

The SML logo consists of the letters 'SML' in a bold, blue, sans-serif font. The background of the entire page is a close-up, high-contrast photograph of crinkled, reflective plastic film, likely polyethylene or polypropylene, showing various folds and highlights.

EXTRUSION LINES – ENGINEERED TO PERFORM ▶

▶ **CPP / CPE /
cast-PET /
barrier and
MDO film**

Cast Film Lines

www.sml.at



Let us introduce you to
the most powerful
cast film lines in the world

In our view, the most complex technology simply works. That is why you are now getting to know cast film systems, which are not only characterised by exceptional detail engineering and high performance, but also by an unprecedented level of operator friendliness. The result can be used in various ways.

Cast film systems are designed to manufacture cast PP, PE, PET, barrier and MDO film products. These can be used in the packaging industry for food and consumer goods, in electronics, for optical surface protection and for pharmaceutical use.

To give a few examples, CPP films are used as lamination films for food packaging. Barrier film is used for food packaging too, but also in the medical field. Due to their special properties, mono-oriented films are mainly used for different packaging materials and also for technical applications such as cable insulation. You will discover even more areas of application on the following pages.

Creating a customised experience

SML has installed hundreds of cast film lines worldwide and has become a recognised technological leader in the field of extrusion systems. But its very nature, technology often reaches its limits. At SML our goal is to evolve continuously and find new ways to develop further technological breakthroughs. Cast film lines are therefore always at the highest technical level which also means cost-efficient production.

Based on its long-standing experience, and together with its customers, SML develops highly customised equipment. If required, the machines can be tested on site in order to shorten commissioning at the customer's site.

Flexible, compact, strong

Innovative detail engineering enhances the constant development of new core components such as HO-LT extruders for heat-sensitive polymers like EVOH, further-developed machine direction orientation units (MDO) and new technology for winders. The cast film produced in this way make an impressive impact due to its low gauge tolerances, high transparency, suitability for metallisation and printability.

Highly efficient and comfortable to control

Every machine can be comfortably operated and controlled by SML's advanced control system SMILE, a software solution that supports complete remote control. SML's digital data generation and analysing tool bitWise allows the data-based optimisation of production processes.



