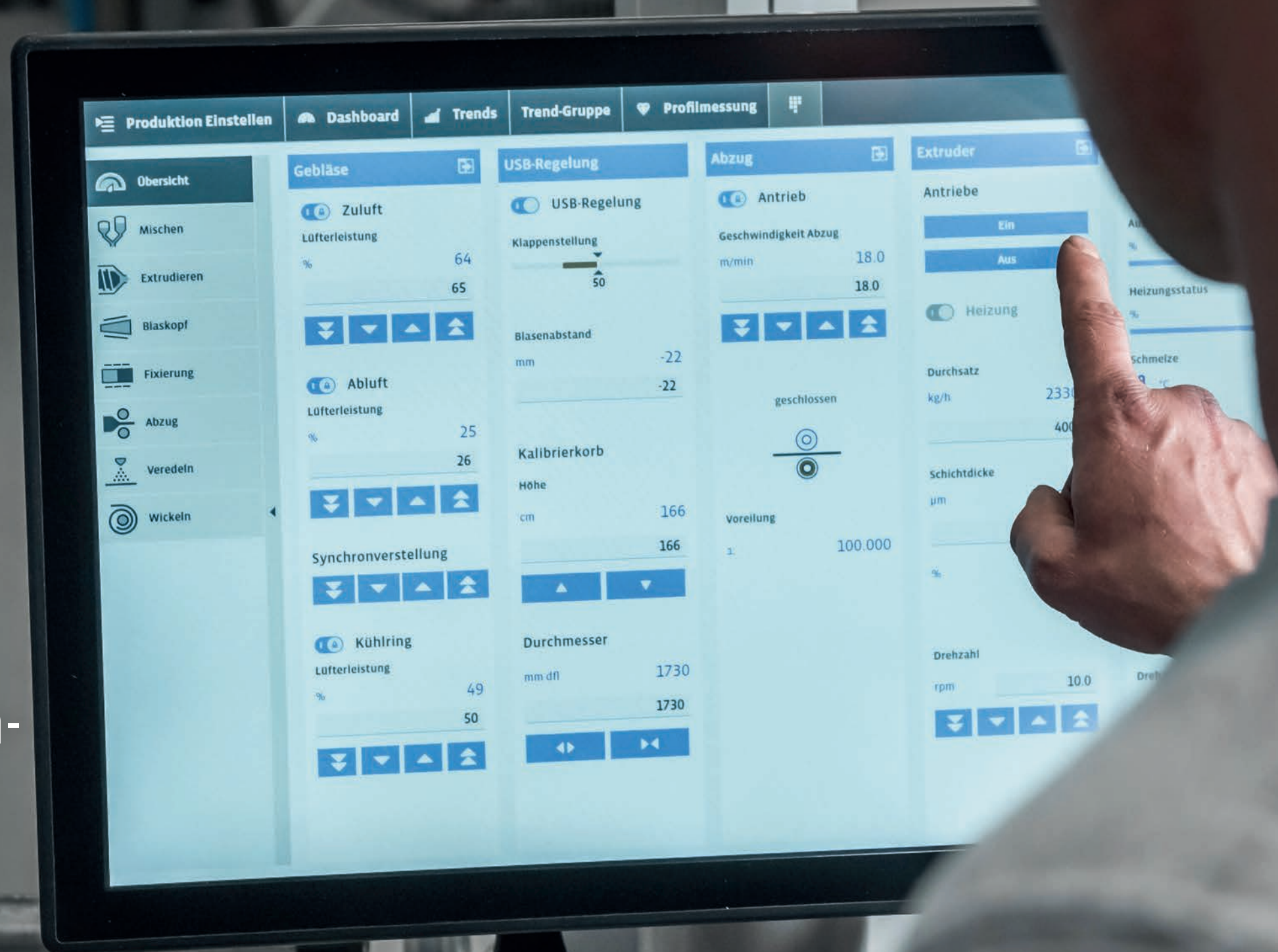
Bubble diameter and product requirements always match. This is achieved by the adjustable dual lips on the air ring. Optional control systems also ensure constant film thickness.

