Pilot plant presentations were the highlight of the event for most of the numerous participants (photo: Leistritz)

Close to the Limit

Workshop. A new visitor record was set at Leistritz Extrusiontechnik GmbH's Compounding Workshop 2008 with more than 160 participants. Given the economic situation, this was a pleasant surprise for both the machine manufacturer and its speakers.

At first glance, the papers and presentations did not seem to offer anything new. Glass fiber-reinforced compounds, formulae with increased calcium carbonate content ($CaCO_3$) or the processing of shear-sensitive materials may well be demanding tasks for compounders, but in no way novel if seen by themselves. The clue among these applications lies in the fact that, no matter how different the demands they place on processing: They can all be produced in high quality on one and the same machine type.

With their new ZSE MAXX line of machines, the developers have killed two birds with one stone. For one thing, the machines in this series have a D_a/D_i cross-sectional ratio of 1.66. Compared to the manufacturer's ZSE-HP series, this results in 30 % greater free volume in the same size machine. For another, the 15.0 Nm/cm^3 specific torque in their synchronized twin-screw extruders is matched nowhere. Thanks to these features, this series is suited both for volume as well as limited torque processes.

Translated from Kunststoffe 2/2009, p. 24
Article as PDF-File at www.kunststoffe-international.com; Document Number: PE110061

Highlight Pilot Plant

Together with BASF SE, Ludwigshafen, Germany, Leistritz demonstrated the processing of effect pigments (glimmer) in the company's own pilot plant. Their common goal was to find a processing method that would maintain both brilliance and transparency in the pigment particles. Since their lamellar structure makes these pigments very sensitive to shear, there are considerable difficulties involved in processing them on extruders. After experimenting with various machine types, processing parameters and feed systems, the combination of split-feed processing and a twin-screw extruder turned out to be the gentlest way of producing effect granulate.

The advantage of this new machine series lies in its lower mass temperature at unchanged screw speed. Combined with increased torque, throughput can be increased up to 50 % over modern extruders with no loss of product quality.

In order to illustrate the enhanced performance of the new series, the pilot plant performed the compounding of a highly viscous polymer (PE-HD) with a carbon black (CB) masterbatch on a modified extruder of the new series. The actual specific torque displayed by the performance meter on the machine's operating wasn't 15 Nm/cm^3, but only 11 Nm/cm^3. It thereby demonstrated what utilized capacity a conventional twin-screw extruder of the same size would have to have in order to generate the same throughput at the same speed. In fact, due to its lower torque, the conventional extruder couldn't process the high throughput. The comparative results clearly certify that the new machine series has 30 % higher power and up to 50 % more throughput than other machine types.

Participant Limit Reached

Parallel to attending the papers and presentations, many participants took the opportunity to inform themselves in detail in one-on conversations about applications and machine technology. Marketing Manager Richard Steiner emphasizes that, too: "On the scale we have achieved with the event, it can be hard to give participants enough time to discuss details in expert discussions. That is why we regard the large number of participants with mixed feelings."

Andreas Stein