Line description CPP/CPE film line ▶ 8



Line description CPP film line with an integrated MDO unit ▶ 12



Machine-direction orientation (MDO) unit ▶ 22

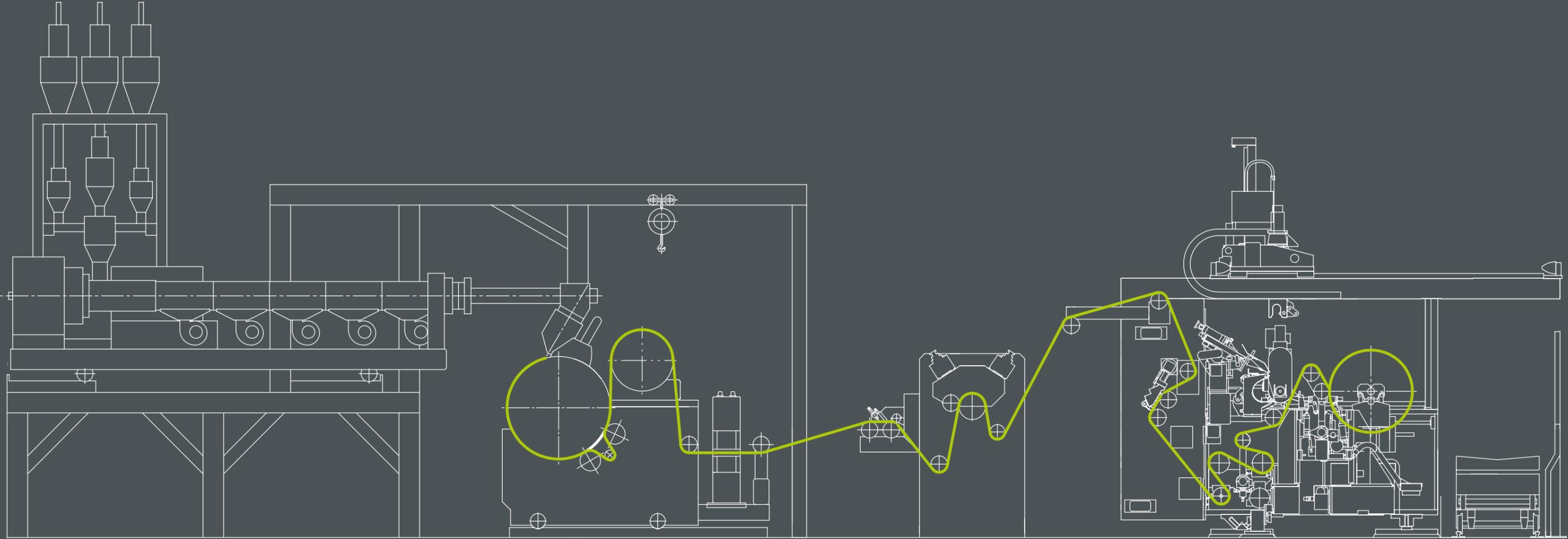


Winding systems ▶ 26

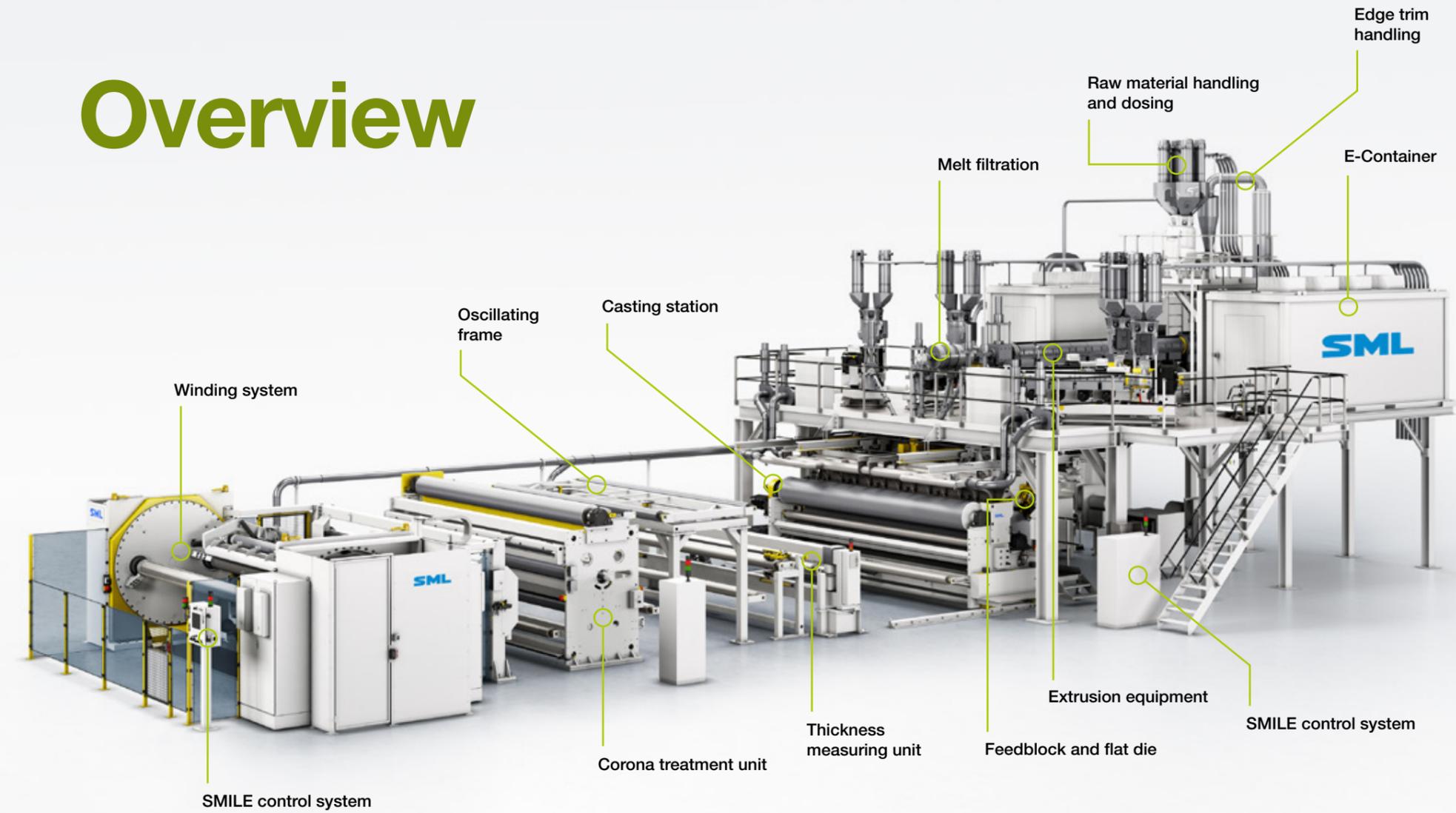


**CPP / CPE /
cast-PET /
barrier and
MDO film**

The core
of our idea:
Lines for
CPP/CPE film



Overview



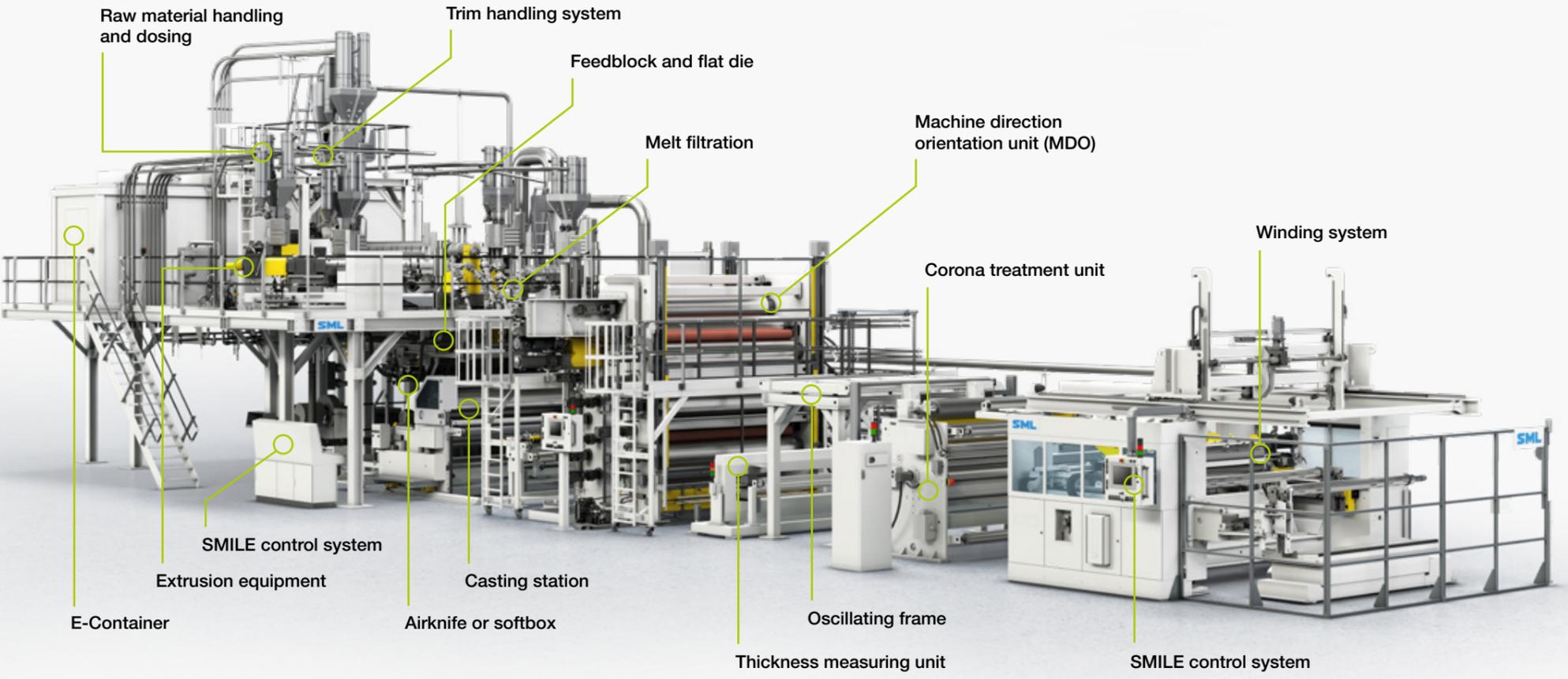
Typical CPP film Products

- ▶ Packaging of bakery products
- ▶ Lamination film
- ▶ Twist film
- ▶ Metallised film
- ▶ Flower packaging
- ▶ Textile packaging
- ▶ Frozen food



The core of our idea:
Lines for CPP/CPE film
with integrated MDO unit





CPP/CPE film line with integrated MDO unit



Typical mono-oriented film Products

MOPP or MOPE

- ▶ Stand-up pouches
- ▶ Label film
- ▶ Carrier handle
- ▶ Tear tapes
- ▶ Foamed labels
- ▶ Adhesive tapes
- ▶ Foamed decoration tape
- ▶ Cable insulation
- ▶ Hygiene backsheet film
- ▶ Roofing film



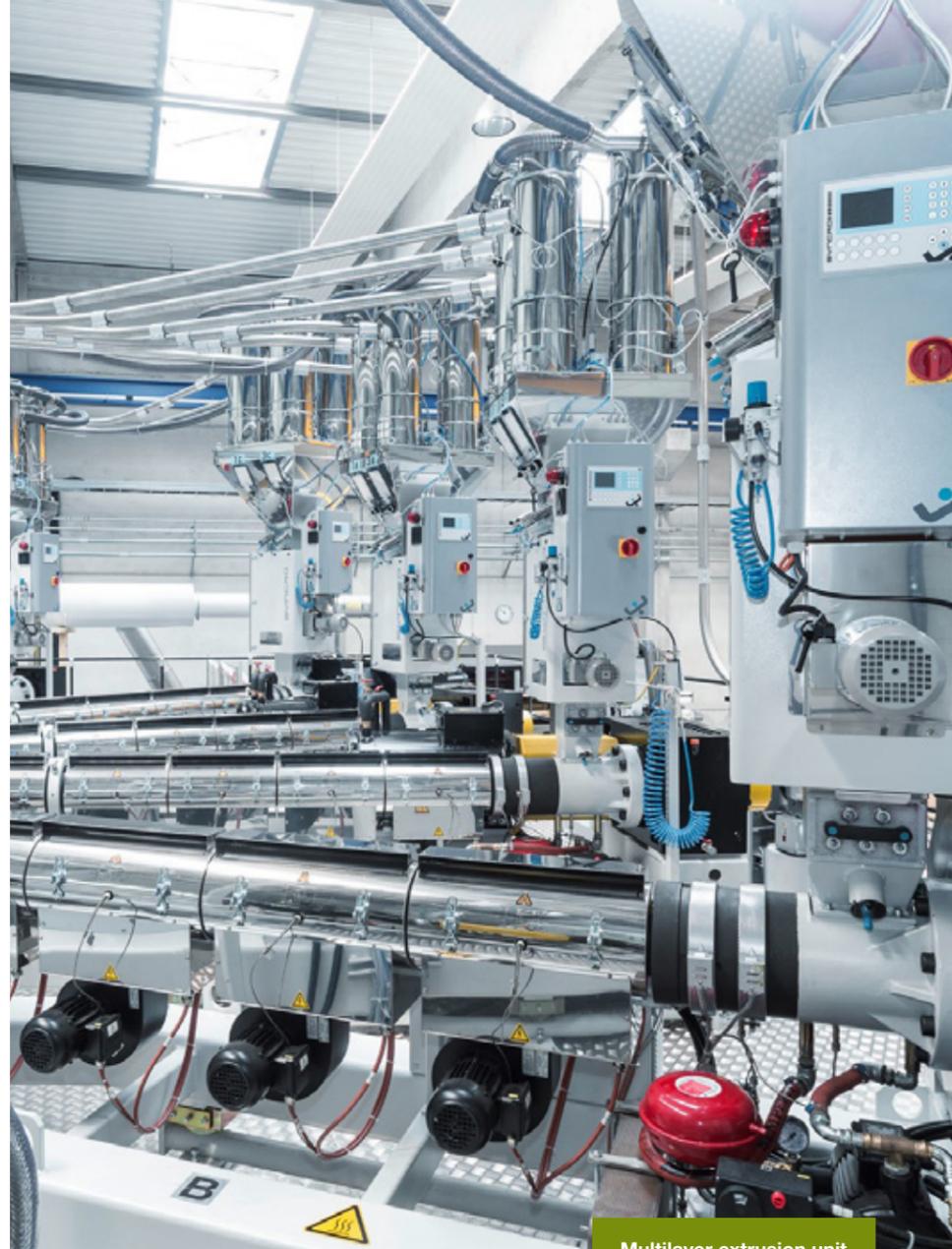


High precision dosing Raw material

SML offers a wide range of gravimetric batch blenders and continuous gravimetric feeders, enabling **recipes to be run with great accuracy and repeatability**. Each extruder can be fitted with **up to six feeding components**, suitable for **high-temperature polymer processing**.

Integrated in customised software

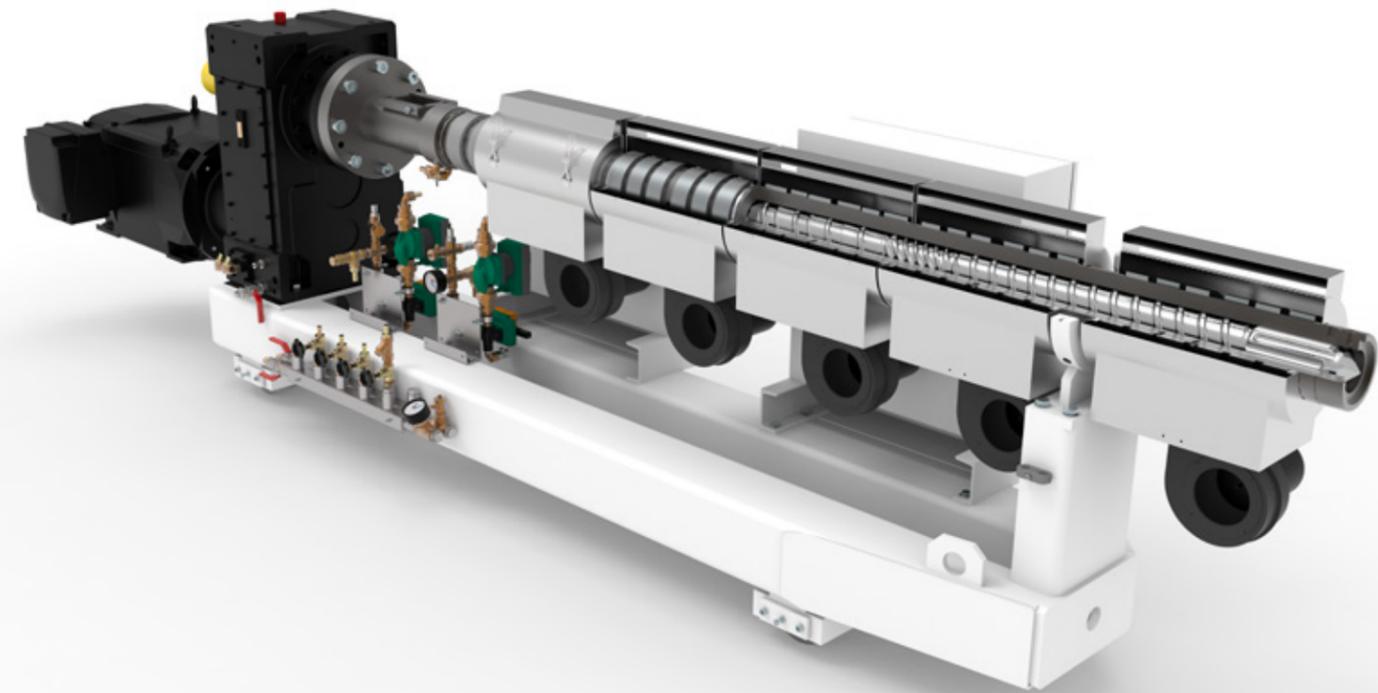
The complete dosing system, as well as all the material supply vacuum pumps, filters and valves are fully integrated in SML's overall machine control system SMILE.



