Advantage

SML high-performance barrier sheet lines ensure best product characteristics

Extended shelf life for fruit products or pre-cooked meals demands first class packaging with excellent barrier properties. The aim is to retain the flavour, aroma, colour and freshness of the food. Within this context the employment of a tailor-made EVOH layer in the film structure can form an effective safeguard against undesirable environmental influences and thus ensure long-term freshness. However, the production of top quality barrier layers using EVOH is far from simple.

THE ADVANTAGES OF PP FILMS WITH AN EVOH MIDDLE LAYER

- Outstanding barrier characteristics against gases, water vapour and odours
- High resistance against fats and oils
- Excellent thermoformability and good mechanical properties of the product
- EVOH-composites are recyclable and thus avoid environmental burden

SML HIGH-PERFORMANCE BARRIER SHEET LINES WITH NEW EXTRUDER TECHNOLOGIES

The employment of EVOH creates special demands with regard to melting, which SML barrier sheet lines fulfil through the incorporation of two differing extruder concepts.

The most important process parameter for the extrusion of EVOH barrier films is a low melt temperature, which requires particularly gentle melting in the extruder. SML ensures that this is achieved through the use of special high output / low temperature (HO-LT) extruders, which take the heat-sensitive characteristics of EVOH into consideration. A single HO-LT-55 extruder facilitates EVOH production amounting to as much as 250 kg/h.

In addition, as far as the polyolefine outer and intermediate layers are concerned, SML’s High Speed Extruders (HSE) with direct drives are recommended. These make very high production rates possible, as evidenced by PP output of up to 1,500 kg/h from just one HSE-75. Furthermore, both extruder series are notable for their low power consumption per kilogram of material.

These extruders are operated with SML roll stacks of horizontal design, which possesses up to 9 post-colling rolls to serve raise of throughput. As a consequence, despite unchanged film widths, the latest equipment generation produces high-barrier PP/EVOH-PP sheet at an output of 2,500 kg/h. Accordingly, at this performance level, SML barrier sheet lines are well able to hold their own in international competition.

JOINT RESEARCH WITH THE JOHANNES KEPLER UNIVERSITY

New materials and composites are continually being tested and developed in cooperation with the Institute of Polymer Extrusion and Compounding (IPEC) at the Johannes Kepler University in Linz. In order to keep pace with the steady increase in demands regarding quality and innovation of barrier sheet, an SML high barrier sheet line has been installed at IPEC for continuous research and development. (www.extrusion.jku.at)

Other features deal with the burning issues of the fourth industrial revolution and the essential matter of recycling. The former relates to our implementation of the latest digitisation technology in our control systems for even greater extrusion line efficiency, while the latter points to PET as a raw material that is ideally suited to closing the packaging loop.

The ongoing upswing in our industry is remarkable and has resulted in strong demand for high-performance extrusion lines, which has helped SML to grow faster than planned. Therefore, we would like to take this opportunity to thank all those that have contributed to this success and express our gratitude to our customers, whom we have the privilege of serving.

Yours sincerely,

Karl Stöger
Managing Director

Dear Reader,

We have been publishing the “Technology Report” twice annually for the past 15 years. Therefore, it was high time that it received a facelift and we are proud to offer you edition no. 30 with a new look.

We hope that the makeover will be to your liking and, equally important, that the articles assembled by our editorial staff will again prove of interest. These include information from our R&D department about a new and improved drum winder, and a recent project involving a high-output, high barrier sheet line.

Other features deal with the burning issues of the fourth industrial revolution and the essential matter of recycling. The former relates to our implementation of the latest digitisation technology in our control systems for even greater extrusion line efficiency, while the latter points to PET as a raw material that is ideally suited to closing the packaging loop.

The ongoing upswing in our industry is remarkable and has resulted in strong demand for high-performance extrusion lines, which has helped SML to grow faster than planned. Therefore, we would like to take this opportunity to thank all those that have contributed to this success and express our gratitude to our customers, whom we have the privilege of serving.

Yours sincerely,

Karl Stöger
Managing Director
for digital transmission

ideas. Accordingly, in order to further existing products and completely new data logging, which plays a significant role many years has offered scalable process also exert a major influence on which not only revolutionised the thus incorporates technologies, The “industry 4.0” megatrend ErP level.

actuator level right up to the parameters from the sensor/ maximise and flexibilise of to the efforts aimed at the op-

programm, is suitable for heavy product rolls up to 4 tons due to the fact that it does not require a turning unit and therefore the installed motor power and related energy consumption. Via the winding drum, the contact pressure and winding tension are exerted ex- tensively onto the roll to be wound, which remains in contact with the winding drum until it is very last layer.

