

mpm also Shows its Strengths in Extrusion Technology

Synergy. For the first time, Krauss-Maffei Extrusionstechnik, Munich/Germany, and Berstorff GmbH, Hanover/Germany – both of them part of the mannesmann plastics machinery Group (mpm) – staged a joint Extrusion Forum in Munich.

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With the presentation of a large number of innovative exhibits and a high-calibre lecture program, the forum attracted around 1200 participants. It was also attended by thirty partner companies as co-exhibitors.

Graziano Parisi, Managing Director of Krauss-Maffei Kunststofftechnik GmbH, and Manfred Reichel, Managing Director of Berstorff GmbH, gave the trade press an overview of the market situation and introduced the main exhibits. In the mpm Group, extrusion technology accounts for sales of around EUR 200 million and is to be further strengthened by future take-overs. In recent years, both companies have gradually transformed themselves from machine builders to competent systems suppliers and development partners.

Development of the World Markets

Although there is little overlap between the product portfolios of Krauss-Maffei and Berstorff, the markets are fairly similar. Krauss-Maffei, for example, is heavily dependent on the construction industry. Graziano Parisi said: "In central and western Europe, the market situation in the construction industry is dramatically poor. We are not expecting any significant improvement for 2004 either. Fortunately, this is partly compensated by other markets. In the United States, we are experiencing a recovery and have returned to the level of 1998. The eastern European markets have gathered momentum and Russia, in particular, is importing large quantities of windows from western Europe. Production lines are also gradually being installed there. China has enormous potential in the field of extrusion, and, by 2010, plastic window frames will have a

market share of at least 50 %. We also see significant rates of increase in Southeast Asia, but based on a very low level. In South America, the market collapsed after the financial crisis in Argentina, but there is now a slight upswing with windows."

Berstorff, too, is not waiting for the regular markets of Europe and North America to pick up again, but is stepping up its activities in Russia and China. Manfred Reichel: "The economic situation in the countries of the former USSR has improved appreciably, and is characterised by growth. In the field of plastic and rubber processing, we see particularly high potential with expanded insulating materials for the construction industry and the production of TPE materials. Other important target markets for us are the manufacturers of rubber profiles, conveyor belts, the tyre industry and, of course, the compounders. We regard the growth potential in the eastern European countries – in particular the nations about to join the EU – as similar to that of the CIS countries. Another important growth market for us is the Asia region, above all China. Based on a current AMI study, we expect a rise in total global plastic consumption by 2005 of 5.1 % on average. China tops the list in this study with a growth of 6.8 %."

A Sensation for Pipe Extrusion

With the QuickSwitch system, Krauss-Maffei has come up with a major innovation: For the first time, it is now possible for pipe manufacturers to change the dimension of the pipe without halting production. The advantages are enormous: Lower investment, fewer operators, less production rejects and cuts in warehousing costs. Existing extrusion lines of all makes can be retrofitted and made considerably more economical. The system is already being used very successfully on the production line by the development partner, Egeplast, Greven/Germany. A Quick-

Switch line, KM-QS-B, for the production of PE pipes with a diameter of between 70 and 160 mm, was showcased at the Extrusion Forum. (A detailed article on this technology appeared in the June edition of *Kunststoffe plast europe*.)

New Extruders with Defined Features

The new XS series of single-screw extruders from Krauss-Maffei was developed above all for basic applications and for line integration in the lower output range of pipe and profile extrusion. They offer high performance for a comparatively low investment (Fig. 1).

Despite the favourable price, the manufacturer claims to have made no compromise on quality: For manufacturing the XS extruders, the same components are used as are employed for the proven standard machines of the KME series.

From the process engineering point of view, the new single-screw extruders are noted above all for their high efficiency and process reliability. All the machines come as standard with the proven, modular C4 line control system, which meets all requirements regarding automation, process data recording and production reliability.

Profile Extrusion with Broad Program

The new 32D extruder generation for profile production was also presented. Through the longer process unit and a new screw geometry for the twin-screw extruder, melt homogeneity has been improved and the processing window expanded (Fig. 2). All in all, this technology is a step further in the direction of even more stable, high-quality profile extrusion. The demonstration featured the production of a window profile on a KMD 90-32 extruder.

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Krauss-Maffei and Greiner Extrusionstechnik GmbH, Nussbach/Austria, have been cooperating in the field of profile extrusion since K '92. The latest joint product is VisionLine, an inexpensive, compact standard line for window profiles that is equipped with a control system for the entire line.

