TECHNOLOGY report

SML

LENZING | AUSTRIA edition no. 14 2/09

EDITORIAL

Karl STÖGER
Managing Director

Dear Reader,

Now that the holiday season is over and the economic crisis is subsiding, I hope that everybody has been able to make the most of the quiet period to gain momentum for a strong finish to the year and a vivid future. Recent surveys reveal a careful and optimistic outlook on behalf of the industry which we share. A lot of activities are scheduled for this autumn which shall most certainly give us the opportunity to get together on one occasion or another.

When acquiring capital goods, a decisive question is the obtainable "return on investment". How soon and how often an extrusion line will be able to earn back its purchase price depends on its productivity and on the total expenditure required to operate the plant over time. That is why energy efficiency is so crucial. With an appropriate machine design and a new drive technology, it is possible to minimize energy consumption considerably. The newly launched EcoCompact stretch film line is a positive example. And so is our new high-speed stretch film line, which both show the lowest specific energy consumption and also needs the lowest possible floor-space per kilogram of film produced. It goes without saying that this is achieved without sacrificing flexibility, ease of operation and the quality of the finished product.

The purchase of advanced machinery of top quality may cost more at the outset but what counts more is how fast a machine will pay for itself. SML goes to a great deal of effort to design extrusion lines for a better return on investment. Let us talk about your projects to find out how quickly a new SML line will pay off.

Yours sincerely

SML goes High Speed

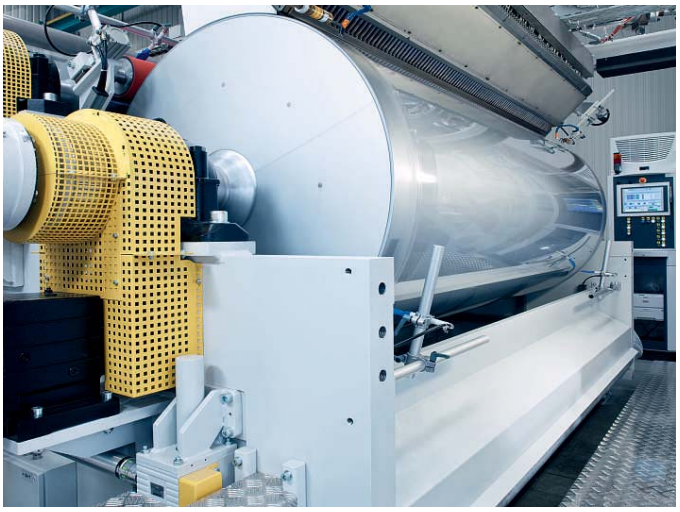
Stretch film up to 1000 m/min

We are glad to inform you that our latest innovation THE HIGHSPEED STRETCH-FILM-LINE has been successfully taken into operation at our headquarters in Lenzing, Austria. We have reached our ambitious goal! SML has developed a compact and energy-efficient 4 up-line that is able to run with the capacity of a standard 6 up-line. Due to its speed potential, the aim is to run a constant maximum output at all standard film thicknesses of between 15 and 23 µm.

Why did SML decide to pursue this development way?

Because we are convinced, that even with high outputs the production of stretch film needs to be flexible in terms of product changes. It is a key priority for us to develop machines that are more efficient in terms of energy consumption and space requirements.

The new high speed line, which is designed for a mechanical speed of 1000 m/min and an extrusion capacity of 2500 kg/h for 5 layers equipped with 5 extruders. Two high speed extruders of the HSE series with a new drive concept feed the main layers and an additional encapsulation extruder guarantees a low neck-in and a good edge stability at high production speeds. The HSE extruders are able to process standard raw materials from C4 up to C8, as well as metallocenes in the best melt quality, which allows the high line speed and additionally the production of very thin films down to 8 µm. Regranulate from edge and bleed trims and start-up rolls can be processed up to 100%. Due to the short residence time of the polymer in the extruder, quick material changes are possible. Compared to a conventional extruder with the same capacity, the HSE extruder has lower energy losses because of its compact design.



