Based on its High Speed Extruders (HSE) and its HO-LT (High Output – Low Temperature) extrusion technology, SML provides high-performance sheet lines focused on the cost-efficient large-scale production of sheet with superior qualities.

The most recent example of SML’s innovative strength in this field is its PP/EVOH barrier sheet line. This line manufactures sheet with outstanding barrier characteristics against oxygen, water vapour and odours – at output volumes as high as 3.2 tons per hour.

Apart from high-performance solutions, SML is providing its well-established Economic Class Sheet Lines for great flexibility at mid-range outputs, at an extremely reasonable price-performance ratio.

Another example of SML’s leading role in this market segment is its well-proven inline sheet extrusion concept. It helps to minimise the energy costs of the overall production process of thermoforming applications of around 20 to 25 percent.

SML’s thermoforming sheet lines are designed for 24/7 production reliability and a long service life. Besides outstanding extrusion solutions, it is above all SML’s advanced roll stack technology in combination with superior winding systems and the operator-friendly machine control system SMILE, that gives SML’s customers the competitive edge in this market segment.
LINES FOR THERMOFORMABLE SHEET

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High-Performance Class Sheet Lines

SML’s High-Performance Class Sheet Lines provide extremely high output levels in combination with top product qualities, low energy consumption, minimal personnel costs and a very economical use of polymers.

All of this makes the large-scale production of sheet for thermoforming applications extraordinarily cost-efficient and competitive.

SUPERIOR EXTRUSION AND CALENDERING TECHNOLOGY
The central elements in SML’s High-Performance Class Sheet Lines are High Speed Extruders (HSE) and well designed calendering roll stacks. These include a unique Smart Parallel Gap (SPG) calendering roll and an optimal number of post-cooling rolls, adapted to the respective sheet type.

COMPACT LINE DESIGN
Another key characteristic of SML’s High-Performance Class Sheet Lines is its very compact design, providing a maximum of productivity on a minimum of floor space. Based on SML’s modular design concept, the layout of the line can be customised to very specific space requirements.

Your Advantages
✓ Maximum output and line speed
✓ Energy efficiency
✓ Polymer savings

PERFORMANCE LEVEL

<table>
<thead>
<tr>
<th>Polymer</th>
<th>Production performance (at 1m sheet width)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS</td>
<td>up to 3,300 kg/h</td>
</tr>
<tr>
<td>PP</td>
<td>up to 3,000 kg/h</td>
</tr>
<tr>
<td>PET</td>
<td>up to 1,800 kg/h</td>
</tr>
</tbody>
</table>

CONFIGURATION EXAMPLES

<table>
<thead>
<tr>
<th></th>
<th>TSL-1 Jumbo</th>
<th>TSL-2 Jumbo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extruder</td>
<td>1x HSE75</td>
<td>3x HSE75</td>
</tr>
<tr>
<td>Plastification</td>
<td>PS: 1,500 kg/h PP: 1,350 kg/h</td>
<td>PS: 3,300 kg/h PP: 2,700 kg/h</td>
</tr>
<tr>
<td>Sheet thickness range</td>
<td>200 - 2,500µm (thin PP films may require an air knife)</td>
<td></td>
</tr>
<tr>
<td>Number of layers</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Sheet width</td>
<td>1,000mm</td>
<td>1,200mm</td>
</tr>
<tr>
<td>Line speed limit</td>
<td>70 m/min</td>
<td></td>
</tr>
<tr>
<td>Winding diameter</td>
<td>2,000mm</td>
<td>2,000mm</td>
</tr>
</tbody>
</table>

SPECIFIC ATTRIBUTES

- Modular design
- High Speed Extruders (HSE)
- Easily handled feedblock technology
- Standard 1 – 3 layers
- Horizontal roll stack (with multiple nips)
- Optional air knife
Economy Class Sheet Lines

With output volumes of up to 1,000 kg/h, this line concept stands for the highly efficient production of premium sheet at an extremely reasonable price-performance ratio.

MACHINE SET-UP IDEAL FOR LOW BUILDINGS

One main characteristic of SML’s Economy Class Sheet Line is its straightforward design. The HSE main extruder, the melt pump, the die, and the electrical cabinets are all mounted on the same frame. The usage of a vertical roll stack allows the extruders to be placed directly on the floor. The winding technology, including the accumulator, is designed to keep the height of the line as low as possible.

