SML TECH REPORT

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Advanced design and coreless winding

Next Generation *SmartCast* stretch film line

Greatest variety of equipment options

The SmartCast stretch film line (6-up) is one of the most versatile stretch film lines within SML's portfolio. The concept features the greatest variety of equipment options for unparalleled and efficient stretch film production – from 2-inch hand rolls to high-quality machine rolls, 60 kg-jumbo rolls, and films with folded edges, among others. At the K trade fair, SML unveils the next generation of its SmartCast brand and presents innovations in both line design and product quality.

NEW EXTRUDER ARRANGEMENT – SIMPLIFIED MAINTENANCE

Next to an overall face-lift, the new 3 m line concept boasts an ultra-compact footprint with newly arranged, parallel-oriented extruders. This arrangement places all motors, dosing units, and filters next to each other, facilitating faster and easier access for maintenance and service. Pre-assembled extruder modules further streamline the installation process. In addition, all small electrical components are now housed in an E-container, which eliminates connection boxes in the hot areas of the extruder.

CHILL ROLL WITH EVEN LARGER DIAMETER AND NEW SURFACE

The SmartCast is equipped with the largest chill roll ever seen in the stretch film market. With a diameter of 1,800 mm and the latest chrome-plated Smart 3.0 surface, this chill roll sets a new standard in the production of high-quality stretch film. The Smart 3.0 surface finish significantly reduces cleaning efforts for paraffin and other deposits that occur during production. The extended contact area at the chill roll allows for gentle cooling, which results in the highest elongation combined with superior tear propagation. Despite its size, it still offers the fastest cooling for SuperStiff products.

CORELESS WINDING TO SAVE RESOURCES

With the new SmartCast design, SML has further developed its coreless winding technology not only to improve production economy but also to save resources and improve sustainability. SML's coreless technology improves the winding quality on the inside of the stretch film roll at optimised production speeds. Post-production shrinkage is reduced. But most importantly, quick switches between coreless winding and winding on rigid cores are achieved at the touch of a button. This unique key feature reduces waste to zero during changeover and maximises production efficiency.

To sum up, the new 6-up SmartCast stretch film line represents a significant leap forward in efficiency, product quality, and sustainability. Its innovative design and advanced features make it a must-see at the K 2025 trade show, where it will be demonstrated live in operation on the SML booth.

Extrusion lines – engineered to perform

Dear Reader,

With the K Trade Fair taking place in the second and third weeks of October, this is the time of year when countless press releases, information about technical improvements, and announcements of new product rollouts are released. Inside this TechReport we also cover a variety of articles on SML's latest technical achievements, new developments, and product updates.

For our industry, the K Trade Fair is what the Olympic Games are for athletes — the race begins as soon as the exhibition halls in Düsseldorf open. Technology driven companies such as SML are constantly under pressure to develop ever more competitive solutions, and every three years the K Show provides a perfect opportunity to demonstrate our innovative strength to the market.

Our latest generation of SmartCast lines enables the production of stretch films without paper cores at the press of a button. Switching between winding on cores and coreless winding will be shown daily during the demonstration runs live at the K-show. In addition, the line on display will be an eye-catcher for a variety of other features to be shown in public for the first time.

Also on display will be a new twin-screw extruder especially developed by SML for sheet extrusion and high-performance cast film lines.

As you explore this TechReport you will see that all imminent market trends are well addressed by SML. Superior technologies for improved sustainability and recyclability are worked on intensively. Our cast-MDO lines set the benchmark for producing recyclable, lightweight, mono-material packaging. Likewise, our aesthetically pleasing, lightweight, fully recyclable PP foamed cups - used to serve fresh coffee at the K Show - highlight our commitment to sustainability.

Besides our FlexPack coating line with leading-edge technology for ultra-thin paper coating we have established the SML Triplex line as a preferred extrusion line for paper board coating – a solution in high demand for aseptic liquid packaging.

Whatever your interest may be, please get in touch.

