

# Thermal compensation lifts extrusion quality

Hungarian blown film producer DR-Pack claims to have improved homogeneity and reduced defects in its production through an internal development programme focused on improving thermal distribution in its extruders.

The company says it initiated its own development after failing to find adequate solutions in commercially available extruders. "We have not encountered any machinery producer that has started to deal with the problem of homogeneity already in the extruder itself," said a DR-Pack spokesman.

"Instead of that, they all want to make a film with approximately consistent thickness through compensation for the inhomogeneous material flow with inhomogeneous application of cooling air."

DR-Pack claims that by applying a number of thermal compensation units to the barrel it has almost eliminated inconsistency in temperature.

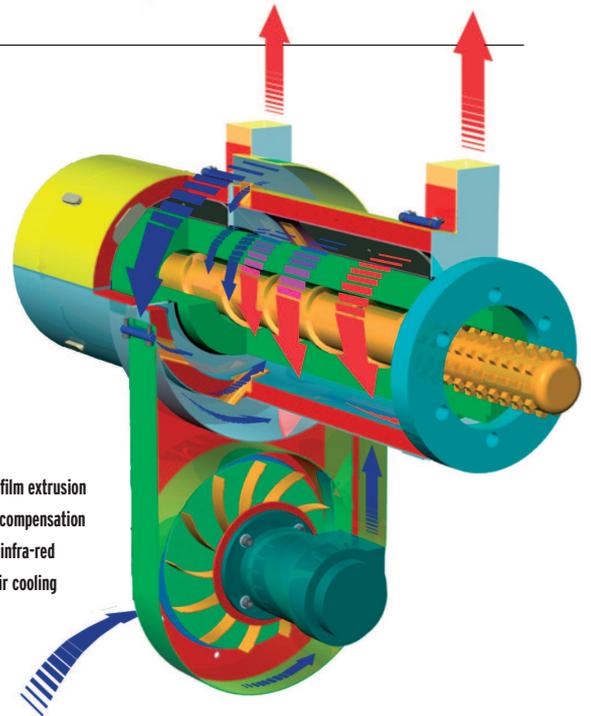
"The heat distribution of the screw block is almost ideal and that can lead to significant improvement in stability", the company claims.

Each thermal compensation unit is comprised of a ceramic infra-red radiator located at a defined distance from the screw surface, which radiates heat in towards the screw block. Fans are used to blow cooling air through a spiral pathway between the block and the heater.

The company says in a conventional system melt temperature is adjusted externally. However, poor homogeneity arises during cooling as air is introduced on the lower side of the barrel, resulting in less effective cooling of the upper side. There is also variation during heating as one thermocouple switches on a block of heating elements.

The conventional situation is made worse, says DR-Pack, because a large amount of insulation is needed to prevent

DR-Pack has improved film extrusion by developing its heat compensation system using ceramic infra-red radiators and ducted air cooling



heat loss. This reduces the effectiveness of air cooling and causes slow thermocouple reaction. The company says the result is a temperature deviation of as much as 70°C within one zone, leading not only to inconsistency but some bending of the screw block as well. It has measured screw block shifting of as much as 1.8mm, which it says must accelerate screw wear.

Application of its thermal compensation approach has resulted in more consistent film properties and has made it possible for DR-Pack to tighten specification limits to save raw materials.

While it has developed the technology for its own film

production, it says it sees no reason why heat compensation units should not be applied on any extruder used in an application where polymer melt must be maintained at a constant temperature.

In an associated development, DR-Pack has also optimised its extrusion drive systems with the use of planetary gear drives, which it claims avoid problems caused by excessive load on motors and screw blocks. The company believes its planetary gear solution avoids the uneven loading of belt drives while providing a more compact solution than conventional direct drives.

[WWW.DRPACK.HU](http://WWW.DRPACK.HU)

# Laser system speeds wine cork marking

DSM's Micabs innovation centre has teamed up with German tampon pad printer Tampoprint to develop a new system for producing laser marked plastics wine corks at rates up to a 45,000 units an hour.

The system, which is currently limited by feeding equipment performance rather than marking speed, uses Tampoprint's Alfalas marking equipment and is designed

around DSM Micabs' laser sensitive masterbatch. The DSM Micabs technology uses laser-active inorganic particles that change colour to a dark grey under laser exposure, giving high definition marking irrespective of the type of polymer.

Aside from high speed, the laser marking technique provides the benefit over

DSM Micabs has partnered with Tampoprint to develop the market for laser marking of synthetic wine corks



traditional cork printing methods in that no pre-treatment is required, and there is no need to handle inks or clichés. Masterbatch addition levels of between 1-5% are typical.

With plastics corks accounting already for 20% of the market, DSM Micabs business manager Hugo Schoot sees great potential ahead.

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