Application	Older films	Today's standard	Trend	Raw materials	Thickness [µm]	Width [mm]	Circumference [m]
Mulching film				LL, mLL, LD, bioresin	10 to 100	600 to 1600	
Greenhouse				LD, LL, EVA, EBA	120 to 250		8 to 18
Silage stretch film				LL, mLL, EVA, PIB, LD	17 to 25	500 / 750 mm per roll	
Silage bags				LL, mLL, LD, MD	120 to 240		4.7 to 13.4
Silage cover film				LD, LL, mLL, MD	125 to 250		6 to 24
Venting				LD, LL, mLL, EVOH, PA	25 to 70	2000 to 4600	
Container / bulk liners				LD, LL, mLL, EVOH, PA	50 to 500		3.5 to 9.5

For increased film functionality and higher crop yields, more and more producers in the agricultural sector are now using multilayer films – some with a barrier component. Today, the production of such complex films is easily possible thanks to sophisticated plant technology.

PE
Barrier layers

Complex technology meets easy operation: Our well-thought-out human-machine-interface guides every operator through the process intuitively and supports the production with intelligent features.



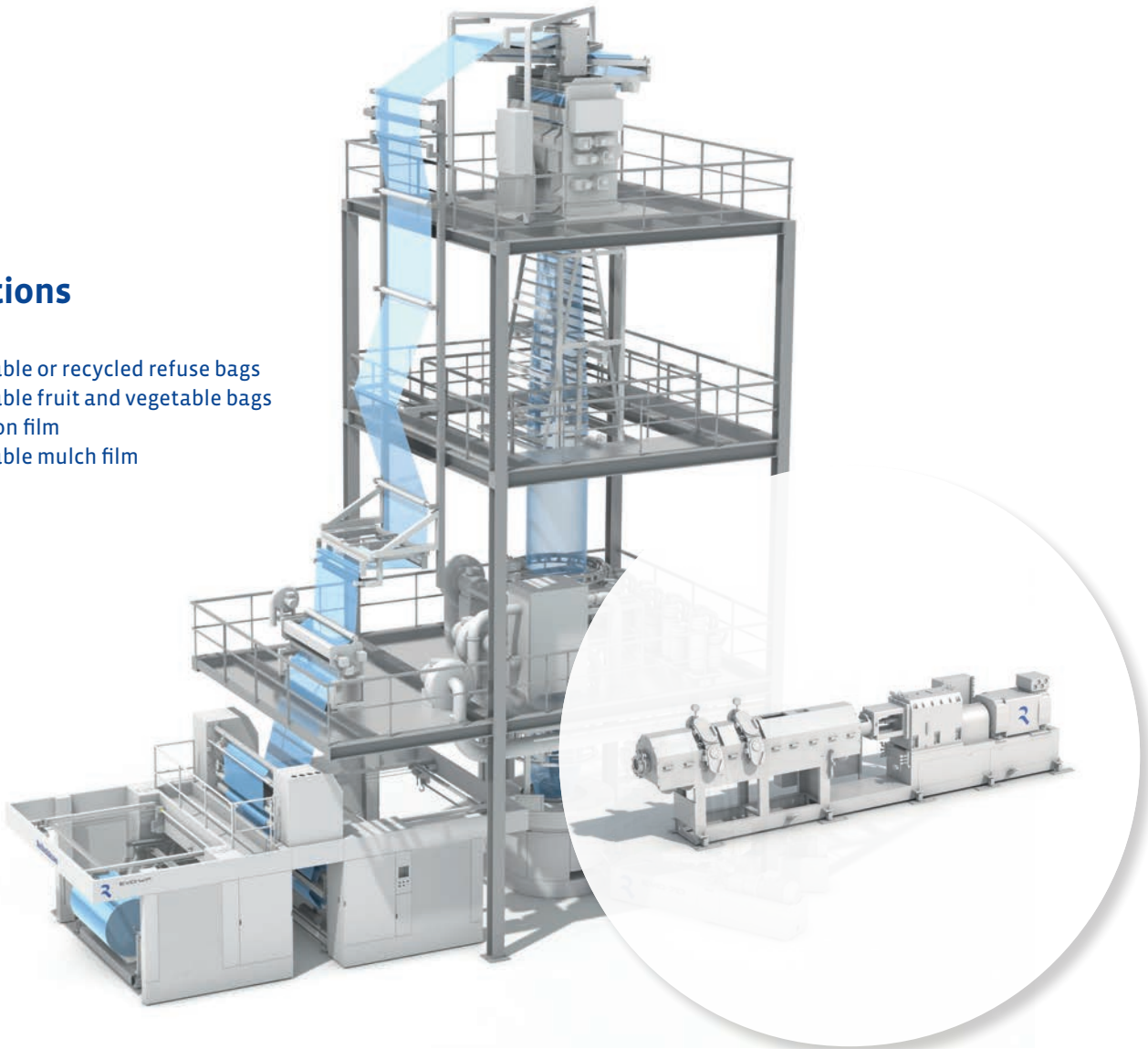
EVO Fusion

Processing plastic waste without regranulation.