Multilayer extrusion unit

Always state-of-the-art Extrusion equipment

SML cast film extruders are designed according to the processing requirements for all the relevant polymers used in this market segment. Long-standing experience, paired with continuous innovations, ensure that the systems are always state-of-the-art.



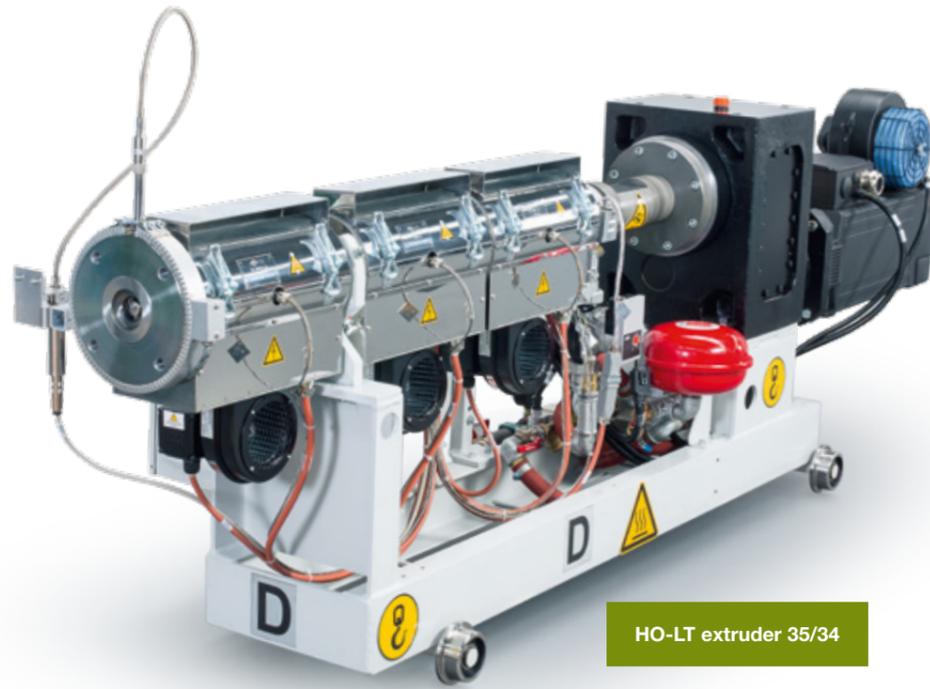
Extruder 60/30

Diversity in screw designs

A selection of standard versions is available with **screw diameters from 45 to 180 mm**. Depending on the size of the extruders and the processed materials, screws are available with **bimetallic barrels** and **armoured flights for extended wear resistance**. Extruders with an L/D ratio of 28 or 33 and bimetallic barrels are powered by **energy-efficient**, low-maintenance, water-cooled AC drives.

Energy efficient heating system

All of the extruder barrels are heated using the SML advanced heating system. A gravity-closing flap prevents hot air escaping from the system and thus retains the heat in the barrel. All of the adapters between the extruders and the feedblock can be equipped with a heat insulation jacket.



HO-LT extruder 35/34

HO-LT extruder

HO-LT stands for “**High Output – Low Temperature**”. The special screw and barrel configuration enables these machines to plasticise large quantities of polymer at relatively low screw speeds. The result is a very low melt temperature, an extremely stable output and a high-pressure generation.

This patented extruder is especially designed for the processing of **temperature-sensitive polymers** like **EVOH** or adhesives in functional layers. It is also used for the thin **functional layers in coextruded structures**.

Three different sizes

SML offers the HO-LT extruder in three different sizes typical for co-extruders in multilayer lines.



For pure quality Melt filtration

Effective melt filtration to remove impurities, unmelted or cross-linked particles is extremely important.

Usually, SML installs manual or hydraulic single filters in its cast film lines. Disk filters or candle filters are used for applications such as surface protection and films which require a very strict melt quality.



Casting station

Different options, always optimised for your needs Feedblock and flat die

As a leading supplier of cast film lines, SML relies exclusively on respected partners for its **feedblocks and flat dies**. A **3-layer feedblock with 3 extruders** as well as a **5-layer feedblock with 4 or 5 extruders** are standard for plain or metallised CPP/CPE lamination films for food packaging.

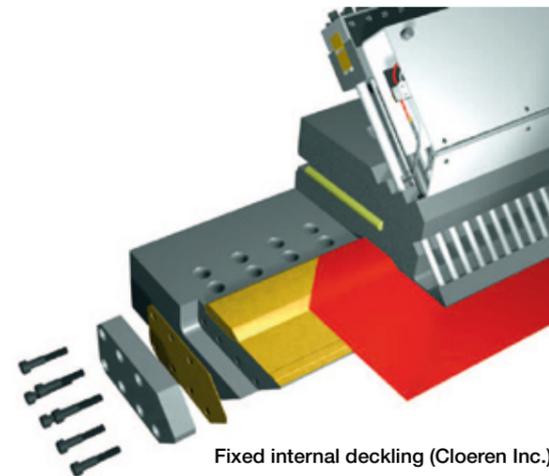
Variable geometry feedblocks

For barrier films there are no limits in terms of the number of layers. For example, 3-layer structures with three extruders are used for the minimum requirements, while **11 layers with 11 extruders** are employed for special **high-barrier structures**.

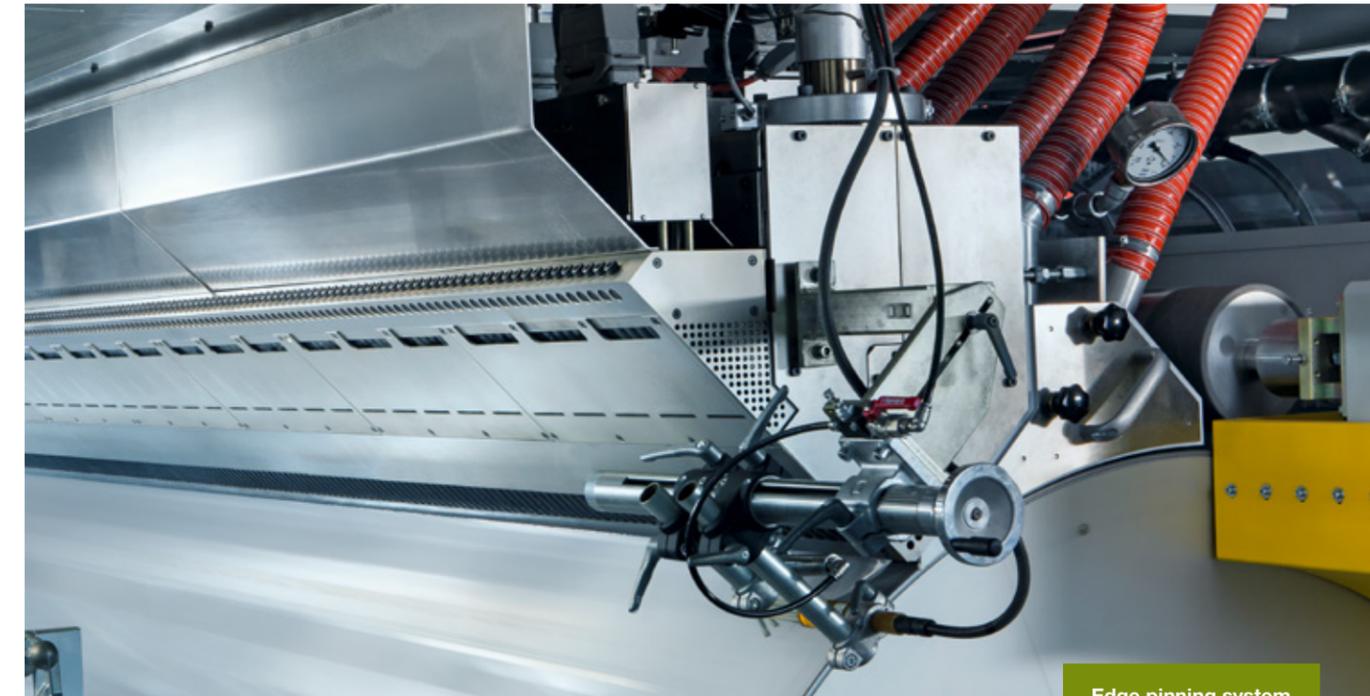
Multilayer structures require great flexibility with regard to feedblock adjustability. Therefore, SML generally utilises variable geometry feedblocks and inserts that can be profiled to optimise the thickness variations of the single layers. The layer configuration can be modified by changing the selector plug or sequence block.



Die splitting system multi-manifold die



Fixed internal decking (Cloeren Inc.)