ENERGY-SAVING TECHNOLOGY

Unlike most other contact winders, the appliance power of the contact winder motor does not have to be raised in accordance with increasing roll diameter. This permits a very considerable reduction in both the installed motor power and related energy consumption. In order to create the maxi- mum flexibility required for the processing of differing materials, the drum diameter, which normally works surface driven, can also be equipped with a centre drive as an option.

The new winder series bears the designation W1800 and is designed for roller widths of 1,500 - 3,500mm, a maximum production speed of 500m/min and the handling of roll diame- ter of up to 1,800mm. Depending on the application, a choice is available for cross cutting using a guillotine or a flying knife. Both versions are equipped with a counter support that is mounted in satellite style on the winding drum for optimised cutting geometry. Consequently, the winding drum can be utilised by both heavy composite sheaths as well as flexible paper rolls.
Looking ahead

SML is meeting the PET challenge

EUROPEAN COMMISSION’S ENVIRONMENT ACTION PROGRAMME (EAP)

It is estimated that the world’s oceans already contain some 140,000,000t of waste, a large percentage of which consists of plastic waste, which when subjected to sunlight disintegrate into tiny platelets. These particles then enter our food chain via fish and other sea creatures, and are also to be found in marine mammals such as whales. It is therefore hardly surprising that the global pressure on both the political and business spheres for bans on single use plastics is mounting, or that initiatives such as the European Commission’s 7th Environment Action Programme (EAP), which is intended to help guide the EU response to environment issues and climate change up to and beyond 2020, have been launched.

In view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future in view of these developments, plastic packaging will only strengthen its future

The Ellen MacArthur Foundation suggests a sustainable approach to the plastics loop

- 30% saving by innovation and redesign
- 20% saving by reuse
- 50% recycling with radically improved economics & quality

The second aspect of SML’s approach to the PET issue involves down-gauging and physical foaming. The former may involve the use of a MDO orientation unit, which facilitates the production of films in a thickness range of 15 to 50µm. These have a fine grain crystallinity, which makes them resistant to ageing and heat, but does not affect their transparency and gloss. The layer distribution in a typical MDO PET film is 10 / 80 / 10% with recycled content in the middle layer. The resultant films are suitable for product applications such as food packaging, shrink labels and adhesive tapes.

Key objectives of the EU programme

- Protection and conservation of natural capital
- Transition to a resource-efficient economic system
- Protection of citizens against environmental influences that pose a threat to the human habitat and health

Physical foaming in PET utilising nitrogen or CO2 reduces the raw material requirement by some 40%. Foamed PET is not only 10 to 15% lighter than PS, but in terms of the raw material price, also over 40% cheaper. The end product is employed in areas such as cups or food trays.

SML’s machinery portfolio is targeted on the widest possible production of PET films with a maximum recycled material content, using recycled bottle flake material and other regrinds. An example is PET/PE composite barrier films for food packaging. Another application is PET decorative sheet, glossy or matt structured, with a PETG or APET formulation.

These, and similar statutes worldwide, also envisage the rewarding of manufacturers, who integrate recyclates and recyclability into the design of their packaging, and increase their use of polymers based on renewable resources. A further opportunity that can be seized by means of SML’s sustainable, technological answers to the PET issue.

Events 2018

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Booth No.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERPLASTICA</td>
<td>Moscow, Russia</td>
<td>8.1 / A16</td>
<td>January 23 - 26</td>
</tr>
<tr>
<td>PLASTINDIA</td>
<td>Gandhinagar, India</td>
<td>8823</td>
<td>February 7 - 12</td>
</tr>
<tr>
<td>BREATHABLE FILMS CONFERENCE</td>
<td>Cologne, Germany</td>
<td>March 7 - 8</td>
<td></td>
</tr>
<tr>
<td>PLAST ALGER</td>
<td>Algier, Algeria</td>
<td>March 11 - 13</td>
<td></td>
</tr>
<tr>
<td>PLASTICIS &amp; RUBBER VIETNAM</td>
<td>Ho Chi Minh City, Vietnam</td>
<td>March 20 - 22</td>
<td></td>
</tr>
<tr>
<td>CHINAPLAS</td>
<td>Shanghai, China</td>
<td>April 24 - 27</td>
<td></td>
</tr>
<tr>
<td>HPE</td>
<td>Orlando, USA</td>
<td>W6185</td>
<td>May 7 - 11</td>
</tr>
<tr>
<td>PLAST MILAN</td>
<td>Milano, Italy</td>
<td>Hali 15/C71</td>
<td>May 29 – June 1</td>
</tr>
</tbody>
</table>