Circular Economy in perfection: EVO Fusion lines permit the direct fluff-to-film-production without cost- and energy-intensive regranulation and predrying as well as the inline compounding of bio-materials. The fusion of blown film technology and twin screw technology makes it possible.

Applications

- Biodegradable or recycled refuse bags
- Biodegradable fruit and vegetable bags
- Construction film
- Biodegradable mulch film



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COST-EFFICIENCY

ENERGY-EFFICIENCY

RAW-MATERIAL-EFFICIENCY

Increased sustainability with twin screw technology

Inline compounding

Lowering material costs

No more purchasing expensive ready-made compounds. EVO Fusion lines are designed for inhouse compounding of bio based materials and the direct feed of fillers and liquid additives. This reduces raw material costs significantly.

Fluff to Film

Processing 100% recycled material

EVO Fusion lines process 100 percent recycling material, such as post-consumer and post-industrial film scrap, directly and without previous regranulation. They have a unique feature: The venting pump extracts impurities directly out of the extruder, such as inks, moisture, and solvents.

System control

Operating lines as easy as usual.

All components required for direct extrusion are simple to operate using the main operator interface – components such as powder and liquid dosing units, gravimetric units, and venting pumps.

EVO Fusion can be operated as a mono or coextrusion line setup. It is also possible to integrate a twin screw in every EVO line.