Edge pinning system

Efficient variations of net film widths

Co-extrusion flat dies with a T-channel shape are able to incorporate fixed or variable internal decking systems, which allows efficient variations of the net film width. Depending on the product, dies are either chrome or nickel-plated. In both cases automatic die control via thermal heated bolts is standard.

Multi-manifold dies

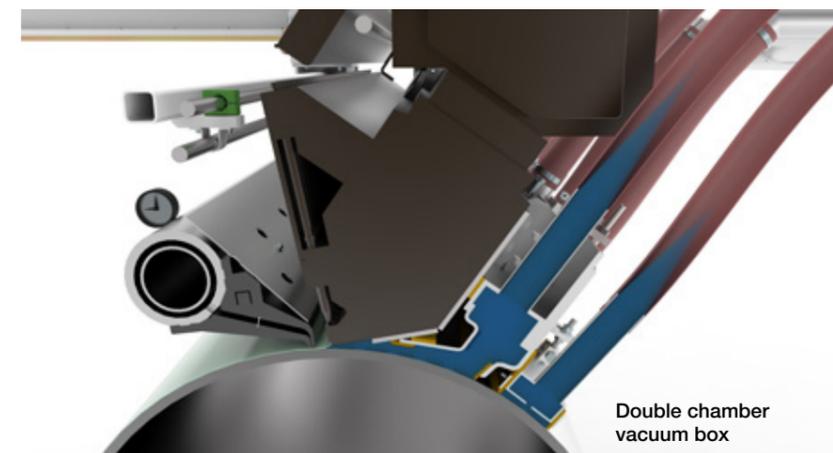
To improve performance in terms of the individual layer distribution, multi-manifold dies are sometimes recommended for the structures using polymers with large differences in the melt viscosity or processing temperature.

Edge encapsulation system for barrier film

Encapsulation makes the production of barrier films more economical and leads to a significant reduction in the scrap rate. With SML's edge encapsulation system, it is possible to re-feed the primary edge trim to one of the extruders, because this trim consists entirely of clean encapsulation material (PE or PP) and is not contaminated with any barrier material. The two encapsulation channels are fed from a separate small extruder directly to the edges of the die.

Die splitting system

The die splitting system is standard on SML's machines, but on the market this is something special. The die can be opened quickly and safely, the die remains in its original position in the machine and continues to be heated. This process shortens the cleaning times enormously – a clear advantage!



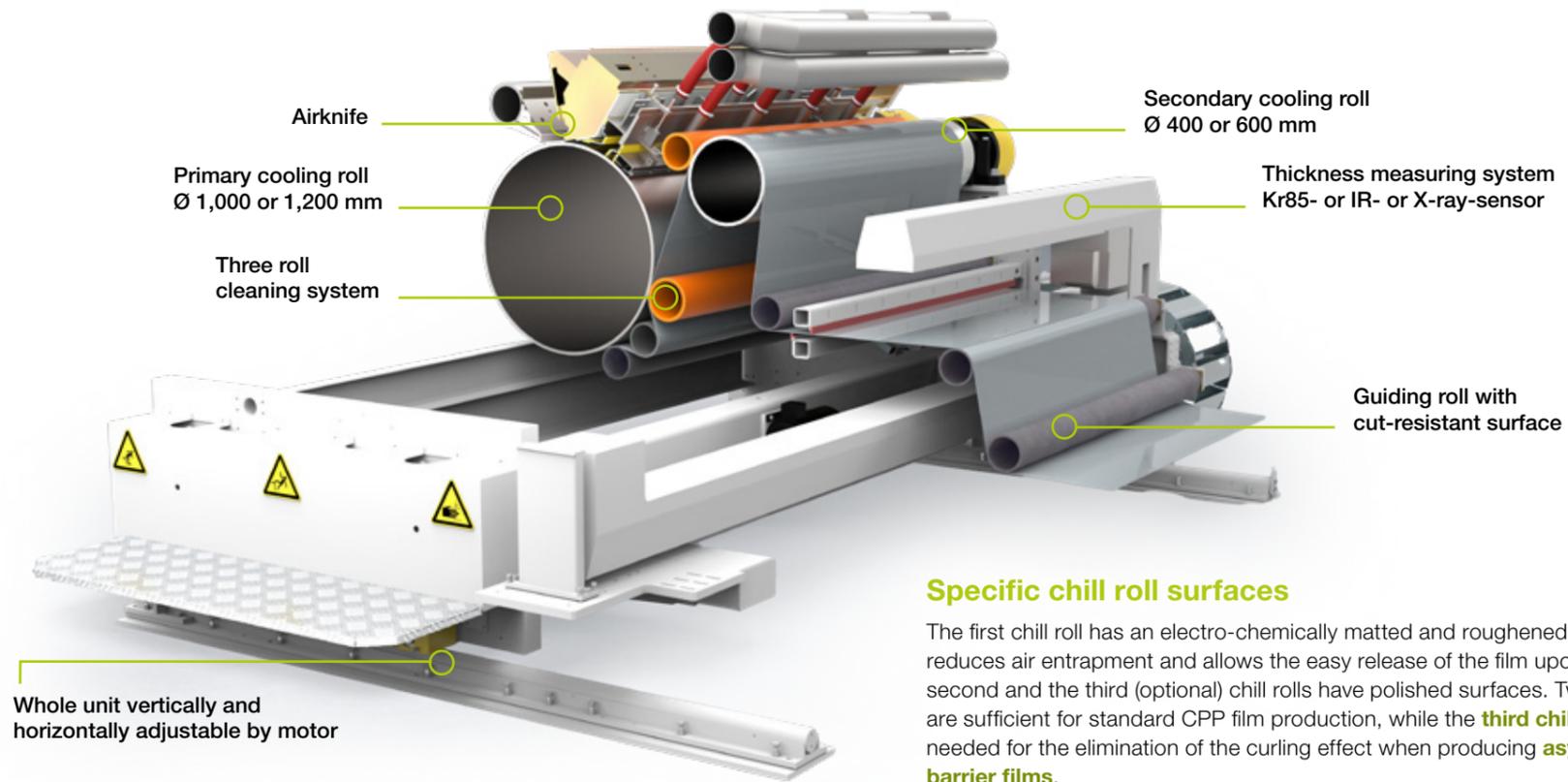
Double chamber vacuum box

Edge pinning

A combined electrostatic and pneumatic pinning system fixes the film to the chill roll surface and reduces the neck-in. The positioning of the film with an adjustable static power and air pressure is straight-forward and easy. It guarantees precise pinning and therefore solid contact between the film edges and the chill roll.

Double chamber vacuum box

SML's double chamber vacuum box, which is mounted directly on the die body, consists of two chambers. The prechamber extracts the airstream generated by the rotating chill roll, while the main chamber maintains a low air pressure between the extruded film and the chill roll and prevents the entrapment of air. The length of the melt can be adjusted before it touches the chill roll. Both chambers are equipped with separate, **flow rate-controlled suction fans**. The vacuum box is slidable and mounted on the die splitter. Therefore, it is **not necessary to disassemble the vacuum box during die cleaning**.



Details that count Casting station

In interaction with the bi-vacuum box, the airknife or the softbox of SML's casting station has a significant influence on the final product quality. Parameters such as the position relative to the flat die, chill roll temperatures and vacuum box, soft box or airknife settings have a direct effect on the optical and mechanical properties of the film – such as the haze, transparency, tensile strength or shrinkage.

Specific chill roll surfaces

The first chill roll has an electro-chemically matted and roughened surface that reduces air entrapment and allows the easy release of the film upon exit. The second and the third (optional) chill rolls have polished surfaces. Two chill rolls are sufficient for standard CPP film production, while the **third chill roll** is needed for the elimination of the curling effect when producing **asymmetric barrier films**.

Separate temperature control

All chill rolls are equipped with separate water temperature control systems and accurate speed control drives. Optional heating systems can be installed in the water circuit for polymers such as PA or PET.

Cleaning roll unit

A cleaning roll unit is installed to stop monomers and other deposits from contaminating the first chill roll. The cleaning roll with a smooth rubber surface and the crowning, to compensate deflection, constantly press the film against the first chill roll, thus preventing deposits on the entire surface. Optionally, the position of the cleaning roll can be adjusted on the roller circumference.

Horizontally and vertically adjustable

The complete chill roll unit is **adjustable in the horizontal and vertical direction** in order to ensure the correct casting position for each product. Electrical drives actuate the movements and the actual position is shown on the control screen unit and stored in the recipe. All the guiding rolls in the production line have a cut-resistant surface for a high film grip and a long service life.

Accurate film thickness regulation

SML places the thickness-gauge unit directly on the chill roll frame behind the last chill roll to achieve the shortest possible distance from the extrusion die to the measuring point. This results in minimum space requirements and highly accurate film thickness regulation.

Either with infrared, X- or Beta-ray sensors

SML supplies **automatic gauging systems**. There are three different systems to choose from depending on the country and the product: either with **infrared, X-ray or Beta-ray sensors**.



If we claim we will find
the best solution for every
customer, we mean it!

Airknife / Softbox

SML receives many requests for the production of thicker films. In this case, it is necessary to additionally fix the film onto the first chill roll using an airknife. This also enhances film cooling, which results in better haze and transparency values.

Airknife

SML's airknife has a specially designed, internal air distribution system and an **adjustable lip gap**. The internal air distribution system guarantees a constant airflow across the whole width of the airknife. To ensure that no particles are blown onto the film, the air is filtered in three positions. The fan of the airknife is speed-controlled to be able to adjust the air-volume-flow.

Softbox

The softbox represents an alternative to the airknife. It offers a gentler airflow and the advantages of a larger area, where the film is attached to the chill roll. Compared to the airknife, softbox handling and adjustment are easier.

