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Profiling energy savings

- Molding opportunities surge in subcontracting
- Potable-water market growing for PE, PVC pipe
- Injection quality control is designed for economy
- Focus: Color measurement

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of 25% coming into effect in 2001.

MeB is applied to the soil under film covers, but conventional PE films offer little barrier to the gas, which quickly escapes to the atmosphere. Growers tend to apply extra-large doses to the soil to overcome this problem.

However, barrier film structures containing EVOH or nylon can be used to reduce the required dosage

levels. Tests at the Volcani Center have shown the gas still to be present after five days, even with spray levels of one third the normal dose. Normally, the gas escapes within 24 hours. Two films have been tested in Israel, one from the Lawson Mar-don Group, ◀382▶ part of Lonza in Zürich, Switzerland; the other from Plastopil Hazorea, Kibbutz Hazorea. ◀383▶ —Peter Mapleston

MPI, 38) was flawed, he decided. Now, with his latest design (see drawing), the inventor is confident that he has a resolution that is as fault-free as one can get.

"This design is the simplest, lowest in cost, and most accurate," he asserts. Now, Ziv-Av says, he is looking for a company to build it.

Benefits detailed. The fixed platen is mounted to the vertical sections of two L-shaped frames, and also to the main frame of the machine. The clamp mechanism is mounted on the main frame, but the moving platen runs along the horizontal sections of the two L-frames. Any deformation in the main frame would have no effect on the position of the moving platen, which has a flexible link to the clamping mechanism, Ziv-Av states. He adds that this mechanism can be hydraulic or toggle.

One advantage for the design, Ziv-Av claims, is that there is no need for elastic compensation in the machine frame. Also, linear bearings are rigid and never lose contact with the moving platen. Moreover,

INJECTION MOLDING

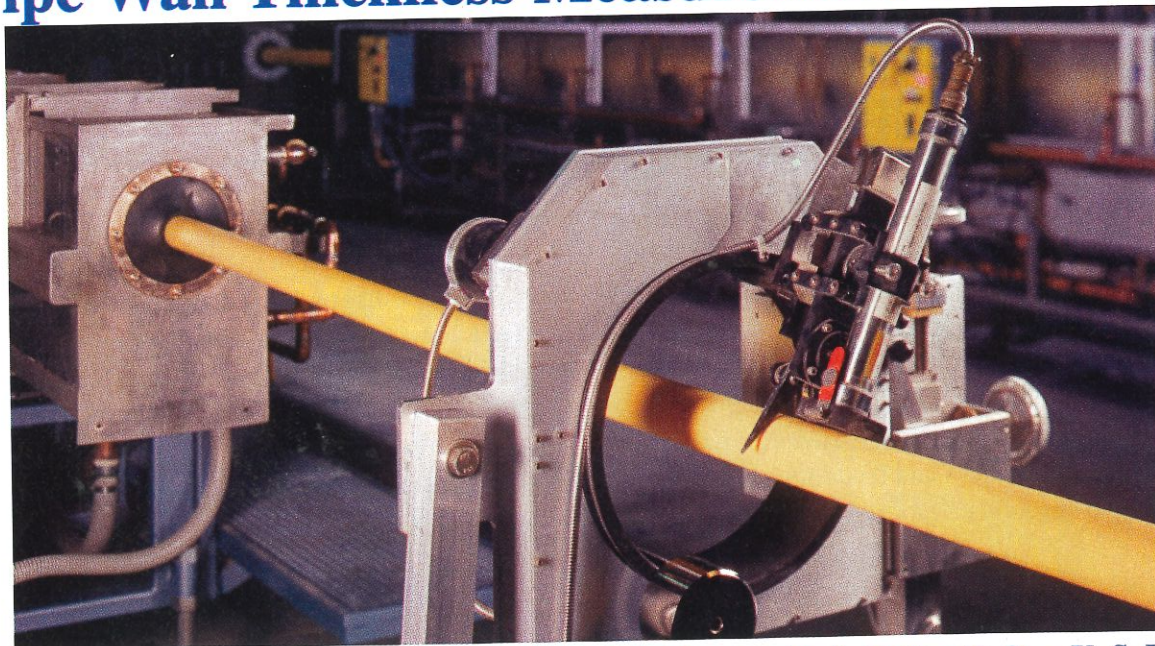
Inventor offers 'fault-free' design for tiebarless units

Amir Ziv-Av, head of Ziv-Av Engineering in Or-Yehuda, Israel, claims that he has examined every current design of the tiebarless injection molding machine, and has concluded that each one is flawed in some important way. Ziv-Av's judgment includes his own initial design.

According to Ziv-Av, one design would lose accuracy with time, another created too much friction at key pivot points, a third had an excess of mechanical elements that over the long haul would require costly maintenance. And so on.