With this set-up, SML’s Economy Class Sheet Lines are ideally suited to installation in buildings with minimal ceiling heights.

Your Advantages

- Ideal line for the medium output range
- Energy and polymer savings
- Optimal price performance ratio

SPECIFIC ATTRIBUTES:
- Modular design for 1 layer
- Main extruder, pump, die and electrical cabinets on one frame
- Vertical roll stack, 1,200mm roll width
- One control panel on the roll stack

CONFIGURATION EXAMPLES

<table>
<thead>
<tr>
<th>TSL-Eco Jumbo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extruder</td>
</tr>
<tr>
<td>Plastification performance</td>
</tr>
<tr>
<td>No. of layers</td>
</tr>
<tr>
<td>Sheet thickness range</td>
</tr>
<tr>
<td>Net sheet width</td>
</tr>
<tr>
<td>Line speed limit</td>
</tr>
<tr>
<td>Webs</td>
</tr>
<tr>
<td>Winding diameter on 6-inch shafts</td>
</tr>
<tr>
<td>Options</td>
</tr>
</tbody>
</table>
EXTRUDER ARRANGEMENT OF A BARRIER SHEET LINE

Barriere Sheet Lines

SML’s technology leadership in this field is above all based on its competencies in process engineering and comprehensive R&D. The latest innovations are High-Performance Barrier Sheet Lines with unparalleled, high output capacities.

INTEGRATION OF HSE AND HO-LT TECHNOLOGY

With the launch of its high-performance PP/EVOH barrier sheet lines with a capacity of up to 3.2 tons per hour, SML has set a milestone – both in terms of output volumes and product properties. The line integrates two well-proven extrusion concepts: High Speed Extruders (HSE) are used for the outer and regrind layers of the film structure, while the barrier layer in the centre is produced by a High Output – Low Temperature (HO-LT) extruder.

NEW OPPORTUNITIES FOR MANUFACTURERS

The fusion of HSE with barrier technology opens new opportunities for manufacturers, above all in cost-efficient high-volume production. Beside the output volume, it is the outstanding barrier characteristics, i.e. against oxygen, water vapour and odours, that make the difference.

READY-TO-USE SOLUTIONS

Like all systems from SML, the High-Performance Barrier Sheet Lines are generally delivered as ready-to-use solutions. Due to the modular set-up, commissioning times are very short.

SPECIFIC ATTRIBUTES:

- Customised design
- Layer security: individual extruders for each layer, gravimetric output control
- Flexible feedblock technology with up to 9 layers or more, layer distribution manipulation
- HSE and HO-LT extruder technology
- High-performance horizontal roll stack (with multiple nips)

Your Advantages

- Superior sheet quality for thermoforming
- Energy and polymer savings
- Tight and stable layer distribution
- Skeleton recycling up to 70 %
- Outstanding polymer flow design to avoid polymer degradation effects
SML’s inline extrusion sheet lines in combination with a thermoformer are designed to manufacture ready-to-use end products with outstanding quality properties.

**ADVANCED ROLL STACK TECHNOLOGY**

SML has made no compromises with regard to the functional components and the extremely uniform sheet formats of these types of lines. Excellent product quality is guaranteed through comprehensive temperature control, Thin Shell Roll technology and a 5° inclined roll stack design.

**CLOSED LOOP MATERIAL FLOW**

A closed material loop flow means, that there is usually no waste production. Only thermoformed containers leave the production line. There is no edge trim and, with direct skeletal refeed, neither storage silos for recycling, nor recycle reuse management is required.

**ENERGY EFFICIENT PROCESSES**

Inline extrusion and thermoforming constitute the most efficient method of producing large quantities of cups and containers.

