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Editorial

Karl Stöger
Managing Director



Dear Reader!

I hope that you are well and that your business is staying strong during these turbulent times. Sadly, our world is no longer as stable as it used to be. Lockdowns, military conflicts, sanctions, skyrocketing energy costs, supply shortages, high inflation rates are all taking their toll. And who knows what surprises will be next up on the agenda?

For the whole industry, the underlying conditions are anything but easy to handle. Markets are becoming increasingly erratic which impacts us in one way or another. The lack of clarity is curbing the desire of businesses to invest and the prevailing anxiety we are all experiencing is hindering people to pursue future-oriented ideas.

For SML the imminent shortage of supplies, especially for electronic components and increasingly also for many mechanical machine parts, represents a major challenge. This makes it harder for us to meet delivery deadlines. A major concern is the unexpected sharp price hikes on items we need to buy from sub-suppliers, which has unavoidable implications on our margins and in turn requires adjustments on our quotations. On the other hand, our customers are battling the rising costs of energy and raw materials which, inevitably, dampen their own profitability.

One silver lining in all of this is that the demand for products made by our customers remains to be very strong. In the face of all the seemingly insurmountable obstacles mentioned above, we still expect to continue our growth path. Overall, the plastics industry maintains a steady increase in volume. If the key decision makers in this world have the sense to avoid further damage, we should be able to sail into safer waters and continue to enlarge our value-creating economy.

Even though working through our backlog of orders is keeping us on our toes – 2021 was our best-ever business year and 2022 shall be even better – we have not neglected our R&D work. A wealth of new features has been developed for our extensive product range and we have implemented unique projects in collaboration with customers. Inside this Tech Report you will find interesting stories about our innovation-driven company.

Enjoy reading our Report, keep well and stay safe!

Karl Stöger

SML multilayer cast film line: Dry melt-embossed film for agricultural applications



► Your advantages

- No water treatment required
- Less maintenance
- Lower embossing pressure for longer life of the silicon roll

While SML has many years of experience with manufacturing lines for dry-melt embossed cast film, the new multilayer line is the first to provide manufacturers of agricultural film with interesting prospects for the future.

In December 2021, SML delivered its first tailor-made cast film line for multilayer agricultural film to Ginegar - a global leader in smart agricultural covers (TASE: GNGR). The line was designed to manufacture dry-melt embossed mulch films from 14 g/m² to 40 g/m², which are especially used for weed control, water conservation, attracting or repelling pests and the modification of microclimates in the soil.

“The key advantages of melt-embossed films for these applications are their flexibility and softness,” Alexander Bruckmüller, product manager at SML, explains. The dry-melt embossing unit on SML’s multilayer line gives the film an evenly matt surface, while coloured

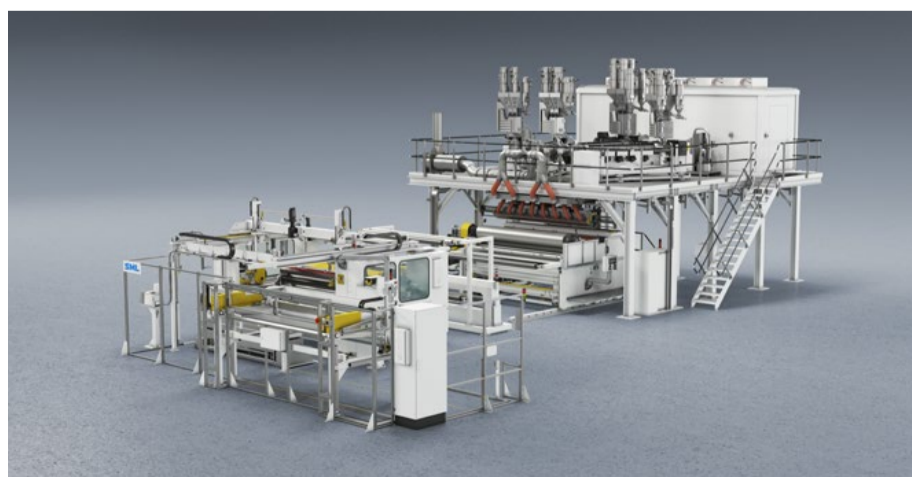
films can be produced with the preceding extrusion process.