Optional cooling and heating

The airknife can be equipped with air cooling or heating systems as an option.

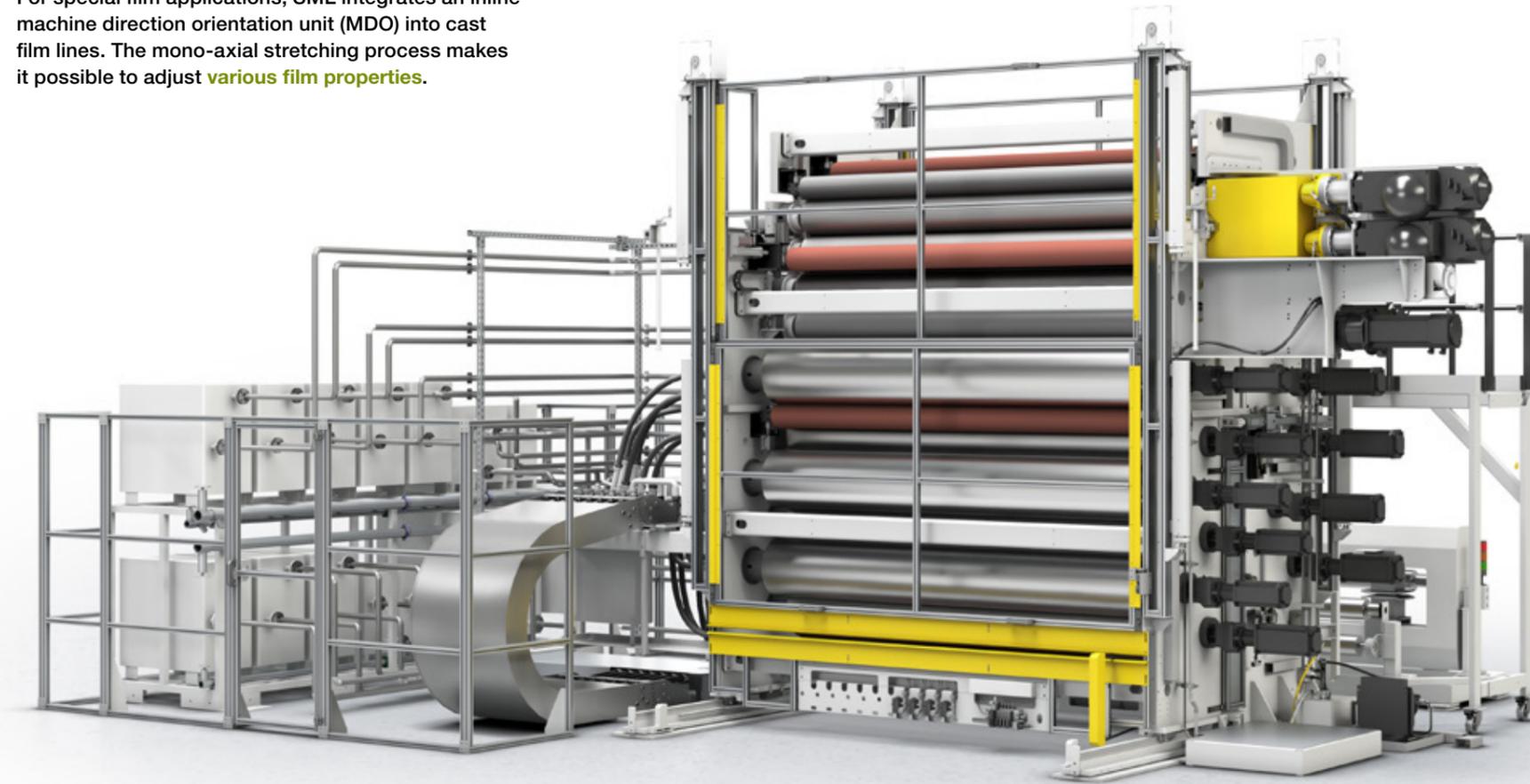
Parking Position

If these units are not required for production, they can be moved to a **parking position** which is **outside of the operation area**. The airknife is slidable and mounted on the die splitter.

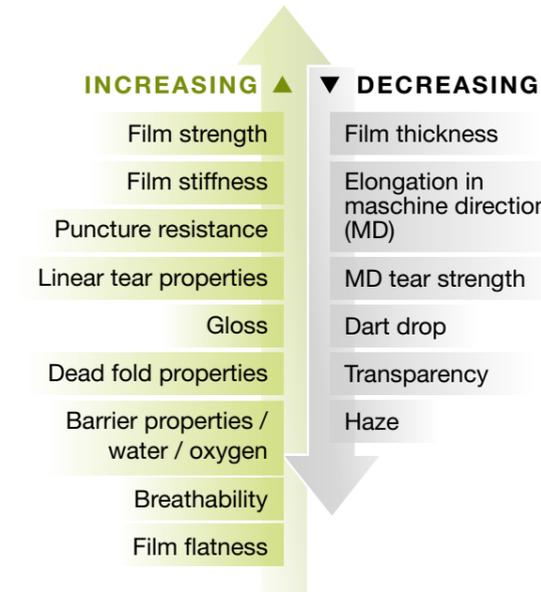
Brings balance to the process

Mono-axial stretching unit

For special film applications, SML integrates an inline machine direction orientation unit (MDO) into cast film lines. The mono-axial stretching process makes it possible to adjust **various film properties**.



Impact of mechanical and optical film properties with MDO stretching



- ▶ Better tear properties for easy opening
- ▶ High stiffness / perfect optical properties
- ▶ Perfect roll quality and film flatness
- ▶ Excellent printing capabilities and machinability
- ▶ 100 % recyclable

Modular machine set-up

MDO units consist of a stable, modular machine frame, including a preheating section, a stretching section and an annealing and cooling section. **All of the rolls are separately driven and temperature-controlled.** Well dimensioned film pre-heating and annealing sections are important with regard to mechanical properties and high production speeds. Annealing helps to influence the shrinkage of the film. A higher or lower shrinkage is possible, depending on the product.

Several options and add-ons

The modular design of the MDO unit allows the addition of pre-heating or annealing rolls. Nip rolls can also be installed on every roll in order to fix the film and to eliminate air entrapment. The MDO unit is equipped with an adjustable stretching gap, which provides greater flexibility regarding process parameters. For a **comfortable line start-up**, the unit is tooled with a **film feeding chain**. MDO units are also available for blown film lines.



Corona treatment

Corona treatment unit

Corona treatment is necessary to prepare the films for subsequent offline printing, metallisation or laminating processes. A corona treatment results in improved print quality and speed, metall bonding and adhesion force. SML provides you with all the important data so that you can make the right decision for your specific requirements.

One-side reversible vs. double-sided treatment

Depending on these requirements, one-side or one-side reversible or double-side treatment stations can be installed. The corona unit is **equipped with electrically driven, water-cooled treatment rolls** and with a nip roll to prevent the backside treatment of the film. For a gentle but effective treatment of the required surface tension, it is important to select the correct number, shape and material of the electrodes in combination with a well-dimensioned generator.

Post-cooling roll for additional film cooling

During the corona treatment, the film is heated, whereby the amount of heating energy required is contingent upon the speed, raw material and treatment level. Depending on the design of the treatment station, a **driven post-cooling roll with a nip roll** for additional film cooling can be installed either directly at the corona station or at the winder inlet.



Fluff re-feeding unit

Ensures economic production Trim handling system

It goes without saying that SML tries to make production as cost-saving as possible. Rest assured that the engineering team has optimised every step of the process and never misses an opportunity to further perfect it. This also applies to the trim handling system.

Two cuts will be made: One in front of the MDO or corona treatment unit to optimise edge stability during the stretching process and to avoid treatment of the reverse side. And a second time **directly on the winder** to ensure a good rolling quality.

Vertical scraptruder

After trimming, the trims are sucked through the grinder of the fluff re-feeding system and then transported to a vertical scraptruder, which feeds the **fluff together with virgin material directly into the extruder for the core layer**.

Energy efficient fluff re-feeding

Fluff re-feeding is a very energy-efficient and material-compatible method, as no additional melting is involved. This leads to a lower energy consumption and also results in **less thermal stress on the material**. The whole process is a closed circuit without any contamination.

Get the best out of your production

Winding systems

The precision of our design team is evident in the smallest of details. This leads to great things, such as winders with a final width of up to 6.5 meters final film width. New market developments or specific customer requirements are evaluated in detail.

SML upgrades its winders continuously. SML winders can be integrated (retrofitted) into existing SML film lines or extrusion equipment from other manufacturers.

High production speeds

SML has created different winding systems focused entirely on the demands of film producers and their customers. All these winders have a solid, vibration-dampening steel frame construction, which is able to resist the dynamic forces generated at high production speeds.

Maintenance work made easy

A touch screen is attached directly to the winders for winding parameter adjustment and for maintenance work. Additionally, all of the winders in SML's cast film lines can be comfortably controlled from the line's central control station with the operator-friendly SMILE system.



Find the right winder for your application

Winder type	winder W1300	winder W1500	winder W2000	winder W6000
Film thickness range ¹	15 – 300 µm	15 – 300 µm	15 – 300 µm	15 – 120 µm
Max. mechan. speed	450 m/min	350 m/min	400 m/min	400 m/min
Max. winding width	3,600 mm	1,950 mm	3,150 mm	6,500 mm
Winding core ²	6 / 8 inch	6 inch	3 or 6 inch	10 inch / 450 mm
Max. winding Ø	1,500 mm	1,200 mm	980 mm / 1,300 mm	1,300 mm
Winding direction	top outside	top inside or outside	top inside	top outside
Winding tension	10 – 100 N/m	10 – 100 N/m	10 – 100 N/m	10 – 100 N/m
Contact pressure	30 – 100 N/m	30 – 100 N/m	30 – 100 N/m	30 – 100 N/m
Roll handling	manual	manual	automatic	manual
Oscillation	frame	frame	winder or frame	frame

¹ Film thickness range is depending on cutting unit
² Winding core diameter is depending on winder width

Winder W1300

The winder W1300 is a turret winder for a wide range of film thicknesses and designed for a maximum roll diameter of 1,500 mm. The maximum winding width is 3,600 mm.