Chill roll unit

High Speed Stretch-Film-Linie installed for demonstration at SML, Austria

Also the downstream equipment with a large chill roll with a high diameter, high-life and cut-resistant surfaces on all film guiding rollers and the proven turret winder type 4000 for machine rolls guarantee constantly high production speeds.

Martin KALTENECKER,
Head of Sales Department

For technical applications and food packaging

Modern Extrusion Coating and Laminating Line

How does one react quickly to changing market requirements? SML has built a modular high-tech extrusion coating line, which is flexible in terms of the product type and web width and which can be operated with a minimum of manpower.

Various products such as cardboard, paper, fabric, non-wovens, film and aluminium foil down to 6.35 µm can be processed on the line.

Two fully automatic shaftless turret unwinders, adjustable in width from 750 to 1600 mm, give the flexibility to produce either a single layer coated product or a laminate structure. They can handle roll diameters of up to 1500 mm with different diameters of cores. Due to the new and unique cutting system, bi-directional unwinding and splicing can be done at full production speed. New substrate rolls can be handled by a hydraulic lifting table or a crane system so that a minimum of manpower is required for roll handling.

Fully installed line in SML premises

Corona treatment stations for both substrates with ceramic rollers and ceramic electrodes ensure a perfect bonding strength also for conductive materials such as metallized films or aluminium foil.

The laminator uses a quick-coupling system and a separate integrated crane runway for the quick exchange of the large-diameter chill rolls with different surfaces.

The 120 mm main extruder mounted on a height-adjustable carriage and equipped with a 4-component gravimetric batch dosing system provides a maximum extrusion output of 850kg/h. A later expansion with an additional 75 mm extruder for co-extrusion is already foreseen.

An automatic die with an internal deckling system combined with a radiometric dual-frame differential thickness measuring system guarantees excellent thickness profiles even for coating layers down to 8 µm.

The finished product is wound on a turret winder which is equipped with an integrated edge trim and part bobbin cutting system and can handle mother-rolls as well as customized multiple webs.

Customers will appreciate the compact machine design. Due to the modular structure of the line, customers will successfully grasp market opportunities and will be able to adjust to the changing requirements of the market in the future.

Mario HÖLLNSTEINER,
Product Manager Coating

GC/90V,60RH,60RH/1050/40

WE ARE ABLE TO OFFER A REFURBISHED CO-EXTRUSION CALENDERING LINE.

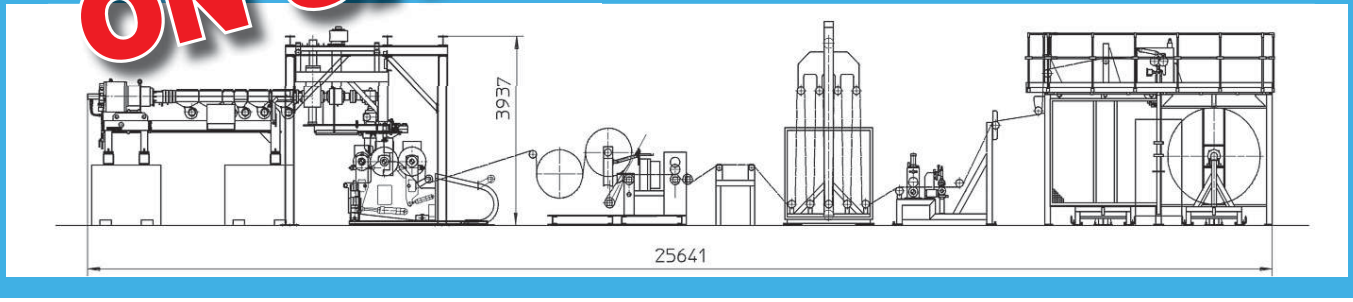
Year of manufacture: 2005/2006 for the most part
Time used: approx. 4700 hours only
Condition: fully reconditioned, almost as new

The machine will be installed in our workshop and can be inspected by November 2009. It is designed for PP and PS thermoforming films. It includes a winder for jumbo rolls up to 2 meter diameter. The thickness range of the 3 layer film is 500 to 2000 microns.