SML’s line for dry melt-embossed mulch films contributes to Ginegar’s dedication to support the agricultural industry worldwide: “For over 50 years Ginegar has invested in and continues to adopt state-of-the-art technology to maintain a winning edge in the industry and provide the best solutions for our clients”, the COO, Alasker Napso, explains.

The tailor-made line comes with a state-of-the-art W2000 winder with an automatic core feeding and roll handling system. This allows the optimum production of rolls

with smaller diameters that can be easily handled manually by farmers in their fields.

A further requirement from Ginegar with regard to farming was the no-fold-back cutting unit on the winder. Whenever there is a roll change, this guarantees that the film is laid onto the new core without any fold-back. “This was of prime importance for our customer since the rolls are delivered directly to the farmers who usually use the whole mulch film up to the very end of the roll,” Alexander Bruckmüller says.



**Extrusion lines –
engineered to perform**

CPP, CPE and barrier film:

New production scale pilot plant at Borealis

Since last year, polyolefin producer Borealis operates a production scale SML cast film line as pilot plant at the Application Hall of its Innovation Headquarters (IHQ) in Linz, Austria. The plant is equipped with five extruders and designed to manufacture CPP, CPE and barrier film with up to 7 layers in a range from 15 to 300µm. So what are the application areas of this new plant at Borealis?

“With this state-of-the-art cast film line we can serve the needs from our business units to test new application designs, from our Innovation Projects to support new material development and from our Circular Economy Solutions Studio,” says Harald Zoebel, Group Leader Application Hall Conversion at IHQ Borealis.

The new pilot line has a film width of 1 metre and a maximum extrusion output of

550 kg/h. Beside for tests in the field of CPP, CPE and barrier film, the new line is also used for new business development and for customer trials.

FLEXIBILITY MATTERS

Asked, why Borealis IHQ is using a full-featured production scale line as a pilot plant, Harald Zoebel comments: “As a global polyolefin producer, it is important for us to understand our customers’ needs and therefore a cast film production line in this scale is crucial to test our newly developed materials on a commercial line. The line is designed to be very flexible in terms of layer structure and layer distribution. Furthermore, in research and development it is crucial to have short transition times from one to another formulation.”

The international Borealis Innovation Headquarters (IHQ) hosts state-of-the-art



research and market development facilities such as a catalyst plant with Borealis’ own Sirius catalyst technology, a pilot plant for hydrocarbon production technologies, high tech polymerisation laboratories as well as industrial scale polymer com-

pounding, injection moulding, pipe extrusion and film and fibre production facilities. The Circular Economy Solutions Innovation Studio, which is the platform for Borealis’ polyolefin recycling activities is part of the IHQ as well.

Shrink sleeve film:

Opportunities in niche markets



Shrink sleeve films provide unparalleled product placement possibilities and fascinate retailers, consumers and recyclers alike due to their outstanding features. It is therefore not a surprise that the labeling film market is growing steadily.

According to a market survey provided by “marketsandmarkets”, the demand for shrink sleeve film will increase annually by approx. 5 - 6 % in the years to come. With a market size accounting for USD 14.4 billion, the growth is projected to be in the USD 800 million range. 11,213 million square meters – this is the worldwide annual production rate, according to another study provided by AWA (Alexander Watson Associates). So, doing a little bit of math, this amounts to some 770,000 tons of polymer which is processed into shrink sleeve film every year.

Shrink sleeves are high-end products that can be sold at attractive margins, even though raw materials such as PETG or COC are by no means cheap.