**Your Advantages**

- 20 - 25 % less energy consumption
- Optimal utilisation of the remaining heat in the sheet
- Superior final product clarity and stiffness
- Inline recycling of skeleton up to 60%

---

**SPECIFIC ATTRIBUTES:**

- SPG calendering roll for an outstanding thickness profile
- Thin Shell Roll technology for even cooling
- Electric cabinet mounted on the extruder frame

**ENERGY SAVING POTENTIAL OF INLINE EXTRUSION AND THERMOFORMING:**

<table>
<thead>
<tr>
<th>Extrusion</th>
<th>Thermoforming</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>600</td>
<td>600</td>
</tr>
</tbody>
</table>

*As and alternative, the HSE90 can be used for more polymer flexibility*
1. HIGH SPEED EXTRUDER (HSE)
2. TRIPLE GAP ROLL STACK
3. POST COOLING ROLLS
4. GAUGING SYSTEM
5. GRAVIMETRIC BATCH FEEDING AND DOSING SYSTEM
6. TOOL UNIT
7. TOOL UNIT WITH CHAIN HOIST
8. EDGE TRIMMING
9. A-FRAME WINDER
10. ACCUMULATOR
11. REGRIND CONVEYING SYSTEM
SML offers extrusion solutions highly customised to the respective production requirements. In addition to the High Speed Extruders (HSE) and the HO-LT (high output – low temperature) extruders, SML provides various standard systems, driven by a direct motor-gearbox combination. All SML extruders for thermoforming sheet lines are fitted with closed barrels and vented variations for a maximum of energy efficiency.

**HIGH SPEED EXTRUDERS**

For thermoforming sheet applications, SML provides HSE solutions with 75mm and 90mm screw diameters. Both sizes cover the same output range: the 75mm diameter extruder runs at a higher screw speed and with superior energy efficiency, while the 90mm diameter extruder is selected when a wider range of different polymers are processed. With the 75mm diameter extruder a L/D ratio of 37 and 42 is standard. This allows the processing of up to 70% recycled materials in SML’s thermoforming sheet lines. In general, all SML’s HSE extruders cover a wide output range with only two screw diameters by using differing extruder configurations.

**ENERGY-EFFICIENT DRIVE TECHNOLOGY**

Naturally, all of SML’s HSE extruders are able to handle extended recycle rates and are equipped with vented screws and barrels. They are driven by energy-efficient, special AC or torque motors with a direct connection between the motor and the screw.

**HO-LT EXTRUDER**

HO-LT stands for “High Output - Low Temperature”. The special screw and barrel configuration enables these extruders to plasticise a huge amount of polymer at relatively low screw speeds. This leads to a low melt temperature, an extremely stable output and high pressure generation with very fast material changeover times. Due to these features, HO-LT extruders do not require a melt pump. They are ideal for heat-sensitive polymers such as EVOH and adhesives. SML’s HO-LT extruders are available with screw diameters of 35, 45, 55 and 75mm as a standard.

**Your Advantages**

- Perfect for heat-sensitive polymers
- Outstanding output volume at low melt temperatures
- High pressure generation for a maximum of production stability

![Graph showing typical output rates for Ø35, Ø45, and Ø55 HO-LT Extruder](image)
Use of regrind material

SML’s sheet extruders are designed to re-process very high volumes of regrind material. For some applications, a 100% of the regrind can be recycled. This is possible due to the advanced screw geometrics in SML’s extruders, which are very forgiving with regard to changes in regrind density. The refed of scrap can be done directly from buffer storage, or by using standard dosing equipment.

Venting

The use of vented extruders is very popular for sheet extrusion, and quite often it is sufficient to vent atmospherically. In addition, a wide choice of active vacuum systems is available. All vented barrels, employed in thermoforming extrusion, can be plugged.

Melt filtration

The size and type of a melt filtration system depend on the output volume, the type of polymer, the required filter mesh and the anticipated amount of contamination. SML provides single and double piston concepts for the production of thermoforming sheet. These are manually actuated for small units, and otherwise hydraulically actuated. Double-piston systems allow screen changing while the machine continues to run.

Foam

Polymer foam can be produced using additives (chemical), direct gas injection (physical), or with a combination of both. SML’s thermoforming sheet lines can be fitted with a special screw and a gas dosing pump for the physical foaming process. The gas injection process is less expensive than the use of additives. In addition, the direct gas injection allows the quick adjustment to the required density in less than five minutes.

Melt pumps

The melt pumps in SML’s thermoforming sheet lines operate as volumetric dosing systems for the melt, while building up pressure efficiently. The constant volumetric flow ensures the perfect length tolerance of the sheet. It naturally contributes to the stability of the sensitive melt bank between the calendaring rolls. The excellent pressure build-up capacity in SML’s lines relieves the screw of this task, which makes it easier to operate vented extruders economically. In addition, the melt pump can compensate a certain degree of extruder instability, originating from a very high level of low-density regrind.