Even the revised design Ziv-Av had patented earlier this year (Jun

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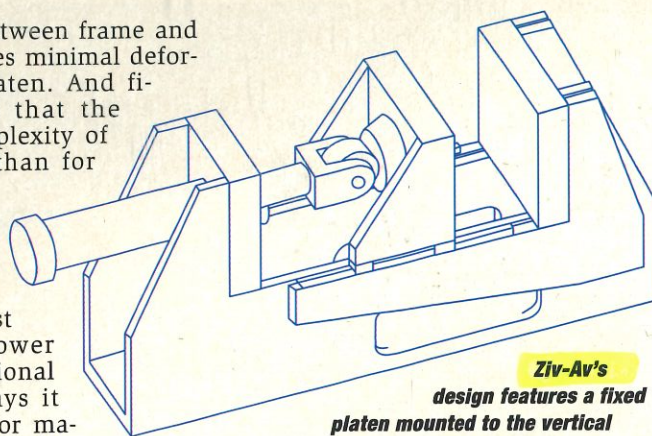


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the connection between frame and fixed platen creates minimal deformation in the platen. And finally, it is said that the number and complexity of parts are lower than for all competing designs.

Ziv-Av reckons the cost of making machines based on his latest design will be lower than for conventional units. And he says it should be valid for machines of up to around 5780 kN. —Peter Mapleston



Ziv-Av's
design features a fixed
platen mounted to the vertical
sections of two L-shaped frames and also
to the machine's main frame.

INJECTION MOLDING

Plunger press achieves shot volumes that exceed 21 L

Shot volumes of over 21 L are said to be attainable with just 650 tonnes of clamping force on an injection compression molding press developed by Meiki Co., Ohbu, Japan. The machine employs a novel accumulator injection unit. The injection press unit typically operates with an initial parting line clearance of 1 to 2 mm, and injection pressure is limited to 750 kg/cm², less than half that of conventional injection presses. ◀384▶

Meiki developed the machine jointly with processor Aronkasei Co., Tokyo, which is using it to mold tabletops, man-hole covers, trash bins, and other thick-walled, large parts.

Gentle processing. Low injection pressure limits minimum part thickness to about 4 to 5 mm and precludes the machine's use for high-precision technical parts. Nevertheless, the unit is said to produce components with less molded-in stress, to facilitate insert molding, and to allow the use of less-expensive tool steels.

In Meiki's DC2250/22 machine, both the screw and barrel of the injection unit act as the plunger, a mechanism the company terms an in-line plunger. This enables "first-in, first-out" injection of the resin, says Kouichi Sakai, executive director of Meiki. This type of setup is said to be especially suited to heat-sensitive resins such as PVC.

To further enhance temperature

control, the outside surface of the barrel section that is exposed to the accumulator walls while it functions as a plunger incorporates a series of microheaters. This is in addition to the heaters and thermocouples employed to heat the accumulator itself.

The design of the plunger system also allows for quick cleaning and material changeover, according to Sakai. The accumulator can be swung open after retracting the screw from the barrel to fully expose the interior, which can then reportedly be cleaned within 30 minutes. This compares with the five hours Meiki says is required to clean most conventional plunger-type injection units.

Mold costs plunge too. Besides a lower clamping force, an additional benefit of low injection pressure is the ability to use less-expensive mold steels, says Sakai. Aluminum molds weigh only 30 to 50% of equivalent steel molds, and cost 20 to 60% less. Even when using standard mold steel, Meiki says a lighter mold results in cost savings of at least 30%.

The DC2250/22's footprint measures 14 x 4.3 m, almost the same as Meiki's conventional injection molding presses. But smaller hydraulics means the press is 20% less expensive. Platens measure 2550 x 2250 mm. Meiki says a 1300-tonne press capable of injecting a shot weight of 44 kg is under development.

—Stephen Moore

EXTRUSION

Blown-film upgrades and coex calender make debut

Some people just can't wait for next year's K'98, the world's largest plastics and equipment fair, scheduled to be held in Düsseldorf, Germany, Oct. 22-29, 1998.

Last month, two European suppliers of equipment for blown and cast film production decided to unveil their newest products. While the show-and-tell sessions mostly expanded on earlier announcements, the previews were clearly intended to get a jump on the competition. The companies involved are Windmüller & Hölscher, ◀385▶ in Lengerich, Germany, and SML Lenzing Maschinengesellschaft, ◀386▶ Lenzing, Austria.

At its event, W&H unveiled a second-generation version of its air ring Optifil P2K non-contact automatic film-gage system. The supplier expects the device to provide benefits for processors using tacky metallocene-catalyzed resins. The company, whose U.S. operations are in Lincoln, RI, is aiming its modular and highly durable gage system at the retrofitting market for both its own and competitive film equipment. A first-generation, prototype version of Optifil was shown at K'95.

Precision film cooling. Klaus-Peter Voss, W&H's technology director for extrusion, says 90% of all film-tolerance problems occur when heat differentiations in excess of 3°C in the melt exist coming out of the die. Unlike competitive systems, the W&H system selectively influences the cooling air temperature rather than the cooling blown air volume against the bubble skin. This is said to allow an even air current to hit the bubble wall.

W&H also introduced non-contact, film-feeding, air-turning bars and guide rolls for the oscillating haul-off. These are designed for sticky and dull films or webs with tacky surfaces (e.g., protective films). The proprietary system includes specially shaped turning bars designed to form an air cushion at