Technical Data:
extrusion capacity: 900-1200kg/h, width of die: 1025 mm, mechanical speed: 40 m/min

- extruder A HSE90V/33D, extruder B 60/31D, extruder C 60/31D
- 3 layer feedblock and manual die made by Cloeren, calendering unit with high cooling capacity and a post-cooling unit
- winder W501/E/1000 with A-frame trolleys.

ON SALE



A challenge for machine manufacturers and sheet producers alike

Coextrusion of Barrier Sheet

The general change in peoples' eating habits in recent years means that more and more food is being offered by supermarkets pre-packed and divided into portions. This is mirrored by a greater need for packaging film with a barrier layer. In the minimum design with 3 extruders, films and sheet can be produced with 5 layers. Film producers who do not satisfy with simplistic approach find a reliable partner in SML who knows what is important and builds "tailor-made" lines to suit customers' requirements.

This year SML commissioned several lines for 9-layer composite sheet for customers. Extensive and precise planning is of prime importance when it comes to arranging and connecting e.g. 8 extruders and melt pipes around a feedblock without this leading to chaos. But why use 8 extruders when 3 are enough? One extruder is for the barrier layer. If PA is needed in the composite in addition to EVOH, a second extruder is necessary for this. An adhesive layer is required on both sides to prevent the barrier layer from separating from the main layers for which one extruder suffices. It is vital that the EVOH and adhesive are "gently" processed and precisely metered out. The recirculation of regrind from edge trims and skeletons from the thermoforming process is the basis for the two main layers. If the upper and lower side of the sheet are to have different colors, 2 extruders are needed for this. Then 2 further extruders for the virgin outer layers are required. For special sheets there might also be a need to place a "functional layer" (e.g. a peel layer) on one of the two sides for which another extruder is required. This already brings us up to 7 extruders to produce a "sheet composite". To save on material costs (EVOH, adhesive, additive), the composite can have homogeneous, non-dyed, encapsulated edges consisting of a lowgrade PP. For this we need extruder number 8.

The individual layers of material are placed one on top of the other in the feedblock and formed to the corresponding width in the die. It is important that the individual layer thicknesses are as regular as possible across the width of the sheet. The uniformity of the individual layer thicknesses can be optimized further by profiling the distribution pins which influence the material layers in the feedblock.

Post-cooling roller unit

Polishing process - high efficient and precise

The melt emerging from the die is calendered and cooled in a 3-roll calendering unit. It is important that not too much pressure is exerted on the sheet so as not to damage individual material layers in the compound. The possibility to be able to measure the actual pressure really applied to the sheet in-line, is a considerable help for the production of sheets of optimum quality. Since 8 extruders can process a correspondingly large amount of material, post-cooling rollers are arranged directly after the calendering unit to cool thick films down in an even manner.