Layflat widths	100-2600 mm
Number of layers	1-5
Die diameters	180-600 mm

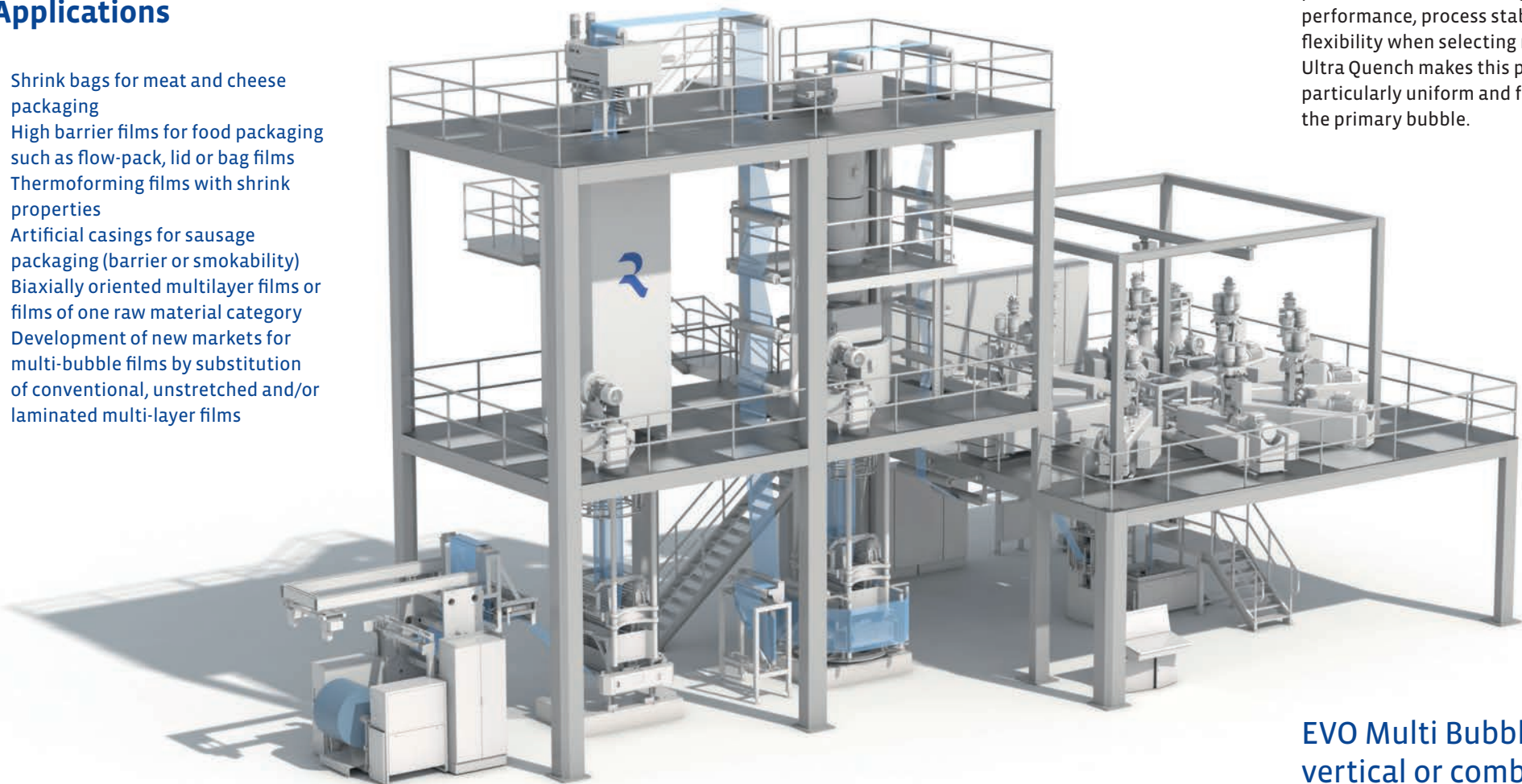
EVO Multi Bubble

Biaxially oriented film in one work step.

Our EVO Multi-Bubble lines produce highly functional, biaxially oriented packaging films in a blown film process in a particularly raw material-efficient way.

Applications

- Shrink bags for meat and cheese packaging
- High barrier films for food packaging such as flow-pack, lid or bag films
- Thermoforming films with shrink properties
- Artificial casings for sausage packaging (barrier or smokability)
- Biaxially oriented multilayer films or films of one raw material category
- Development of new markets for multi-bubble films by substitution of conventional, unstretched and/or laminated multi-layer films



Film cooling

Fast and even

Simultaneous biaxial stretching and the perfect combination of high performance, process stability and flexibility when selecting raw materials: Ultra Quench makes this possible by a particularly uniform and fast cooling of the primary bubble.

Film production

High quality and flexible

Shortest residence times, highest quality, process reliability and a wide range of possible raw materials and layer combinations—this is what our EVO Multi Bubble blown film die heads stand for which we always select in accordance with the specific application.

Film properties

Adjustable

EVO Multi Bubble lines produce crystal clear high-performance films with or without shrink properties. The desired behavior of the films can be specifically adjusted and fixed in the third and last film bubble.

Contact

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Operation

Integrated and simple

For easy operation, we have equipped the EVO Multi Bubble lines with an integrated overall system control and extensively automated the process steps.

EVO Multi Bubble lines are available in horizontal, vertical or combined design.

Layflat widths	25–1100 mm
Extruder diameter	30–80 mm
Number of layers	1–11
Die diameters	15–400 mm