Feedblocks and flat dies

SML provides various solutions for feedblocks for its thermoforming sheet lines. These range from simple fixed geometry inserts, to flexible solutions for layer configuration, adaptable flow geometry, and elements for the fine tuning of the traverse layer distribution. The latter are frequently used for barrier sheet lines.

Your Advantages

- Various solutions for feedblocks, simple and technically advanced
- Flexible layer configuration
- Die splitting system for fast and easy cleaning
ADDITIONAL COOLING ROLLS
Additional cooling rolls can be installed without compromising the process or the handling of the machine. The design of the additional cooling rolls and the relevant process settings define properties such as the surface, transparency and flatness; and frequently the mechanical properties of the sheet as well.

SPG POLISHING FOR PERFECT SHEET THICKNESS PROFILES
The specially designed SPG (Smart-Parallel-Gap) C0 polishing roll ensures a parallel gap between the rolls C0 and C1, since it deflects exactly, inverse to the C1 cooling roll. The parallel gap provides a perfect sheet profile with minimal operator intervention. This principle works for a wide range of sheet widths and nip pressures, allowing comfortable and quick changes of sheet thicknesses with minimal die adjustment.

THIN SHELL ROLL TECHNOLOGIES FOR HIGHER PRODUCTION PERFORMANCE
Modern and reliable Thin Shell Roll technologies allow higher cooling rates and better heat uniformity at the sheet edges. This results in a better production performance, less edge trim and a better winding quality. In comparison to conventional rolls, Thin Shell Rolls do not require chilled water of a very low temperature level.

SPECIFIC ATTRIBUTES:
- Thin Shell Rolls
- SPG roll
- Four roll gaps
- Additional cooling rolls
- Air knife
- Temperature control unit (TCU), either open or closed loop

Your Advantages
- Superior product properties
- Maximum flexibility
- Quick change of sheet thickness with minimal die adjustment
- Less edge trim, better winding quality
Gauging system

In answer to the various regulations in customer countries and to specific product needs, SML supplies different gauging systems:
- Inductive / capacitive sensors
- Radioactive Beta-ray sensors (Krypton 85 or Sr 90)
- X-ray sensors
- Laser shadow sensors

All these systems are available for dies with manual adjustment or automatic profile control. In order to maintain the average value of the thickness setting, they are equipped with a control for the speed of the main cooling roll C1.

Edge trim cutting/removal

Edge trims are cut off by using static blades or motor-driven circular knives. A precise cut is required for excellent winding quality. The edge trim is usually pulled into an inline grinder and the regrind is then either filled into big-bags for interim storage or re-fed directly to the main extruder.
Winding Systems

SML offers a wide range of different semi-automatic sheet winding systems, depending on customer requirements and the available floor space.

All winders for thermoforming sheet are designed and built in-house by SML. They have a proven track record for longevity and outstanding properties in terms of technical precision, reliability and operability. Semi-automatic sheet winders are known for an excellent production stability at an attractive cost level.

ACCUMULATORS FOR CONTINUOUS OPERATION

Accumulators integrated in SML’s semi-automatic winding systems work either from top to bottom with gravity, or from the bottom to top position. In that case, a torque-driven servomotor generates storage movement and precise web tension. The accumulator picks up the sheet during the manual change of the roll in the winder, making roll changes by the operators both very easy and safe.

Your Advantages

- Film capacity: 38m or 50m
- Access doors at operation side for easy sheet feeding into the accumulator
- Compact solutions for limited floor space

Winder W500 A-frame

The winder W500 A-frame is a comfortable and economic solution for large roll diameters.

It is a single or multi web winder equipped with electric drive and with two A-frame winding trolleys for each web.

The operation of the winder is simple and straightforward - after the roll change procedure, an operator removes the A-frame trolley with the finished roll from the winder. The roll itself has to be lifted from the trolley by means of a crane or a forklift.