Yours sincerely

Karl Stöger
Managing Director

Cast MDO technology:

The superior technology for mono-material packaging solutions

Cast MDO technology marks a significant development in mono-oriented PE film production. By combining precise thickness control across a broad thickness range, outstanding optical properties, and customisable barrier options, it provides packaging manufacturers with a versatile and sustainable solution that meets the highest standards of quality, efficiency, and performance.

NEW DEVELOPMENT: MDO PE CAST FILM FOR DEEP-FREEZE APPLICATIONS WITHOUT THE NEED OF LAMINATION

SML's latest generation of cast MDO lines have successfully produced a new, unlaminated MDO-PE film optimised for deep-freeze packaging. This film enables downgauging by up to 50% compared to conventional deep-freeze structures, while maintaining mechanical strength and excellent sealing properties. The cast MDO process ensures exceptional processability across a wide thickness range from 15 µm to 65 µm. These MDO-PE films are produced at line speeds of up to 380 m/min and then successfully printed at speeds of up to 500 m/min. Optimised resins and film layer structures deliver stiffness, puncture resistance, and sealing performance without the process of lamination. "This joint development with TotalEnergies underlines SML's ongoing commitment to innovation in cast MDO technology and sustainable flexible packaging solutions," explains Elias Mayrhofer, Product Manager, Cast Film Extrusion at SML.

PRECISION AND APPEARANCE AT THE HIGHEST LEVEL

Cast MDO technology delivers films with significantly enhanced optical properties, including exceptional gloss and clarity, combined with outstanding flatness and a perfectly uniform thickness profile. This is achieved through precise die regulation with thickness measurement after the MDO unit, compensating neck-in and ensuring best winding quality. Excellent cooling rates on the chill roll enhance surface smoothness and mechanical properties, while integrated edge-trim recycling supports sustainable production in a closed loop system. "These unique performance features are unmatched by any other technology currently available on the market. The result is a premium mono-oriented film, ideal for demanding applications where visual quality and dimensional consistency are most important," Mayrhofer further states.

BARRIER LAYERS FOR EXTENDED FUNCTIONALITY

For sensitive products requiring high barrier properties, a barrier layer of EVOH or PVOH can be integrated into all MDO-PE film structures. Cast MDO-PE barrier films are available in thicknesses from 17 µm up to 65 µm. Compared to unstretched barrier structures, the orientation (stretching) process enhances the barrier performance at the same EVOH content within the film. This ensures superior protection while maintaining recyclability due to the low proportion of the barrier material in the film structure.

Mono-material barrier flow pack

SML, in collaboration with raw material manufacturer Dow and Polish packaging producer Supravis S.A., is proud to present a completely new, sustainable packaging solution at K 2025. The trio has jointly developed a flow pack including barrier properties that fully complies with the PPWR (Packaging and Packaging Waste Regulation) requirements.

The project involved each company contributing their expertise:

- DOW – provided raw materials specifically designed for recyclability and circularity.
- SML – supplied advanced cast MDO machinery ensuring precise and efficient processing.
- SUPRAVIS – designed the laminate structure and produced the final packaging – validated for both functionality and PPWR compliance.

The outcome is a fully validated, market-ready packaging solution that exemplifies the power of industry collaboration. Trade fair visitors will have the opportunity to examine the first samples and assess the quality of this innovative packaging solution firsthand.

FlexPack

The multiple advantages of extrusion coating and lamination

SML's market-proven FlexPack series was specifically designed for the flexible packaging market. Rising interest in recyclable mono-material structures containing MDO-PE or MDO-PP film is bringing the advantages of "classic" coating and laminating processes into focus.