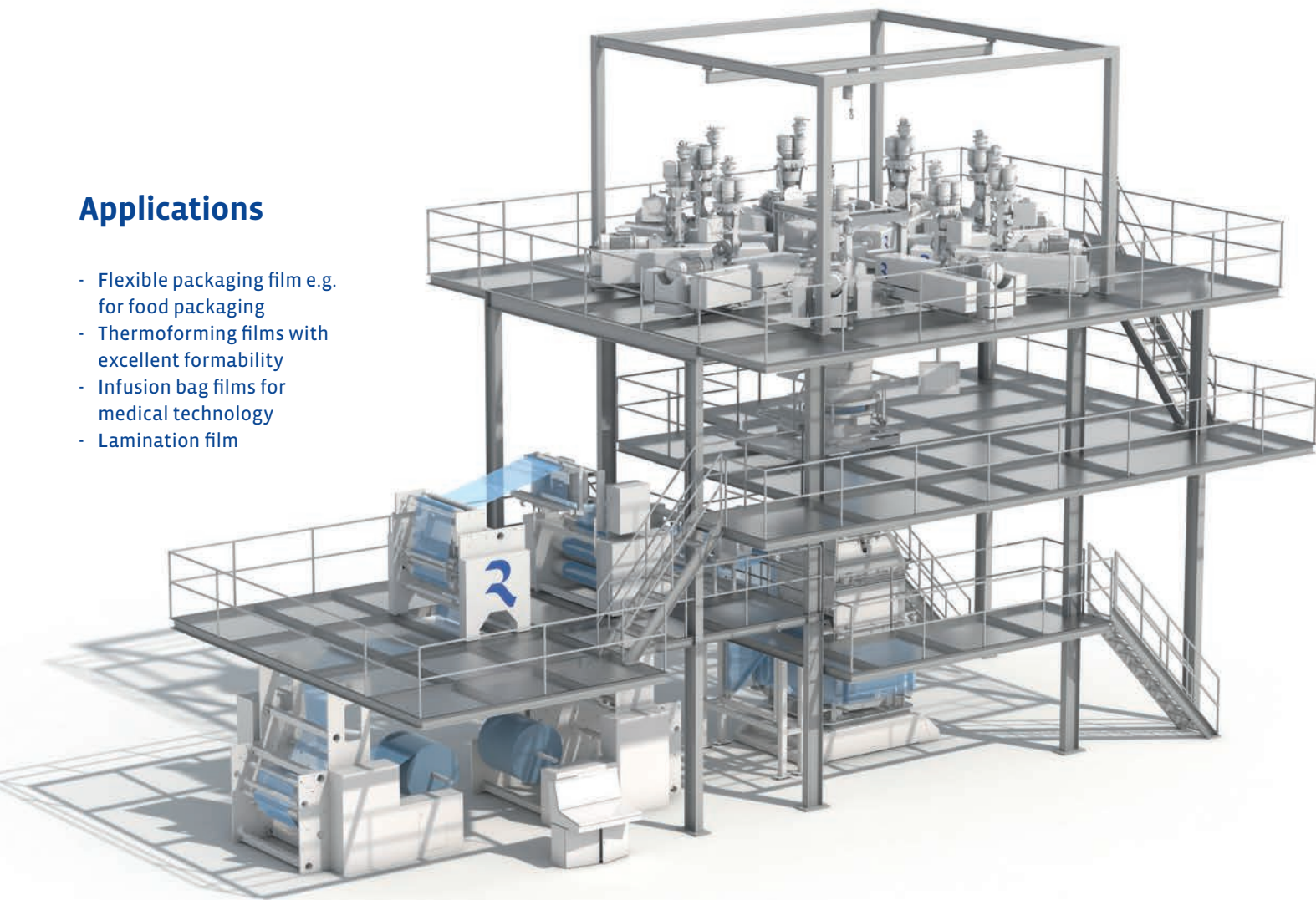
EVO Aquacool

Optimum film properties at high throughputs.

Highly transparent, soft and flexible films with excellent thermoformability and excellent mechanical properties – EVO Aquacool lines can be used to achieve film properties that are of particular interest for the packaging industry and medical applications.

Applications

- Flexible packaging film e.g. for food packaging
- Thermoforming films with excellent formability
- Infusion bag films for medical technology
- Lamination film



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Technology

Advantages of blown and cast films combined

High throughputs, no edge trimming, well-balanced film properties in longitudinal and transverse direction, low space requirement and excellent optical properties: The EVO Aquacool process combines the advantages of conventional blown film technology and cast film technology.

Film properties

Optics, feel & function optimally combined

EVO Aquacool films are highly transparent, glossy and, thanks to their soft feel and formability, ideal for packaging goods. In comparison to conventional blown films, they are characterized by special puncture resistance, elongation and tear resistance. The uniform thickness distribution and barrier properties are also ideal prerequisites for thermoforming the films.

Raw material

Efficient use of resources

Thanks to minimum overall thickness and individual layer thickness tolerances, EVO AquaCool lines produce barrier layers without raw material waste and also allow the use of inexpensive raw materials.

The Process

Following gravity, the EVO Aquacool process extrudes from top to bottom. The film tube is inflated to the desired diameter, automatically profile-controlled and, immediately upon entry into the EVO Ultra Quench water vacuum calibration, cooled down abruptly to achieve the desired film properties. After flattening of the film bubble, the film web passes through a reversing turning bar haul-off unit. Downstream, film properties such as stiffness, barrier or flatness can be optimized through Ultra Flat or Ultra Stretch – all without compromising transparency.

Layflat widths	200–1600 mm
Extruder diameter	40–120 mm
Number of layers	1–11
Die diameters	180–600 mm

Research and Development

At the Troisdorf location, the Reifenhäuser Group currently operates the largest research and development center for plastics extrusion technology. Here, we further develop our own technologies under production-related conditions and accompany the developments of our customers, suppliers and partners – often in joint cooperation projects from which everyone benefits. Whatever the future holds: We are happy to support you with our technologies, our experience and our knowledge.

THANK YOU FOR TAKING THE TIME TO BROWSE THROUGH OUR BROCHURE.

We would be glad to hear your requirements. Contact us. We look forward to talking with you.

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