The extruder, die and downstream equipment are geared perfectly to each other. The innovative central connection system makes it possible to make a tool change very quickly indeed. If desired, the die can be optionally equipped with a quick-action coupling mechanism. The platen and the tanks are an integral part of the line and thus only need to be purchased once.

The modular structure makes it possible to adapt the system flexibly and individually to the particular needs, with plenty of scope for subsequent expansion. The units are equipped with Krauss-Maffei extruders having an output in the range of 80–180 kg and 200 to 320 kg. They can produce profiles with a width of up to 150 mm and a height of up to 120 mm. The lines are equipped with either a saw or a cutter. The extrusion line is particularly space-saving with an overall width of just 850 mm.

Sheet Extrusion on the Increase

Krauss-Maffei has traditionally been strong in sheet extrusion, above all in the PVC sector. Through the setting up of KMB Seide Technology GmbH, Buchholz/Germany, Krauss-Maffei is now gaining comprehensive know-how with sheets of other plastics such as PP, PE, ABS, HIPS, PMMA and PC. At the Forum, the company showed a KMD 164-32, a unit for manufacturing PVC sheet with an output of up to 1500 kg/h.

Expansion of Expertise in Film Lines

Following the establishment of KMB Seide Technology GmbH as a fully owned Berstorff subsidiary, synergies are opening

up both for Berstorff and for KMB Seide which will enable the two companies not only to intensify their activities in the traditional market segments, but also to jointly tap new areas. With the new set-up, they can now handle customers that want technical film and high-grade thermoforming sheet as well as standard thermoforming sheet, sheets and speciality film. Apart from its ability to deliver complete film extrusion lines, a particular strength of KMB Seide is its highly developed calendar technology. This covers not only horizontal and vertical standard calendars but above all the patented planetary calendar, which was also shown at the Extrusion Forum (Fig. 3). This planetary calendar with its variable arrangement of rollers – plus the possibility of varying the position of the third roller in relation to the first two – makes it possible to optimally design the cooling processes via the contact area with the roll surface. On this basis, it is possible to produce high-grade film and sheets in a broad thickness range even with critical materials.

Underwater Pelletiser

With the Compact Pelletizer CP 40-60, Berstorff has added another model size to its underwater pelletising system. Designed for a throughput of 150 to 1500 kg/h, the CP 40-60 can be combined with twin-screw extruders of sizes ZE 40 to ZE 60. The prototype was presented in combination with a ZE 40 UTX twin-screw extruder.

All the main functional features of the CP 25 have been transferred to the bigger machine (Fig. 4). The CP 40-60 is thus designed with a swing-aside pelletising head, articulated pipeline and the head tilted to one side. As a result, the space ahead of the extruder is entirely accessible, simplifying the task of changing the cutter plates, carrying out cleaning work and starting-up. The proven system of fixing the cutter plate with a cap nut has also been taken on board. These two technical innovations reduce the production downtime for a change of cutter plates to less than two minutes.

The geometry of the connecting flange at the feed end is adapted to the bore of the particular extruder and, with this machine, too, is designed in such a way that the screw, after dismantling the cutter plate, can be drawn through the passage of the melt of the pelletiser. Separate dismantling of the pelletiser in advance is no longer necessary. The system is controlled via Berstorff's own process control system with the aid of the existing PLC and the control unit of the extruder.

PET Recycling without Predrying

A further subject was the economical processing of non-dry PET with an initial residual moisture of up to 5000 ppm. For this task, Berstorff offers the co-rotating twin-screw extruder in the sizes ZE 40A to ZE 155A. Through its design with Ultra Torque (UT) – and, connected with this, the high torque levels that can be transferred – the shear and heat-sensitive PET material can be optimally processed at low speeds.

Berstorff's ZE twin-screw extruders can process a broad range of PET materials: From end-of-use PET packaging and production scrap to the processing of virgin PET material, e.g. for direct extrusion into films or fibres. ■

Portrait 1. Graziano Parisi, Managing Director Krauss-Maffei Kunststofftechnik GmbH

Portrait 2. Manfred Reichel, Managing Director Berstorff GmbH

Fig. 1. XS extruder from Krauss-Maffei for economical pipe and profile extrusion

Fig. 2. Krauss-Maffei's 32D twin-screw extruder with its longer process unit and a new screw geometry

Fig. 3. Versatile calendar: the KMB Seide planetary calendar

Fig. 4. The Berstorff Compact Pelletizer as a laboratory version CP 25