SML's FlexPack lines are versatile. They are therefore perfectly suited to the requirements of the highly dynamic, flexible packaging market. The product range extends from various types of laminates and composite structures to innovative mono-material structures made of MDO-PE. The extrusion coating and lamination process boasts a wealth of tangible assets:

FAST AND RESOURCE-EFFICIENT

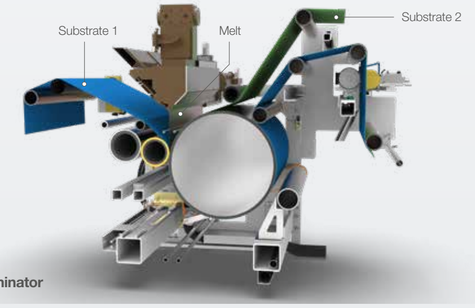
Unlike other coating and lamination processes, extrusion does not require time-consuming curing steps, which is particularly advantageous for large-scale productions. Once the extruded melt curtain has been applied and cooled, the products are ready for further processing.

The careful control of the thickness of the coating layer influences the mechanical properties and often saves on material, weight and costs.

One of the most important environmental benefits of mono-material extrusion coating and lamination is that no solvent adhesives are required for the adhesion between the substrates. This makes the entire process more environmentally friendly and has an overall positive impact on the production of sustainable and recyclable packaging.

BONDING AS A FUNCTIONAL LAYER

Thanks to the variety of raw materials and their specific properties, a particularly strong adhesion can be attained among different substrates. The centre layer between the substrates may serve not only as a bonding, but also as a functional layer, which can significantly improve the barrier properties of the whole structure. This enables the use of more cost-effective substrates with minor functionalities, e.g. blown films. In certain applications, a second substrate can even become obsolete. Besides saving on materials, this also reduces the need for machine capacity and logistics costs.



Laminator

"We have continuously developed and optimised our FlexPack series on the basis of decades of experience and numerous completed projects. Our overriding aim is to provide sustainable, energy-efficient and customer-oriented machine solutions", Michael Mayrhofer, Junior Product Manager Coating & Laminating at SML concludes.

Foamed PP coffee cup

The lightweight and recyclable alternative

The significantly growing market for both disposable and reusable cups in the field of hot-fill applications, such as coffee cups, is facing increasing demands that require innovative and economical solutions in order to be prepared for the future. In addition to good thermal properties and health safety, regulations such as the Packaging and Packaging Waste Regulation (PPWR) must be complied with.

To meet these requirements and offer a cost-effective solution, SML has collaborated with its valued partner KGL S.A., a Polish specialist in the manufacturing and development of plastic packaging products. Together, we have developed an innovative coffee cup that meets all legal standards and delivers exceptional performance.

THE OUTCOME IN DETAIL

The newly developed coffee cup is thermoformed from a 3-layer PP film with a foamed core layer encapsulated by two rigid outer layers. The fine microcells of the foamed layer provide good insulation properties and give the cup a heat resistance of up to 100°C. Additionally, the foam cell structure decreases density, thus saving material during production. A simple preheating process of the film ensures excellent thermoformability.

100 % RECYCLABLE SOLUTION

Since the cup is made entirely from recyclable mono-material, it fully complies with the PPWR and can be sorted in regular waste sorting facilities, making it a sustainable alternative to PS or paper-coated cups.

If you're interested in learning more about the technology behind the foamed PP coffee cup, visit us at the K-Show 2025 at the SML booth – Stand No. 17C39 / 17C42.

Enjoy an espresso from our foamed PP coffee cup while talking with our experts from the sheet extrusion department, who will gladly share insights into the extrusion technology behind this remarkable product.

At the KGL / WM booth – Stand No. 3A16 – you can witness the live thermoforming process of the foamed PP film.

Austrofil VERTEX spinning lines optimised for PET yarn production

A cutting-edge VERTEX multifilament spinning line will be available for demonstration runs and customer trials at SML's Technology Centre from the third quarter of 2025. This new spinning line is specially designed to efficiently manufacture partially oriented yarn (POY) or fully drawn (FDY) yarn at low titres in higher volumes.

