



The preform layers are measured all around by coherent infrared light within 25 seconds

Inspecting barrier layers in transparent and coloured translucent preforms

Non-destructive measurement

The LayerWatcher by the German company Intravis GmbH is able to visualise the structure of layers in preforms, using measurements with infrared light. The non-destructive imaging device delivers an accurate picture of a virtual cut through the preform wall. Intravis presented the LayerWatcher at the K show at the booth of Husky Injection Molding Systems S.A.- a good opportunity for PETplanet to speak to the managing director of Intravis, Dr Gerd Fuhrmann.



Dr Gerd Fuhrmann, managing director of Intravis GmbH

Gabriele Kosmehl: Dr Fuhrmann, your new development, the Layer-Watcher, is a system for the inspection of multilayer preforms. Can you please explain to us how the system works?

Gerd Fuhrmann: The technology behind the LayerWatcher is based on the same principles as known from ultrasonic examinations. A pulse is sent into the material and the echo is analysed. But as we all know from our physics lessons at school, the lateral resolution is a function of the frequency of the probing wave; the higher the frequency the better the resolution. This is the reason for us to use infrared light.

Gabriele Kosmehl: Other systems work with terahertz measuring. What are the differences to your system?

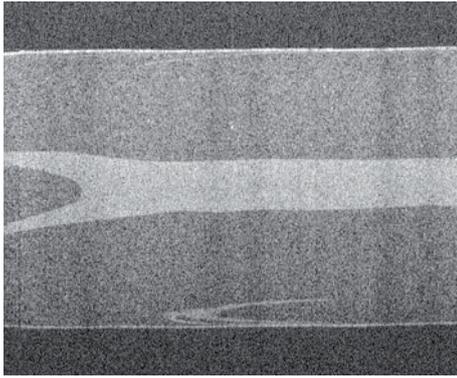
Gerd Fuhrmann: Both systems are based on the same principle. However, terahertz radiation has a much longer wavelength than infrared light. While this affects the penetration characteristics, it also leads to significantly longer measurement times and a reduced resolution, for the reason mentioned above.

A user will first recognise that the LayerWatcher system will give him a high resolution image like he would see it with a microscope when he cuts a preform wall. He will be able to see

clearly even the smallest turbulences of the different materials which form the diverse layers. Terahertz systems measure layer thicknesses at just one point to finally spitting out some numbers. It stays obscure what a terahertz based system will measure in the presence of irregularities, for instance if the flow front of a barrier divides into two flows or shows turbulences. This is especially true as you have to tell a terahertz system for how many layers you are looking before you start. So the method thus involves a kind of guessing about the result before the measurement at all starts.



The LayerWatcher at the K Show: inspecting preforms precisely and non-destructively all around



The Layer-Watcher gives a clear image of a virtual cut of the preform wall. This enables the operator to discover all types of irregularities like a split of barrier layers as in this case.

Terahertz systems measure thicknesses at individual points at the preform; our technology, on the other hand, scans the whole preform. Thus, with a LayerWatcher system, a user can see the flow of the barrier material from the flow front to the trailing edge everywhere in the preform. Even the smallest irregularities are visible in the images. This is an invaluable advantage when setting up the process or ensuring the flawless all-over-quality of a preform with barrier layer.

Gabriele Kosmehl: How does the assessment work? And what happens to the defective products?

Gerd Fuhrmann: Sorting out defective products was yesterday. Today the aim is to produce 100% good quality right away. According to our slogan "We solve problems before they occur" the LayerWatcher will constantly monitor the quality of the barrier layer, taking into account a whole bunch of quality parameters. Feeding back this information into the injection moulding machine, an intelligent control will help to ensure a stable production process even in the presence of external perturbations.

Gabriele Kosmehl: We saw the LayerWatcher at the Husky booth at the K. How does the collaboration with Husky work and at what stage is the development phase currently?

Gerd Fuhrmann: We are linked to Husky through a long-term partnership. What we saw at the Husky booth is just the first step. Converters urge us to fully integrate the LayerWatcher into the production line ensuring the most efficient production of quality barrier preforms. We are working on that.

Gabriele Kosmehl: Dr Fuhrmann, thank you very much for talking to us.

www.intravis.de

At K 2016 Husky was showcasing the Layer Watcher vision inspection system from Intravis in the context of a complete Multi-Layer Barrier experience centre. Husky's latest PET release from the company is the new Multi-Layer Barrier Technology, which offers the opportunity to explore PET as a packaging material for products requiring enhanced barrier properties that are traditionally packaged in materials such as glass, carton and aluminium. The technology is built on the company's HyPET HPP5 platform.

www.husky.co