GOOD LOOKING AND WITH MULTIPLE BENEFITS

Shrink sleeve labels are printed before their application. The shrink sleeve is then ap-

plied to the container and when exposed to heat, the film shrinks and takes on its snug fit. There are a number of advantages:

- excellent visual appearance with far-reaching design possibilities compared to traditional printing methods
- the ability to fully cover complex-shaped containers
- added strength and puncture resistance
- possibility to print the inner surface of the sleeve
- full abrasion resistance of the print using reverse printing technology
- easily removable after use for recycling

TRENDING POLYMERS: PETG AND COC

Shrink sleeve films are made from different types of polymers like PVC, PETG, COC or styrene-based copolymers. While PVC offers good product properties and low raw material costs, it suffers from extremely

poor recyclability and limited eco-friendliness. It seems a likely assumption that PVC’s negative impact on the recycling of consumer goods will make it disappear from the market sooner or later - which translates into a promising future for more ecofriendly polymers like PETG and COC. Hence, many shrink film producers are targeting PET and COC polymers when investing in new equipment.

SINK-FLOAT SEPARATION FOR EASY RECYCLING

Plastics film producers are not the only ones to benefit from this shift to greener materials. PET shrink film labels combined with polyolefin-based containers make it easy to separate the heavily printed sleeve from the pristine container using simple sink-float separation. Conversely, a COC shrink label fits perfectly on a PET bottle and is just as easy to separate from the valuable container material by the same process.

BOOSTING PRODUCTIVITY TO NEW DIMENSIONS

Even though shrink sleeve films came of age a long time ago, today’s extrusion machines are still advancing to help boost productivity to new dimensions. SML has continuously developed proprietary production technology to manufacture shrink sleeve film. The extrusion lines employ decades of process know-how and are designed to ensure the utmost flexibility and productivity.

This allows our customers to process a wide range of raw materials on the same line and, in particular, without the need for pre-drying prior to production. In this way, even small customised production lots can be produced very economically.

SML’s extrusion technology covers the entire process of primary shrink sleeve film production - from raw material feeding to winding and roll handling - and its reliability has been successfully proven multiple times.

Multifunctional: Next generation PET sheet line

In June 2022, SML is going to install the first plant of its new sheet line generation in its Technology Centre. The new multifunctional line presents a completely new layout with a 25 % lower footprint compared to previous models.

Packed with high-end components, the sheet line will be able to produce sheets from up to 100 % post-consumer recycled material (PCR) in a general thickness range of 150 – 1,200µm. The line is designed for an output of 1,200 kg/h and for a net sheet width of 1,150mm.

SML's new sheet line generation is equipped with a thermo-lamination unit

to apply PE film onto a PET sheet. An N₂ or CO₂ gas injection unit for the core layer extruder is included. Therefore, and not least because of its potential to manufacture foamed products out of PET, PP or PS for common thermoforming applications, the new sheet line concept stands for maximum production flexibility and for a wide range of different products.

If you are interested to see the line in full operation at SML's headquarters in Austria, or if you want to book sample or research production, please get in touch with us.



the sheet line will be able to produce sheets from up to 100 % post-consumer recycled material (PCR)

Stretch film and Sustainability: how does it work?

Stretch film is manufactured in high quantities for volume markets, where sustainability topics are omnipresent. The use of bio-based LLDPEs is a relatively new way to make stretch film from renewable resources. A further method for conserving resources is the reduction of paper cores in the winding process. SML took a closer look at both of these approaches.

Over the last years, a number of alternatives to fossil-based PE have been introduced to the market. LLDPEs based on sugar cane, tall oil, cellulose or other bio-based feedstock are promoted by several raw material manufacturers. Their common

claim: LLDPEs from renewable resources look and perform like fossil-based PEs. However, can this claim deliver what it promises in real production conditions?

Sugar cane based LLDPE on a SmartCast Infinity

The Brazilian raw material manufacturer Braskem and SML put it to the test: Together, they manufactured over 100,000kg of stretch film from sugar cane based LLDPE ("GreenPE") on a SmartCast Infinity line at SML's headquarters. "During this trial production, we did not see any process-related disadvantages or differences", Thomas Rauscher, product manager at SML, says.

Any quality differences to fossil-based PE?

All stretch film rolls of renewable LLDPE were delivered to different customers. They used it on stretch wrappers in exactly the same way as film from fossil-based feedstock. To cut a long story short: the end users could also not discern any differences between conventional film and the biobased film manufactured on SML's SmartCast Infinity with raw materials from Braskem. "Accordingly, this verifies that renewable LLDPE is a realistic alternative to fossil-based PE in stretch film production," Thomas Rauscher continues.