Key characteristics of the VERTEX concept are the optimisation for PET, the ability to manufacture a wide range of different yarn types, qualities and colours, as well as the line's expandability. Beside PET, VERTEX lines process PP and PA at the same high-quality levels. "The VERTEX series is the perfect addition to our top-selling Austrofil MT/HT multifilament spinning lines," Thomas Pucher, Product Manager at SML, states. Typical end products are fine yarns for textile applications, outdoor clothing, home textiles, carpet piles, and upholstery.

FOCUSED ON YARNS FROM 50 – 1,200 DEN

A clear strength of the VERTEX series lies in the titre range between 50 to 1,200 den at an maximum output capacity of up to 270 kg/h. "Even at high speeds the VERTEX concept guarantees premium quality at low titres. Generally, this is enabled by the precise interaction of key components, with the sophisticated yarn path making a particular contribution," Thomas Pucher explains. The simple start-up process with ramp-up function contributes to the efficiency of the VERTEX lines as well.

CONFIGURATION OPTIONS AND EXTENDABILITY

The VERTEX concept stands for exceptional customisability and a high degree of flexibility in production: Two separate spinning heads enable the simultaneous manufacturing of two different products. Spinning positions can be adjusted flexibly. The VERTEX line can be equipped with one or two extruders of different types and performance parameters, exactly tailored to the requirements of each individual customer. Thanks to its modular design, the line can be easily extended to increase capacity, scaling from 24 ends up to 32, 48, or even 64 ends as needed.

In terms of winding, three different types of winders are available: Depending on whether the manufacturer's focus is on high-speed winding, high flexibility or on a simple winder design.

For further information about demonstration runs and for deeper insights into SML's new VERTEX spinning line, please contact Thomas Pucher, E-mail: puh@sml.at

High output - low titres

SML unveils new twin-screw extruder at K 2025

SML is expanding its extruder portfolio with the introduction of a co-rotating twin-screw extruder (TSE). This addition marks a significant enhancement of SML's offerings, allowing the company to provide a more comprehensive range of extrusion solutions to its customers.

The brand-new TSE is SML's answer to the increasing demand for high-output capacities for polyolefins and polyesters. "Our in-house-designed co-rotating twin-screw extruder is tailor-made for the specific requirements of our extrusion lines, contributing to an exceptional film quality," states Hans-Jürgen Luger, Head of Research and Development at SML.

COMPACT SIZE BENEFITS ENERGY CONSUMPTION

Compared to a large single-screw extruder with the same output capacity, the TSE has a shorter processing unit and, thus, a smaller footprint. Therefore, less heating power is required to maintain the barrel temperatures. Because of starve feeding, the extruder drive operates at high torque over the entire output range, where it exhibits the maximum efficiency. Additionally, the melt temperature can be controlled by adjusting the degree of filling. Extensive tests of the new TSE on a CPP line in SML's Technology Centre have shown that the specific energy input (SEI) is 10-15% lower compared to a single-screw extruder. In terms of film quality, the gel count detected by a web inspection system could be reduced by up to 20% for a standard CPP film.

OPTIMISED FOR HIGH-PERFORMANCE CAST FILM LINES

One area of application with considerable potential is SML's cast film lines. "With throughputs in the range of 1,000 to 2,000 kg/h, the TSE is ideal for our high-performance cast film lines with end film widths of up to 6.5 metres," explains Elias Mayrhofer, Product Manager at SML.

CLEVER DESIGN AND LOW MAINTENANCE

The swivel-mounted barrel design allows rear screw extraction for quick and easy screw changes. The temperature control of the barrel works via ceramic heaters and air cooling – which is a precise, cost-efficient, and low-maintenance solution. SML offers pre-configured single-piece barrel designs of different lengths and with venting ports depending on the application. For the extruder screws, single-piece solutions or shafts with segments are available.

PET WITHOUT PRE-DRYING AND IN-LINE COMPOUNDING

In combination with SML's high-performance vacuum unit, SML can offer a complete in-house extrusion solution for processing PET or PLA without pre-drying. Furthermore, the TSE enables high amounts of regrind or flakes to be processed as well as in-line compounding.