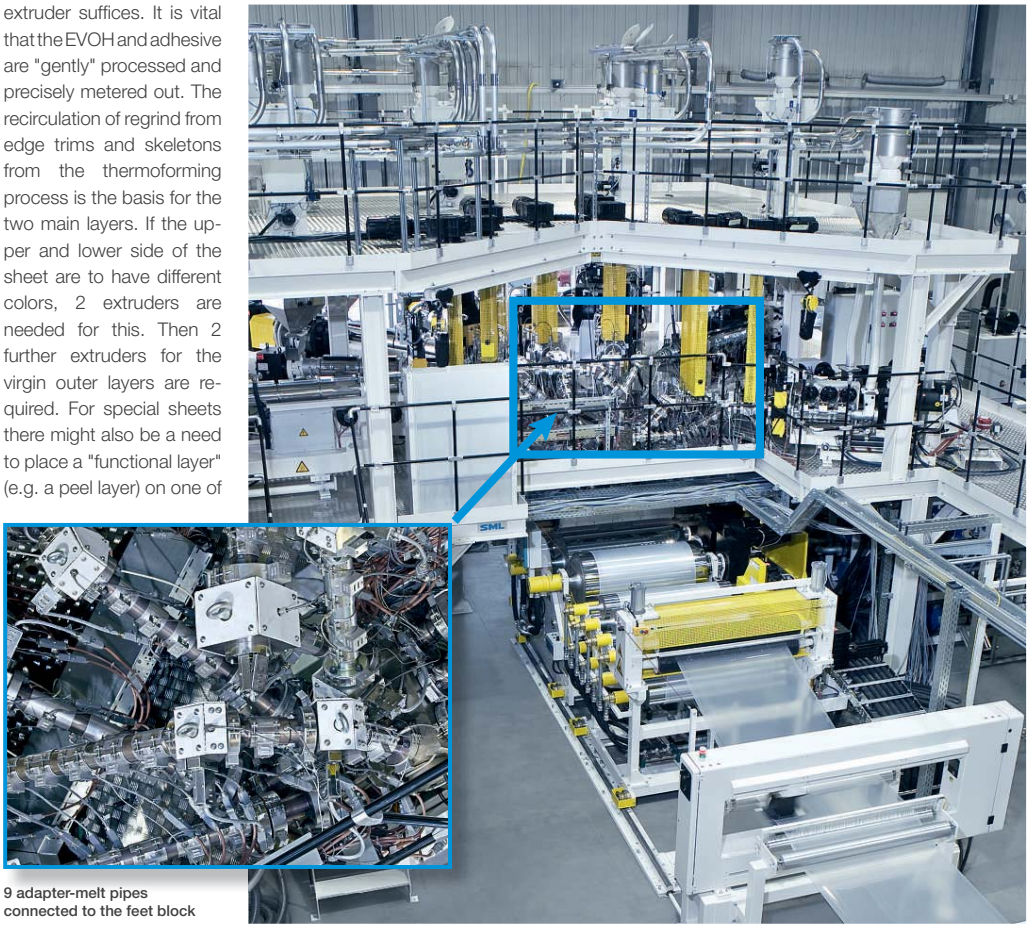
After the edge trimming, the sheet is wound on winding carts to jumbo rolls with a diameter of 2 meter. This is extremely economical particularly when these jumbo rolls are further processed in-house on thermo-forming machines. Compared to a roll with a diameter of just 1 meter, these jumbo rolls can take up to four times the amount of sheet which naturally reduces the down-times for roll changes in the process which follows.

Instead of a long row of switch cabinets, the electrical equipment is assembled together in a large and central electrical container.

SMILE - a control system which make the operators "smile"

The overall line, from the extruder through to the winder, is controlled via the "SMILE" control system from SML. In addition to all of the advantages this control system offers in terms of service and data logging, care was also taken to ensure the utmost user friendliness. Thus the operator can detect very easily on the screen what settings are necessary for the 8 extruders and the roll speed so as to attain the layer thickness ratio of the composite sheet which is required.

Roland HÖRLESBERGER,
Product Manager, Sheet Extrusion



9 adapter-melt pipes connected to the feet block

High Speed extruder

"EcoCompact" – An Energy-Efficient Extrusion Line

SML succeeds with an innovative and intelligent package of measures in something that was considered to be a conflict of goals: The reduction of electricity consumption on an extrusion line while enhancing product quality and raising the extrusion output. The measures taken are many and diverse and have been realized in the stretch film cast line named **"EcoCompact"**. They range from optimized screw geometries, the use of special AC asynchronous drive systems with water cooling, modular twin drive gear boxes, featuring a high degree of mechanical efficiency, and last but not least a holistic approach towards energy management. The central goal behind these measures at any time was to improve the amortisation of the extrusion line by reducing operating costs through minimizing the energy input. Yes, the SML high speed extruders, series HSE, as installed on the **EcoCompact** line are said to be remarkably efficient with regard to the energy consumption. We have taken this extruder 90/33D HSE to the engine test bench and have put the rule to the test.

The result is this: 950 kg/h LLDPE film output at the die with a measured electrical power consumption of only 250 kW/h. This is about 0.26 kWh per 1 kg LLDPE melt. GREAT NEWS.

