

Non-contact thickness measurement and dimension check

Nico Thomae and Fred Vogler review the non-contact thickness measurement and dimension check system developments offered by Germany's VMA.



The VMA factory near Wolfsberg.

VMA GmbH has been a reliable partner for non-contact thickness measurement and dimension check systems in the glass industry for more than 20 years. Founded in 1991 by engineers who had worked in the glass industry for many years, VMA has achieved continuous growth and development. Located near the Thuringian forest, at the heart of Germany, the company enjoys excellent communications to main airports, high speed trains and motorways.

Products and services are provided in the fields of float glass (TMF), container glass (TMC), tube glass (TC) and a recent addition, the pattern (solar) glass (TMP) industry. Together with partners in the field of strain and defect detection, VMA is able to provide comprehensive solutions.

Thanks to its close and direct contact with customers, the company is able to recognise the industry's needs and adapt existing products to suit or transform them into product innovations. Situated close to the Technical University of Ilmenau, VMA can also benefit from the latest trends and technologies.

FLOAT GLASS THICKNESS AND STRAIN MEASUREMENT

TMF is the measuring equipment for the on-line control of float glass lines. The technology can be used both at the hot end and at the cold end. At the cold end in particular, it can be combined with a stress measuring instrument.

Complete inspection systems are available, which are supplied in association with a partner who specialises in defect detection. It is of essential benefit to know the thickness as soon as possible, immediately after forming. The hot end version can take measurements between the discharge from the tin bath and entrance to the annealing lehr. The TMF has frequently been proven at that location and has been installed both beneath and above the glass ribbon. It is always custom-designed and supplied as a turnkey installation.

CONTAINER WALL THICKNESS

With its numerous options and different sensor types, TMC is a flexible and versatile system for the 100% on-line wall thickness inspection of glass containers. VMA offers a modular non-contact measurement and sorting device that works irrespective of colour and shape.

With its different sensor types, the TMC system is able to combine two physical principles (triangulation and chromatic aberration) to suit the specific needs of every customer. Both principles are well established and each has its own advantages.

The latest development in this field is VMA's TMC-C54 sensor system, a smaller and less expensive chromatic sensor, used primarily for non-round containers or inspection machines with strong vibrations or space limitations like CIM/Checkdetector or FP-machines.

TUBE CONTROL

Tube Control is a system which comprises all components for on-line diameter and wall thickness measurement, sorting, automatic control, quality control and defect detection, as well as off-line sample checking and defect detection.

The on-line system for wall thickness or diameter control can be placed in hot end and cold end positions. Heat protection glasses, water cooling and cooling air allow the on-line system to be used at thermally exposed measuring locations within the production process.

The off-line system comprises a rotation bench for the tubes, including wall thickness sensor head and cameras, as well as an electronic unit. The instrument is used for checking rod and tube samples.



Overview of VMA's TMF system for float glass thickness and strain measurement.

Such parameters as diameter, ovality, wall thickness, eccentricity and bend can be measured. Customers in the glassfibre industry in particular upgrade and combine this equipment with a defect detection system from VMA partner JLI.



The recently introduced TMC-C54 sensor system.



Off-line tube inspection system.

PATTERN (SOLAR) GLASS THICKNESS

This business opportunity was created in response to the growing demand for process control during patterned glass production. With their knowledge of glass thickness and other relevant parameters, such as roundness errors at the rollers, customers are able to react to and readjust production and process parameters accordingly, without time losses. VMA provides measurement systems for hot end and also for cold end use. The complexity of these systems is comparable to the company's established TMF systems. ■



Patterned (solar) glass thickness measurement system for hot end applications.

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