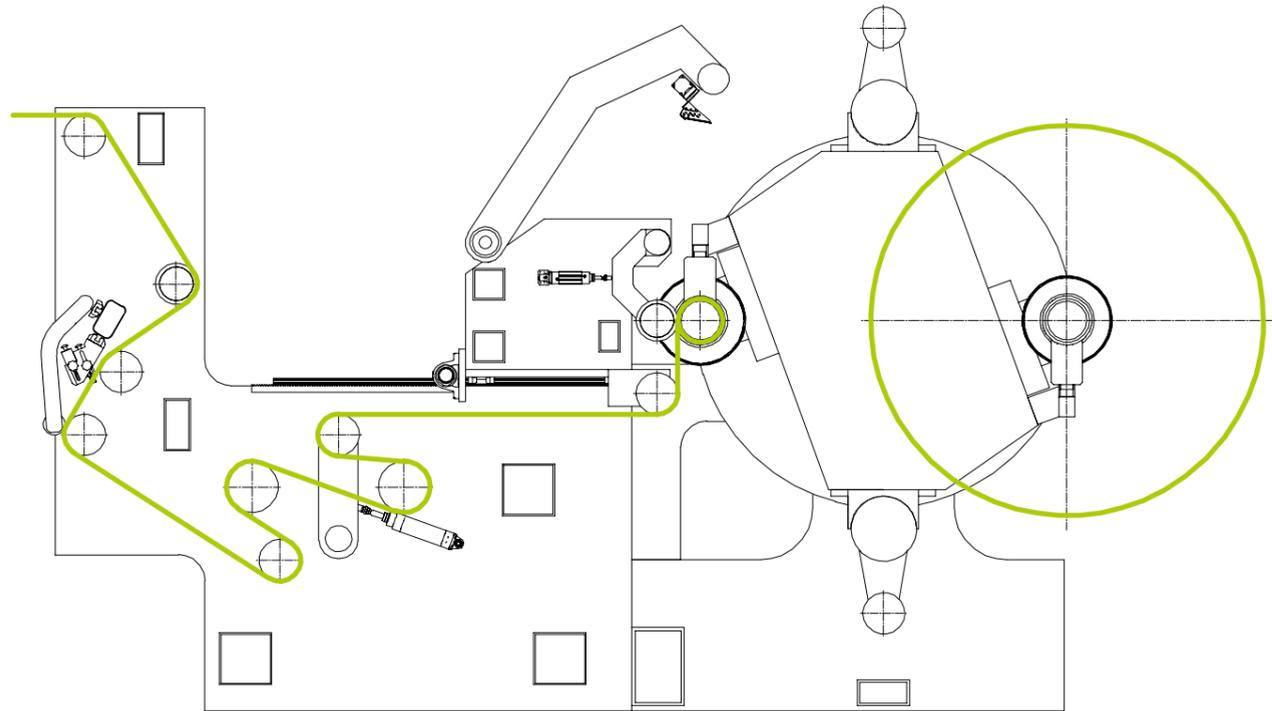
At the inlet of the winder a spreader roll is installed to avoid wrinkles at the integrated edge trim cutting station. An ultra-lightweight dancer roll controls the film tension during winding, while the shaft is center-driven and the film is wound onto the roll either in gap or contact mode.

Different cross-cutting units

The film cross-cutting is performed by a twisting knife or a flying knife depending on the thickness range required. The new winding core must be prepared with a double-sided adhesive tape. For thinner films there is an option to fix the film on the new winding core with electrostatic.

Your Advantages

- ▶ Max. roll diameter 1,500 mm
- ▶ Different cross-cutting units are available
- ▶ Film tension control with an ultra-lightweight dancer roll



Winder W1500

The turret winder W1500 is designed for shaftless winding or winding with shafts for a maximum roll diameter of 1,200 mm and an end film width of max. 1,950 mm.

Winding in gap and contact mode

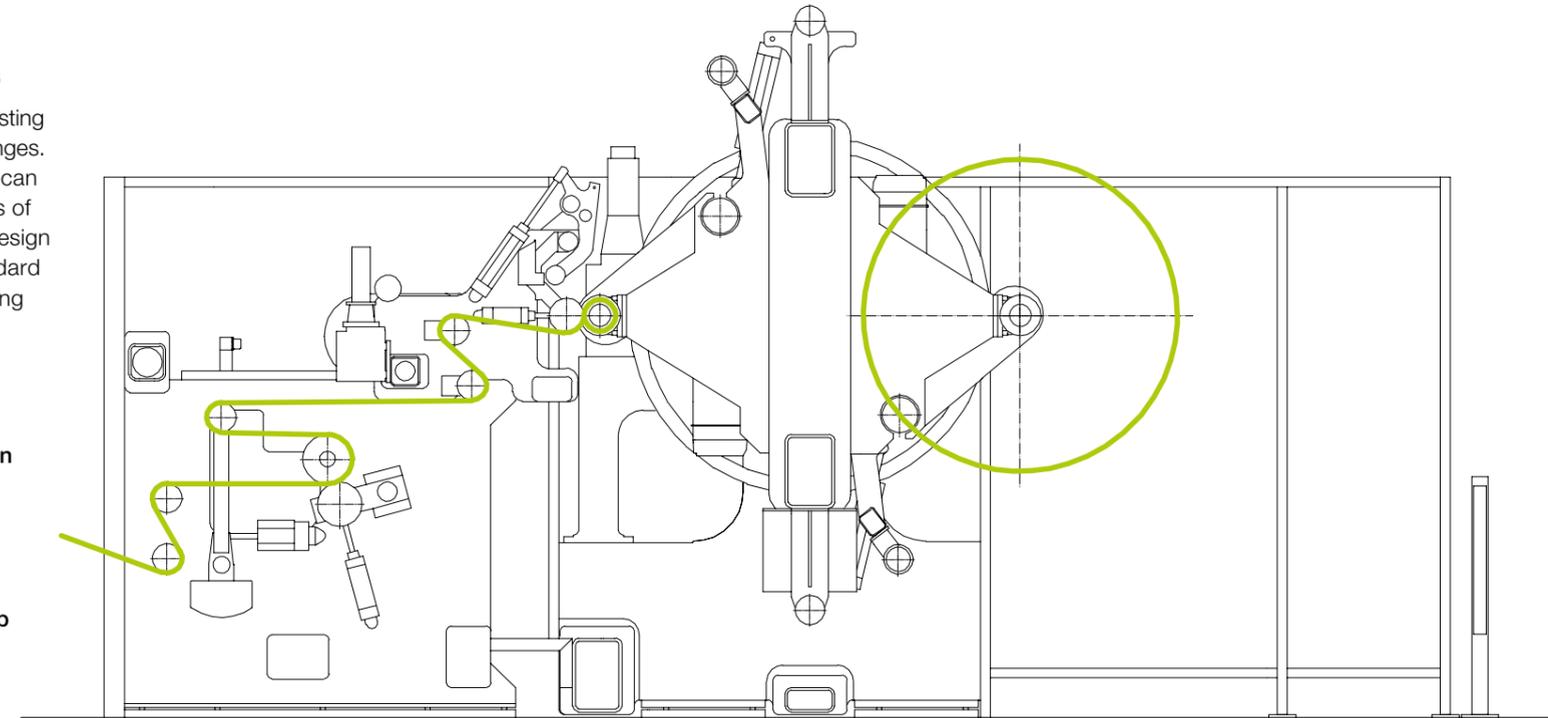
A take off unit at the winder inlet separates the web and the winding tension. A lightweight dancer roll controls the winding tension, while the roll is center driven by an AC servomotor. Winding can be done in the gap or contact mode.

Winding in both directions

Cross-cutting systems with flying or twisting knives are available for smooth roll changes. To meet individual requirements, rolls can be wound in both directions by means of an optional second cutting unit. This design allows for easy roll handling with standard electric forklifts or hydraulic roll handling systems.

Your Advantages

- ▶ Especially for the production of mother rolls in smaller widths
- ▶ Cross-cutting system with flying or chopping knives
- ▶ Fixpoint to separate the web and the winding tension



Winder W2000

With over 100 units up and running, the winder W2000 is the most popular and proven winder for cast film. It is a horizontal sliding winder for mother rolls and inline slit rolls.

The inline-slitting process can be carried out either with bleed trims or without bleed trims in combination with banana rolls for the separation of the single webs.

Optimum winding quality up to the last layer

Owing to the principle of a horizontal winding position moment, the roll in this winder remains in an optimum winding position until the very last moment before cross-cutting, thus guaranteeing a perfect winding quality up to the last layer of the roll.

Different cross-cutting units for different requests

For the winder W2000 different cross-cutting units are available. The guillotine knife is used for a wide thickness range of up to 300 µm. For thin films that do not require a fold-back at the core, a stationary knife with the hot-melt preparation of the core is available.

Fully integrated roll and shaft handling

The finished roll and the winding shaft are transported by an overhead robot onto a moveable trolley, which pulls the rolls from the shaft. To reduce the cycle time, automatic core feeding systems are available.