Your Advantages

- Suitable for large roll diameters
- Single or multi web winder
- Electrically-driven winding trolley, optional
The winder W600 cantilever ensures a maximum of operator convenience, especially in the case of small diameter rolls and frequent roll changes. It is a single or multi web winder which has two winding stations with winding shafts for each web, supported on just one side. After the roll change procedure, a manually operated lifting trolley is used to remove the finished roll from the cantilever shaft, which remains in the winder.

Your Advantages

- Suitable for smaller roll diameters and frequent roll changes
- Single or multi web winder
- Winding shafts for each web, supported on just one side

Combining the advantages of the A-frame winder W500 and the cantilever winder W600.

The W550 stands for increased flexibility and production reliability when making roll diameters from small to big. The A-frame winding trolley is typically used for production processes requiring jumbo rolls, while the cantilever winding shaft is best suited to making frequent roll changes when producing small rolls.

The winder W550 can be easily modified from an A-frame winder to a cantilever winder. The A-frame trolley only has to be moved out and the cantilever shaft is quickly fixed to the drive disc.

Your Advantages

- Highly flexible system – efficiently usable for all roll diameters
- Operator-friendly modification from A-frame to cantilever winder
<table>
<thead>
<tr>
<th>Winding</th>
<th>W500</th>
<th>W600</th>
<th>W550</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. net film width</td>
<td>950mm / 1,100mm</td>
<td>650mm / 950mm</td>
<td>950mm / 1,100mm</td>
</tr>
<tr>
<td></td>
<td>1,300mm / 1,550mm</td>
<td>1,100mm / 1,300mm</td>
<td>1,300mm / 1,550mm</td>
</tr>
<tr>
<td></td>
<td>1,700mm / 1,900mm</td>
<td>1,550mm</td>
<td></td>
</tr>
<tr>
<td>Number of webs</td>
<td>up to 6</td>
<td>up to 3</td>
<td>up to 3</td>
</tr>
<tr>
<td>Core ID (inch)</td>
<td>3, 6, 8</td>
<td>3, 6, 8</td>
<td>3, 6, 8</td>
</tr>
<tr>
<td>Thickness range</td>
<td>250 - 2,500µm</td>
<td>250 - 2,500µm</td>
<td>250 - 2,500µm</td>
</tr>
<tr>
<td>Max. mech. speed</td>
<td>70 m/min</td>
<td>70 m/min</td>
<td>70 m/min</td>
</tr>
<tr>
<td>Accumulator</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Max. roll diameter up to *</td>
<td>1,200mm</td>
<td>1,000mm</td>
<td>1,200mm</td>
</tr>
<tr>
<td></td>
<td>2,000mm</td>
<td>1,000mm</td>
<td></td>
</tr>
</tbody>
</table>

(* Depending on shaft diameter, roll width and number of webs)
SMILE is SML's generic machine control and operation concept. It stands for all-encompassing automation, providing machine control systems with the highest usability in combination with outstanding capacities for profound process management and monitoring.

The end-to-end integration of third-party systems, overall line effectiveness, operator-friendliness as well as tailor-made and flexible software solutions are the key elements of SMILE.

SMILE is developed as a whole in-house and is integrated one hundred percent in SML's extrusion lines. It is the highly precise, centralised control and synchronisation of all components in an extrusion system, which is blazing the way to new manufacturing concepts as well as delivering product properties, line efficiency and output volumes.

INTUITIVE MACHINE CONTROL CONCEPT
SMILE is an integral part of SML's coherent and user-friendly over-all line concept; machine control and operation is highly intuitive and self-explanatory:
- 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, less personnel required
- Remote control, remote update and remote service for minimised maintenance-costs, multi-client / multi-user capability

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

INTERCONNECTIVITY AND THIRD-PARTY INTEGRATION
SMILE has 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 bitVise
- Based on open standards like HTML5 and UPC-UA
- Complete end-to-end process control beyond SML extrusion lines

INTEGRATED ALL-IN-ONE CONCEPT
It is SMILE's all-in-one concept that helps to create completely new types of extrusion solutions, making one single operator-friendly step out of the most complex production processes. The control of temperatures, speeds and pressures on SML extrusion lines is highly centralised. All of the line modules and motors are perfectly interconnected and synchronised with each other.

CENTRAL CONTROL STATION SYSTEM
SMILE's central control station system allows the management of all of the production processes from the wide touch screen attached to the line. As SMILE is web-based, all of the production and maintenance processes can be entirely remote controlled, i.e. 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.