For demonstration and further development, a test extruder is available in the SML Technology Centre.

High-volume PET sheet production

SML launches new XL roll stack

Throughput of up to 5,000 kg PET per hour

The packaging industry is always looking for new solutions to improve efficiency and quality in PET film production. With the launch of the roll stack XL, SML has set a new benchmark for the industry. By combining innovative technologies and an unprecedented width, a PET sheet line featuring the roll stack XL achieves output levels unmatched in the market.

SML SETS NEW STANDARDS IN WIDTH

Designed for a net film width of up to 2,700mm, the roll stack XL allows a throughput of up to 5,000 kg of PET per hour. "With the roll stack XL, our customers can efficiently produce high-quality PET sheets with thicknesses of up to 1,200 µm in large quantities", explains Alexander Streicher, R&D Engineer at SML.

MODULAR AND DIVISIBLE ROLL STACK

Thanks to our patented system, the roll stack (C0/C1/C2) can be divided into a base unit with C0 and C1, and a C2 unit. This is an innovative solution that increases the accessibility of the calender, facilitating careful cleaning and preparation of the roller before start- up – an important step to ensure the quality of the production. "The divisible calender is a significant advantage for our customers," Alexander Streicher continues. ""It simplifies line-start-up enormously, reduces maintenance times, and increases the productivity and efficiency of the line."

FULLY AUTOMATED FOR ENHANCED COMFORT AND SAFETY

A significant advantage of automation is its simple and comfortable operation. The C2 unit can be separated from the base unit and then re-docked in a fully automated process. The calender can also approach different working positions automatically to facilitate work and reduce downtime.

UNIFORM SHEET THICKNESS USING HYDRAULIC ROLLER AND AX-CROSSING

Achieving a consistent sheet thickness and perfect sheet quality across the entire width of the roll stack is particularly challenging for a line of this size. To overcome this, we have combined two systems to counteract the roller deflection and guarantee a uniform calendering gap. By adjusting the pressure in the hydraulic roller, the crowning of the calendering roller C0 can be changed steplessly, allowing for adaptation to the deflection. With ax-crossing, the tilt of the axis can be set precisely so that the size of the calendering gap remains the same across the entire width. This combination offers the highest level of production freedom and flexibility.

"The roll stack XL is a prime example of our ability to develop and implement innovative solutions," summarises Streicher.

Retrofitting pays off

An economical method to secure line availability and productivity

SML extrusion lines are engineered to last for decades. However, due to the fast-paced advancements in technology within the electronics industry, some essential components of extrusion lines, like frequency inverters and PLC components, are only available on the market for a limited time. While this rapid development is beneficial for the consumer electronics sector, it poses a challenge for industrial machine operators who may find it difficult to obtain spare parts. By addressing the topic of retrofitting at an early stage, customers can avoid the pitfalls of discontinued spare parts and ensure the long-term success of their operations.

INDIVIDUAL SOLUTIONS TO SECURE LINE AVAILABILITY

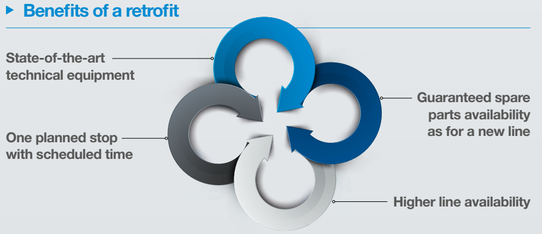
Retrofitting can be a highly economical method to secure line availability and productivity. With its retrofit programme, SML offers customised solutions for upgrading lines with the latest electrical equipment. This includes options such as a complete replacement of electrical components, replacing key components or simply upgrading the PLC. SML's experienced electrical engineers work closely with customers to develop optimised retrofit solutions.