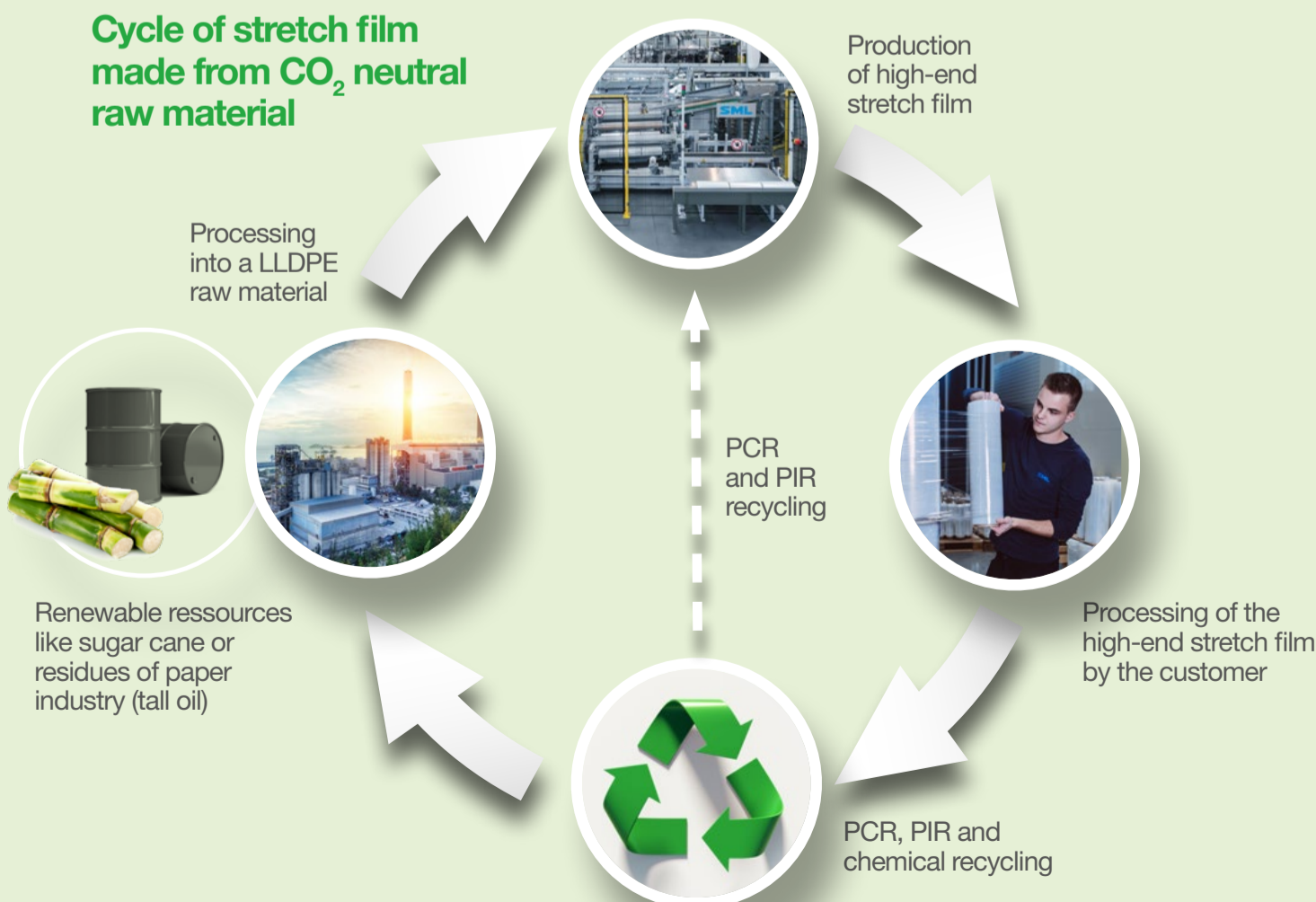
Less paper cores – less carbon footprint

Another method to make stretch film production more sustainable is the reduction of cardboard used for paper cores. Over the past years, SML has developed different methods to decrease the tension of the film required during the winding process. SML technologies like K-AP, ThinCore Technology or the Coreless Technology allow manufacturers to use lighter paper cores or generally cores with less weight. Using these new types of cores leads to a significant reduction in the carbon footprint.