Your Advantages

- ▶ Horizontal sliding winder for inline-slitting
- ▶ Perfect roll quality due to the optimised winding position
- ▶ Roll and core handling systems for short running rolls available
- ▶ Different cross-cutting units for different applications

Winder W6000

The winder W6000 is a shaftless turret winder for extra wide cast film lines with a maximum winding width of up to 6,500 mm. Typical products are thin CPP or CPE films on mother rolls wound onto steel winding cores.

The winder W6000 can carry loads as heavy as 8 tons and provides a range of rolls with diameters of up to 1,300 mm.

Raising roll length to a maximum

In line with the trend towards increasing the largest possible roll diameters on metallisers and slitters, the maximum roll diameter is 1,300 mm, which raises the film length to a maximum.

Optimised for elevated roll diameters

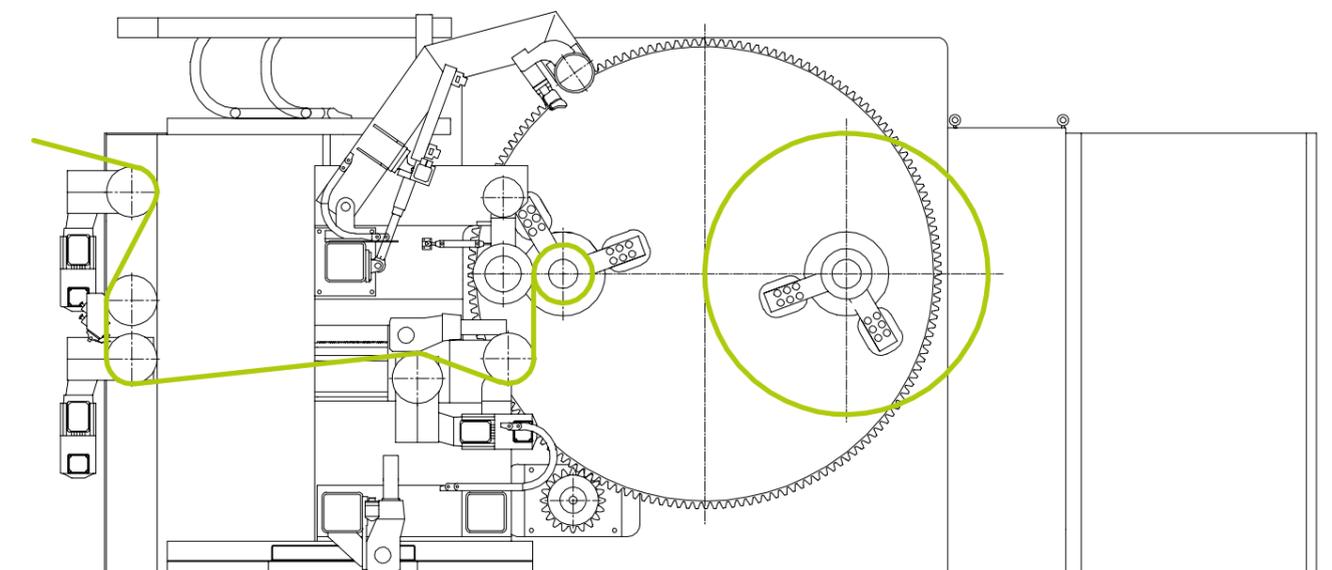
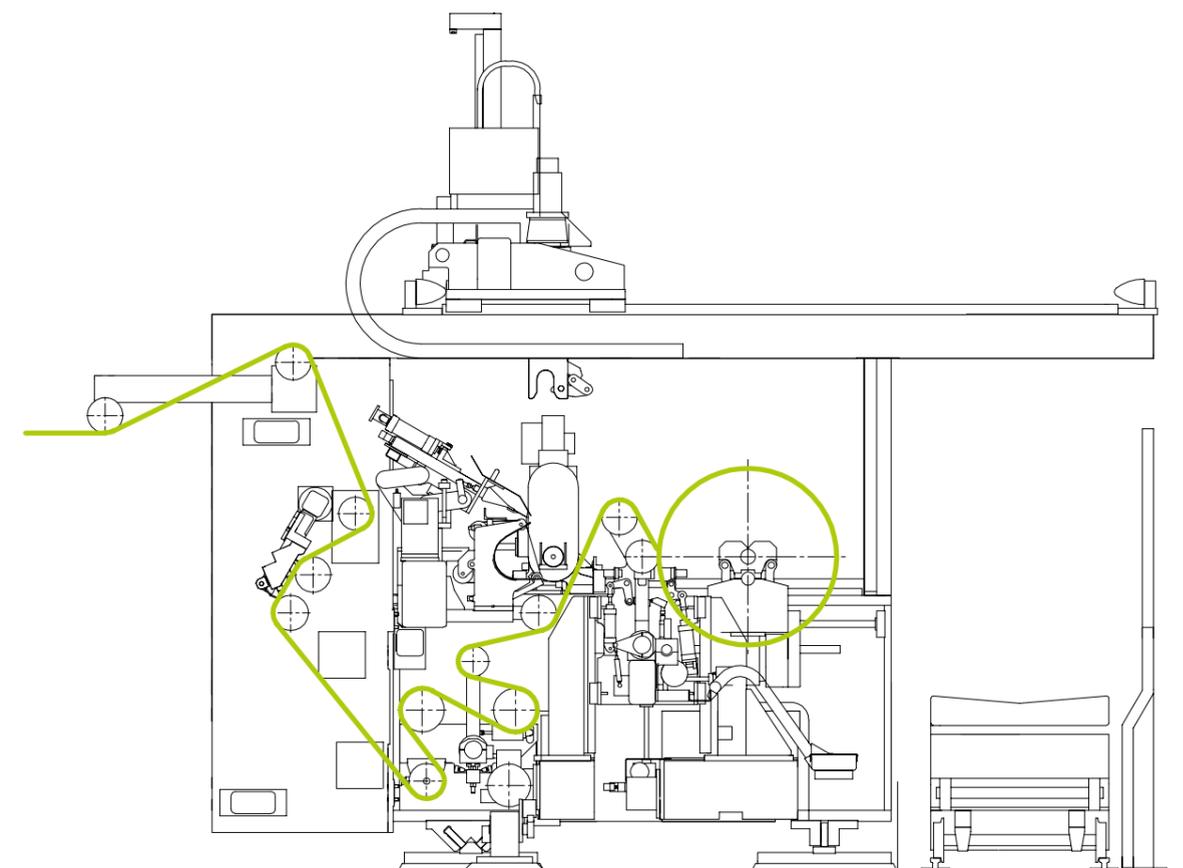
The winder W6000 is equipped with ultra-light carbon fibre rolls for an optimum performance at elevated speeds and an edge trim cutting unit with a spreader roll is installed at the winder inlet. Further downstream, an adjustable satellite roll matches the entrance angle of the film precisely to that of the film roll, thus minimising air entrapment between the film layers. A spreader roller also keeps the wrinkles on the roll to a minimum. The winder can wind in gap or contact mode. The turret unit consists of two massive side frames in which the turning disks, with chuck heads and drives, are indexed. To avoid vibrations, the disks are guided by strong two-path, ball bearing slewing rings.

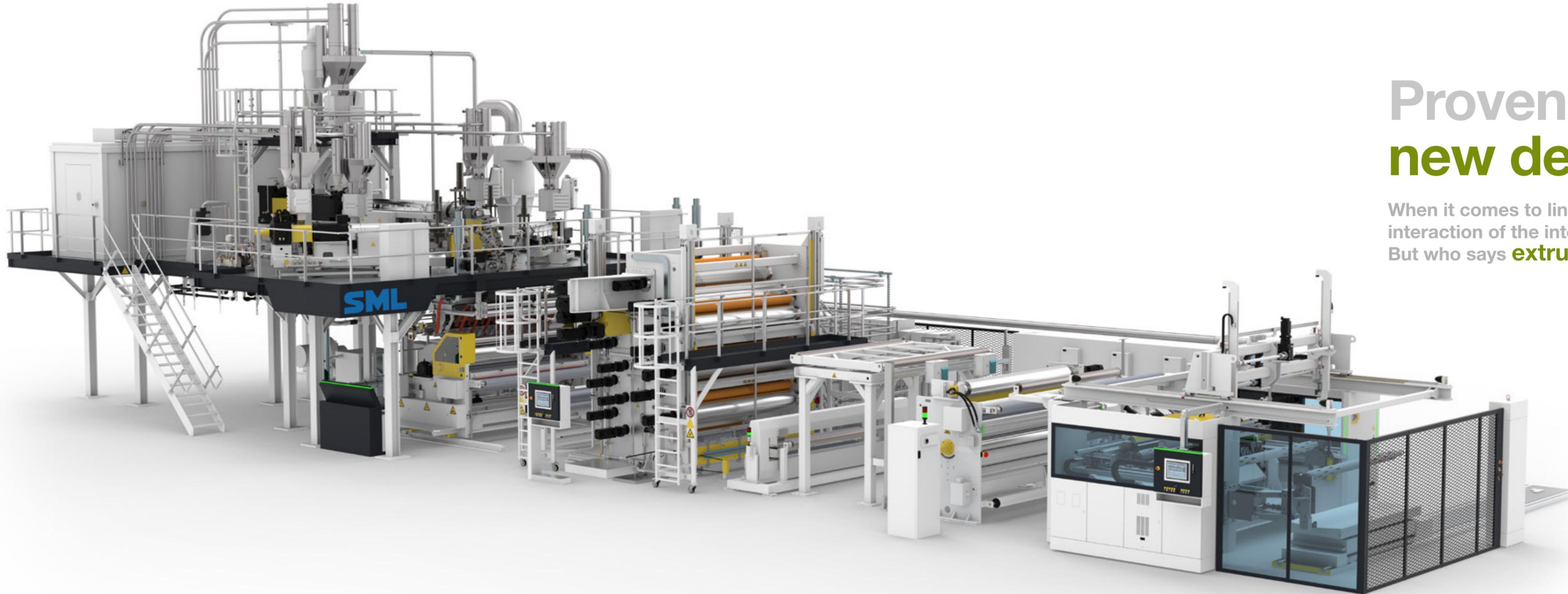
No core preparation necessary

Film cross-cutting is carried out using an electro-mechanical operated flying knife. The film is attached to the new steel core by an electrostatic system. The handling of the finished rolls and winding cores is done by a crane. Like all other SML winders, the winder W6000 is equipped with its own control unit.