If this extruder was a refrigerator, it would be rated in energy efficiency class A++. If this extruder was an investment product, its performance would earn a triple AAA rating.

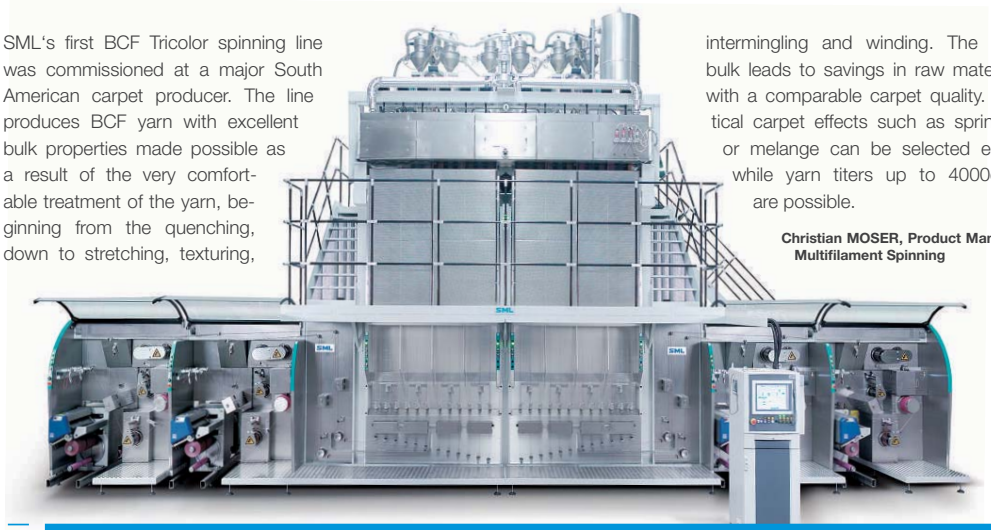
Robert PREUNER, Head of R&D Department

Good News at Challenging Times

We would not be honest if we said that the global economic downturn has no influence on the textile machinery division of SML. Nevertheless, in the first three quarters of the year 2009, the sales of AUSTROFIL spinning lines exceeded expectations.

It is particularly gratifying that all of the AUSTROFIL line types were placed on the market. This relates to the FDY, MDY, POY and BCF lines. Recently SML's first BCF Tricolor spinning line was commissioned at a major South American carpet producer. The line produces BCF yarn with excellent bulk properties made possible as a result of the very comfortable treatment of the yarn, beginning from the quenching, down to stretching, texturing, intermingling and winding. The high bulk leads to savings in raw materials with a comparable carpet quality. Optical carpet effects such as sprinkles or melange can be selected easily while yarn titers up to 4000dtex are possible.

Christian MOSER, Product Manager Multifilament Spinning



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EVENTS 2009/2010

EVENT	LOCATION	DATE
SML GOES HIGH SPEED	Lenzing, Austria	Oct 14 - 15, 2009
SAUDI PPPP	Riyadh, Saudi Arabia	Oct 18 - 21, 2009
STRETCH & SHRINK FILM CONFERENCE	Atlanta, Georgia, USA	Oct 26 - 27, 2009
M-PLAS	Kuala Lumpur, Malaysia	Nov 04 - 07, 2009
ICE	Munich, Germany	Nov 24 - 26, 2009
PLASTEX SIBERIA	Novosibirsk, Russia	Dec 1 - 4, 2009
INTERPLASTICA	Moscow, Russia	Jan 26 - 29, 2010
PLASTICS & RUBBER	Ho Chi Minh City, Vietnam	March 17 - 20, 2010
PLASTIMAGEN	Mexico City	March 23 - 26, 2010

IMPRINT

Publisher: SML
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AUSTRIA
Phone: +43 7672-912-0
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e-mail: sml@sml.at, http://www.sml.at
© Date: 30.09.2009
Editor–in-chief: Susanne KOHLBERGER
Marketing Manager, e-mail: kos@sml.at

Printing: Kroiss & Bichler GmbH & CoKG, Römerweg 1, A-4844 Regau, office@kb-offset.at