Saving one million paper cores per annum

To illustrate this: a SmartCast XL stretch film line is able to produce 16,000 tons of stretch film a year. A typical machine roll has 16kg of stretch film and a paper core of 1.2kg. This results in approx. 1 million pieces of paper cores weighing 1.2kg each - in one year. If a stretch film manufacturer takes advantage of the SML ThinCore Technology, it can use cores with only 0.7kg. This alone allows a reduction of the carbon footprint by half a million kg CO₂ eq per annum. In case the manufacturer uses SML's Coreless Technology, no cores at all are required. This minimises the carbon footprint by 1.2 million kg CO₂ eq.

"Today, we already have several proven technologies and methods at our disposal to make stretch film production more sustainable: from downgauging to post consumer and post-industrial recycling (PCR and PIR), to the use of bio-based LLDPEs and the reduction of auxiliary materials like paper cores. It is up to all of us to combine them in the most effective way," Thomas Rauscher concludes.



Common roots:

Multifunctional coating line for Lenzing Plastics

Lenzing Plastics and SML are not just linked by their geographical proximity in Upper Austria. We have a “genetic relationship” through our common past and common roots. Both companies were once business units of Lenzing AG. Whereas SML separated from Lenzing AG in 1995, Lenzing Plastics was spun off as a separate company in the year 2000.

Two years ago, Lenzing Plastics decided to invest in a modern multifunctional coating line for technical applications, e.g. for the construction or the automotive industry. Following a tough bidding process, SML was awarded the contract.

As it is in real life, the demands coming from inside a ‘family’ always tend to be a bit special. Accordingly, we were determined to make a lasting impression as a supplier to our erstwhile peers. The result is a machine which is exceptional in many ways.

The new line, which is being commissioned, is 100% tailor-made to Lenzing Plastics’ specific requirements. Despite its product width of up to 3.2m, it establishes new benchmarks in terms of flexibility, operating comfort and digital and functional innovations.

FAST PRODUCT CHANGES

Due to the huge variety of different products Lenzing Plastics manufactures, the latter had high demands concerning the flexibility of different product widths, as well as the type of substrates and applied polymers. Equally demanding were the requirements for very quick setup times between one production run and the next.

To provide an example: The two extruder screws (135mm and 90mm in diameter) can be changed in the shortest time, thanks to a new quick-change-system which SML has developed especially for Lenzing Plastics. Generally, the line can be switched from the production of common polyolefins to special TPU applications in less than three hours.