SMILE SOFTWARE FEATURES
- Central control station system for all production processes
- Full interconnectivity – global UPC-UA, programmed on HTML5, open interface to other machines and systems
- Remote access for operators and service teams – worldwide via the internet, from any PC, laptop or most smartphones
- Multi-client / multi user capability – simultaneous access for different type of users, simple assignment of permissions
- Highest comfortability – visualisation of all production processes on a wide screen
- Worldwide possibility of remote update for customisation and technical support

SMILE HARDWARE FEATURES
- The hardware components of SMILE are supplied by B&R Industrial Automation GmbH, a member of the ABB group, a global leader in automation.

SMILE HARDWARE FEATURES
- E-CONTAINER
- Central control station system for all production processes
- Full interconnectivity – global UPC-UA, programmed on HTML5, open interface to other machines and systems
- Remote access for operators and service teams - worldwide via the internet, from any PC, laptop or most smartphones
- Multi-client / multi user capability – simultaneous access for different type of users, simple assignment of permissions
- Highest comfortability – visualisation of all production processes on a wide screen
- Worldwide possibility of remote update for customisation and technical support

SYSTEMATISED QUALITY CONTROL
In close interaction with SML's data collection and analysis system bitVise, SMILE is an efficient tool to keep output quality stable and to optimise output properties.
- Formula recipe system to copy production parameters
- Documentation and detailed reporting of production processes
- Automated alarm functions via e-mail or text message for quick debugging

OPEN FOR CUSTOMISATION
Developed in close consistency with the hardware components of SML's extrusion lines, SMILE is highly customisable. It is SML's flexibility that offers a wide range of opportunities if customer-specific solutions are required.

SOFTWARE 100 % DEVELOPED IN-HOUSE
Above all, it is SML's long-standing in-house competence in the field of automation and machine control that provides loads of innovative functions tailored to specific customer requirements. In-house developed, state-of-the-art and dynamic controller systems always allow running the machines at their very best performance level – considering both economic and environmental aspects. All of SMILE's software solutions are developed by SML technicians. Last but not least, it is SML's concentrated know-how in any aspect of automation, that helps to create the extrusion solutions of tomorrow.
bit.Wise is SML’s digital transformation solution for extrusion lines. It breathes life into the buzzword “Industry 4.0”. bit.Wise provides for a wide range of entirely new opportunities for data driven decisions with a clear focus on the optimisation of production processes and the final product. Completely developed in-house, it incorporates SML’s decades of experience in automation with the latest technologies in data analytics and visualisation.

**IN-DEPTH PROCESS INSIGHTS**
SML extrusion lines are equipped with hundreds of data-generating sensors. Following the principle of “stop guessing – start knowing”, bit.Wise collects, records and visualises this data up to 10 times per second. This gives manufacturers a 360 degree in-depth view of all of the details involved in a production process, both in the present and in the past.

**OPTIMISING QUALITY**
bit.Wise is a powerful tool to optimise any aspect of the production process with a direct effect on product quality.
- In-depth monitoring of all quality-related process parameters, allowing quick corrective action
- Comprehensive tracking and documenting of product quality
- Making quality reproducible

**MAXIMISING OUTPUT**
Data recorded, aggregated and visualised by bit.Wise helps to raise overall line utilisation and deliver 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**
bit.Wise is the central tool to measure and visualise all production-related costs. It forms a strong and reliable basis for the continuous cost-optimisation of production processes.
- 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

**ON-PREMISE SOLUTION**
bit.Wise is a 100 % on-premise solution. Your data stays in your company, on dedicated and secured hardware, no cloud services required.

**CUSTOMISATION AND RETRO-FIT**
As with most technologies developed by SML, bit.Wise is highly customisable. bit.Wise can be retro-fitted to many existing SML extrusion lines optimising production processes, cutting costs, raising the OEE and ROI of existing investments.

**OPEN FOR VERTICAL INTEGRATION**
Extrusion lines are a key part in a wider production chain. For end-to-end optimisation, bit.Wise supports data exchange and vertical integration with third-party systems, e.g. Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP) or Quality Assurance (QA).
HIGHEST QUALITY PRODUCTS