Your Advantages

- ▶ Finished roll width up to 6,5 m
- ▶ Ultra-light carbon fibre rolls for optimal performance at elevated speeds
- ▶ Roll diameter up to 1,300 mm for a high productivity





Proven technology – **new design**

When it comes to line performance, the high quality and precise interaction of the internal components are particularly important. But who says **extrusion lines** shouldn't **look great too?**

Technology that makes you smile

SMILE control system

Not sure if a technology can really make you smile? Now, let the facts about **our ingenious machine** control systems **convince you.**

SMILE is SML's machine control and operation concept. It allows **highly precise synchronisation of all components in an extrusion system.** If an extrusion system is the powerful body, then SMILE is the driving soul that brings that body to life.

100 % developed in-house

The dynamic controller system is entirely developed in-house and has undergone significant further development in recent years. SML's long-standing competence in the field of automation and machine control provides loads of innovative and exceptional features.

Centralised all-in-one concept

SMILE's central control station system allows the management of each production process with a wide touch screen attached to the film line. More than 1000 signals come together here, collected by many sensors, transducers and motors and transported via modern Ethernet bus systems.

This data includes sensory measurements like temperatures, speeds and pressures as well as actuator readings from valves, hydraulics, drives and positions. Thanks to SMILE, all of these components are interconnected and can be perfectly synchronised with each other. This fine-tuning allows customers to run their film lines at the very best performance level.



Intuitive machine control

At SML, we believe machine control and operation should be highly intuitive and self-explanatory. SMILE is therefore an integral part of our coherent and user-friendly overall line concept.

- ▶ A central control station system for the highest operating comfort and the visualisation of all processes
- ▶ Reduced training efforts and error rates at operator level
- ▶ Remote control, remote update and remote service (from a PC or even a smartphone)
- ▶ The system is fully multi-client and multi-user capable, different types of users can log-in simultaneously

Optimised production efficiency

One key purpose of SMILE is the increase in the Overall Equipment Effectiveness (OEE) through optimised production processes.

- ▶ Optimised use of raw materials, preventing waste
- ▶ Faster start-up of production
- ▶ Minimised times for product change-overs, customisable assistant for product changes

Systematic quality control

In close interaction with SML's data collection and analysis system bitWise, SMILE is an efficient tool to keep output quality stable and to optimise output properties.

- ▶ Formula recipe system to store production parameters
- ▶ Documentation and detailed reporting of production processes
- ▶ Automatic alarm functions via e-mail or text message for quick debugging

Interconnectivity and third-party integration

SMILE has many open interfaces that allow the web-based data exchange with third-party machines and systems.

- ▶ Open to interconnecting with systems like Enterprise Resource Planning (ERP), Quality Assurance (QA) or SML's data analysis tool bitWise
- ▶ Based on open standards like HTML5 and OPC-UA, complete end-to-end process control beyond SML extrusion lines

Tailored to specific requirements

SMILE can be tailor-made to client's specific requirements. This is blazing the way to new manufacturing concepts as well as delivering product properties.



Stop guessing, start knowing with bit.Wise data analytics

With bitWise, SML's customers can **analyse the entire process history** of a CPP film line with a **single click**, rather than relying on **current snapshots**.

bitWise incorporates decades of experience in automation with the **latest technologies in data analytics** and provides for a **wide range of completely new opportunities** for data-driven decisions.

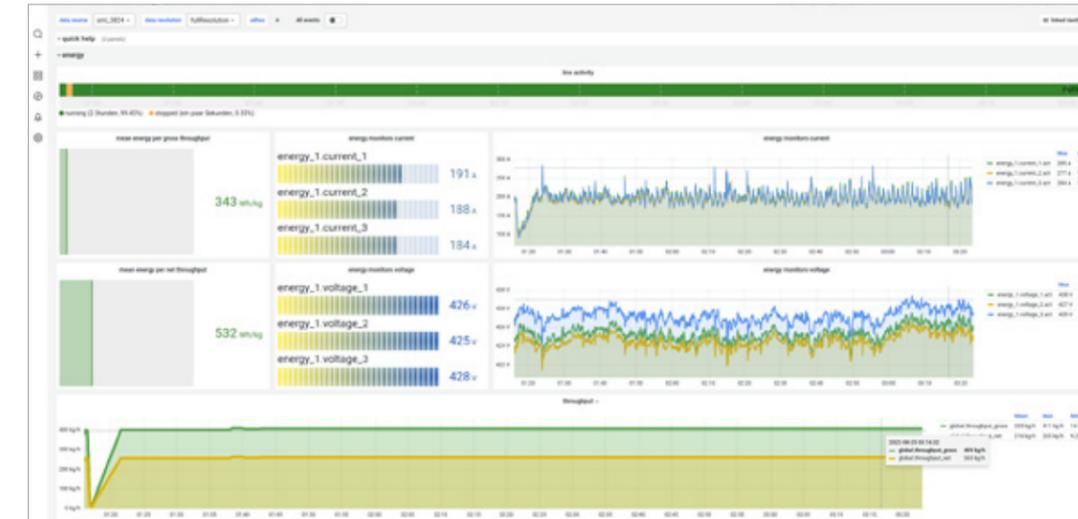
In-depth view of all details

SML's cast film lines are equipped with hundreds of data-generating sensors. BitWise records and visualises this data up to 10 times per second. In addition, each manufactured roll is provided with a QR code that can be identified again. Putting everything together, manufacturers get an in-depth view of all the details involved in a production process – both in the present and in the past.

With bitWise, customers can look back at pressures within the system components and check whether there is a correlation with other measured values such as temperature or with the laboratory results of a finished product roll.

Always connected, even on the go

BitWise is an 100 % on-premises-solution. This means that the data remains in-house on dedicated hardware, no cloud services are required. Nevertheless, customers can access bitWise in their company network via their VPN or a remote desktop solution.



Optimising quality

BitWise is a powerful tool to precisely optimise any aspect of the production process with a direct effect on product quality.

- ▶ Monitoring of all quality-related process parameters, allowing quick corrective action
- ▶ Comprehensive tracking and documenting of product quality
- ▶ Making quality reproducible

Maximising output

Recorded, aggregated and visualised data by bitWise helps to raise overall line utilisation and delivers a faster return on investment (ROI).

- ▶ Discovering hidden or unused output capacities
- ▶ Preventing downtimes by detecting potential problems at an early stage
- ▶ Minimising maintenance times through optimised scheduling and structured access to documentation and service support

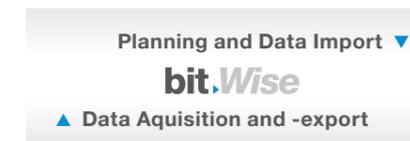
Minimising production costs

bitWise is the central tool to measure and visualise all production related costs. It forms a strong and reliable basis for the continuous cost-optimisation.

- ▶ Detailed monitoring and reporting of energy and raw material consumption
- ▶ In-depth optimising, tracking and reporting of Overall Equipment Effectiveness (OEE)
- ▶ Full end-to-end cost transparency through third-party integration

Open for vertical integration

At SML we understand that cast film lines represent a key part in a wider production chain. For end-to-end optimisation, bitWise therefore supports data exchange and vertical integration with third-party systems such as Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP) or Quality Assurance (QA). Customers can simply retrieve the data from the system.



Choose your perfect interface

As with most technologies developed by SML, bitWise is highly customisable. The remote system can be retrofitted to all existing SML cast film lines.

Outstanding end-to-end service support. Reliable assistance - around the globe, at all times.

Always at your disposal.

Our dedicated customer service team offers reliable assistance to ensure the continuous operation of any SML extrusion line at all times. Regardless of how long a system has been in operation, we offer service to every customer.

- ▶ Long term experienced SML service technicians
- ▶ Support in all ways – via telephone, video call, chat, email and in person
- ▶ On-call service from 7 am to 10 pm CET
- ▶ Remote maintenance system
- ▶ Visual assistance via smart glasses as an option
- ▶ SML service technicians on call worldwide
- ▶ Quick on-site service

Immediate assistance.

The remote maintenance system, which is available for every SML extrusion line, makes it easier to identify potential problems and provide a quick diagnosis. In order to find solutions, our service team works closely together with other departments at SML. This way, 85 – 90 % of all malfunctions can be solved remotely.



Our highly-skilled technicians are at your service within 24 hours throughout Europe and within 48 hours in the rest of the world.

Up-to-date knowledge and experience.

Our service team consists of technicians who know SML's extrusion lines inside out, having installed them themselves for many years. In order to keep their know-how up to date, all service employees continue to work regularly in everyday production. Their competence is reflected in the short reaction times to our customers' enquiries.

Visual assistance in real time.

Through the use of smart glasses, our service team can provide real-time assistance worldwide. Whether our customers have technical problems, need help with product changes or maintenance work - they are guided step by step. This service is available for every extrusion line from SML.

Analyses Development Pre-tested Performance Delivery on Time Service Support Customer Satisfaction

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The image shows a large, modern industrial building with a white facade. The SML logo is prominently displayed on the upper part of the building, rendered in a light blue, three-dimensional font. The building has a long, low profile with a series of windows along its side. In the background, another building with a grid-like facade is visible under a clear sky.

SML

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