ECONOMICAL AND TECHNICAL BENEFITS

It is crucial to address the topic of retrofitting at an early stage rather than waiting until spare parts are no longer available. Retrofit projects are complex in engineering and require thorough planning, so sufficient lead time is needed. Additionally, upgrading to the latest hardware can be economically advantageous, as the prices for discontinued spare parts tend to rise rapidly. In many cases, especially with frequency inverters, modifications can be more cost-effective than direct replacements. Moreover, since electronic components have a limited lifespan and become more prone to failure over time, a retrofitting project can increase plant availability. Besides the economic benefits, there are also technical and usability advantages due to modern electronic and operating components, as well as improved remote service support.

For more information on possible retrofit scenarios, please contact: spareparts@sml.at

Benefits of a retrofit



Establishment as a technology leader

SML captures the liquid packaging market

In the year 2019, SML made the strategic decision to enter the market for extrusion coating and laminating machines used in the production of aseptic liquid packaging cartons. Six years later, SML has established itself as one of the leading global suppliers.

The trend is clear: an increasing number of consumers are opting for cardboard packaging, which is considered environmentally friendly, driving up the demand for advanced plant technology. For a long time, the market lacked additional high-quality suppliers. SML has successfully filled this gap and now provides top-tier, customised solutions for the cardboard packaging industry. “We deliver high-performance systems to well-known manufacturers around the world,” Mario Höllnsteiner, Product Manager for Extrusion Coating and Laminating at SML reports.

When investing in a new plant, it's not just about acquiring a laminating system. Pre- and post-processing steps like printing, creasing, and die-cutting are also essential for producing aseptic packaging material.

To simplify handling and spare parts supply across all components within a plant, there is a significant emphasis on using identical units, such as unwinders. These are often purchased directly by the customer and provided by them. The machine supplier's role is then to fully integrate these components into the overall machine without any compromises.

Precise interaction for the highest quality

One of SML's key success factors is the complete in-house development and programming of the machine’s software. This keeps SML flexible and enables it to optimally integrate even the most complex components into its Triplex systems.

“Currently, demand is at a pleasingly high level, and we are confident that we will continue to expand our technology and solidify our strong market position in the years to come,” Mario Höllnsteiner looks to the future.

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bit*Wise* data analytics

Streamlined maintenance and advanced material management

With bit*Wise*, SML offers a comprehensive data analytics tool to continuously optimise production processes. At the upcoming K trade fair, SML will introduce two new modules to expand the applications of bit*Wise*: one for the comprehensive recording and management of raw materials, and a maintenance module for clearer presentation and summarisation of maintenance work.

MANAGING ALL RAW MATERIALS

The material database module allows customers to enter all the raw materials used in their production, along with their physical properties, into a database. For customers with multiple extrusion systems, this database is synchronised across all lines. When selecting materials on the defined machine control panels, both the customer-specific designation and the relevant physical properties are fully transferred. This selection option not only reduces the likelihood of incorrect entries but also enhances traceability.

The bit*Wise* material database module is an integral part of the order management system. Starting in autumn 2025, this new module will be included in all new SML extrusion lines. Existing systems can be easily retrofitted.

EFFICIENT MAINTENANCE PLANNING

The inspection tasks of all components can be displayed within the new maintenance module of bit*Wise*, which simplifies the administration and execution of maintenance work. Users can customise their own maintenance intervals, ensuring that third-party components used on the machine are also included in the maintenance schedule. This combined display allows for more efficient planning and execution of maintenance intervals. The option of adding comments or time records enables bit*Wise* to provide instructions for subsequent intervals or to specify the time to be estimated.

Moreover, the maintenance module introduces a calendar function to further enhance visibility and organisation. It offers an overview of all activities in the extrusion system, including shift log entries, planned and completed orders, and upcoming maintenance intervals.

The maintenance module will be become available as an add-on module for all new SML machines in autumn 2025. Retrofitting existing extrusion lines is also possible.

Extrusion lines –
engineered to perform

Events 2025/26 We keep you up to date at **www.sml.at**

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