INLINE SLITTING FOR MULTIPLE WEBS

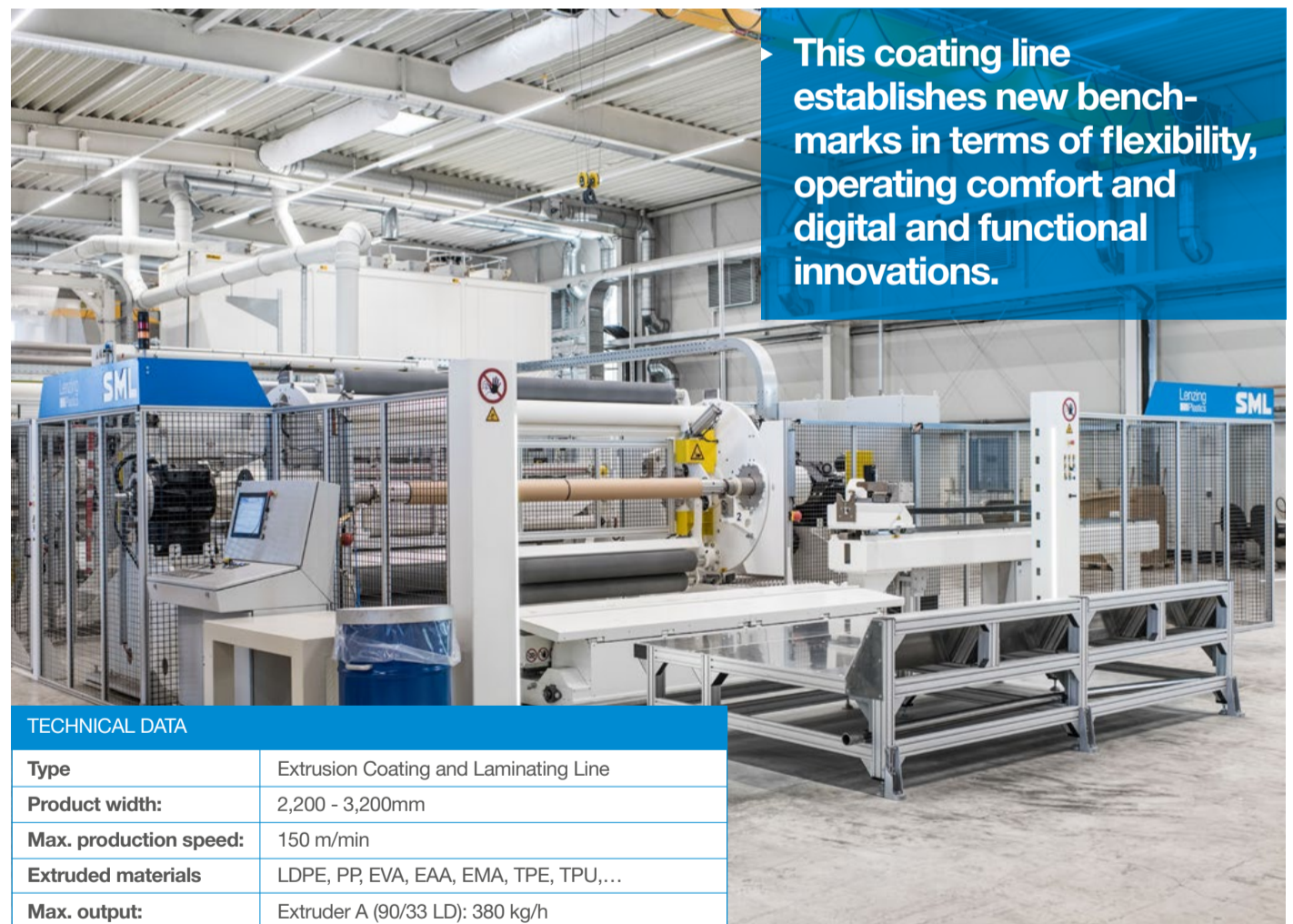
Thanks to an inline slitting unit featuring multiple knives, Lenzing Plastics can run several part bobbin rolls in finished widths on one winding shaft. This saves time and money since an additional production step via a slitter rewinder can be avoided.



Jürgen Miethlinger, Managing Director Lenzing Plastics and Karl Stöger, Managing Director SML

SML’s new SMILE operating interface in combination with the data generation and analysis tool BitWise ensures the comfortable operation of this new coating line. The maximum reproducibility of specific formulations is a solid basis for effective quality control and constant production qualities.

As a result of the close cooperation between the technicians from Lenzing Plastics and SML, both companies were able to benefit and to strengthen their leading position. As a result of the success of this project, there is a mutual commitment to forge ahead with further cooperation in the future.



This coating line establishes new benchmarks in terms of flexibility, operating comfort and digital and functional innovations.

TECHNICAL DATA	
Type	Extrusion Coating and Laminating Line
Product width:	2,200 - 3,200mm
Max. production speed:	150 m/min
Extruded materials	LDPE, PP, EVA, EAA, EMA, TPE, TPU,...
Max. output:	Extruder A (90/33 LD): 380 kg/h Extruder B (135/33 LD): 750 kg/h
Products:	Building industry, roofing membranes, automotive, technical applications

Events 2022

Event	Location	Booth No.	Date
K’2022	Düsseldorf / Germany	Booth 17 / C42	19. – 26.10.2022

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