

A new sensor at the hot end

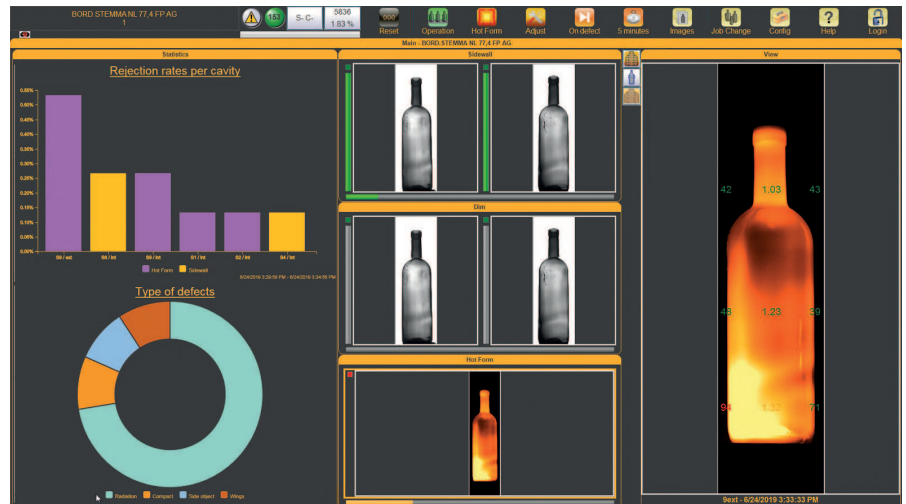
Lucie Jouve* highlights a new range for the hot end which fits in with the Smart Factory strategy.

Tiama has introduced a new module in its Tiama HOT systems range: the Tiama HOT form. In recent years employee turnover has increased in glass manufacturing plants, which has resulted in a loss of know how and experience. Production line equipment equipped with hot end sensors can be a good way of helping operators in their daily work. To fulfill this need, Tiama has developed a new product range dedicated to the hot end: the Tiama HOT systems. This range is composed of four independent modules positioned between the shear cut and just before the annealing Lehr: Tiama HOT mass, Tiama HOT eye, Tiama HOT move and Tiama HOT form, all sharing the same interface and electronics. These modular systems meet specific needs to help customers improve the management of their processes according to their problems. They are filled with sensors collecting data from the gob to the formed bottle. Among them, the Tiama HOT form measures containers' infrared emissivity.

Compact system

The main feature of the Tiama HOT form is to measure the infrared emissivity of articles. This is key information that allows operators to detect glass repartition issues or temperature issues at the early stage of the process, before containers reach the cold end. To do that, the system has to be equipped with one infrared camera (a second camera can be proposed as an option) located in the lower part of a metallic tube to be protected from the heat of articles on the conveyor. And to ensure a full cooling of the system, this tube is air-cooled thanks to a vortex system.

Also, because the space available on the production line at the hot end can be limited, the tube of the Tiama HOT form is directly fixed on the conveyor to limit its footprint on the floor. Moreover, if a customer has already bought a Tiama HOT eye (the module designed for critical defect detection and recognition), the Tiama HOT form camera will be installed in one of the Tiama HOT eye tubes. It

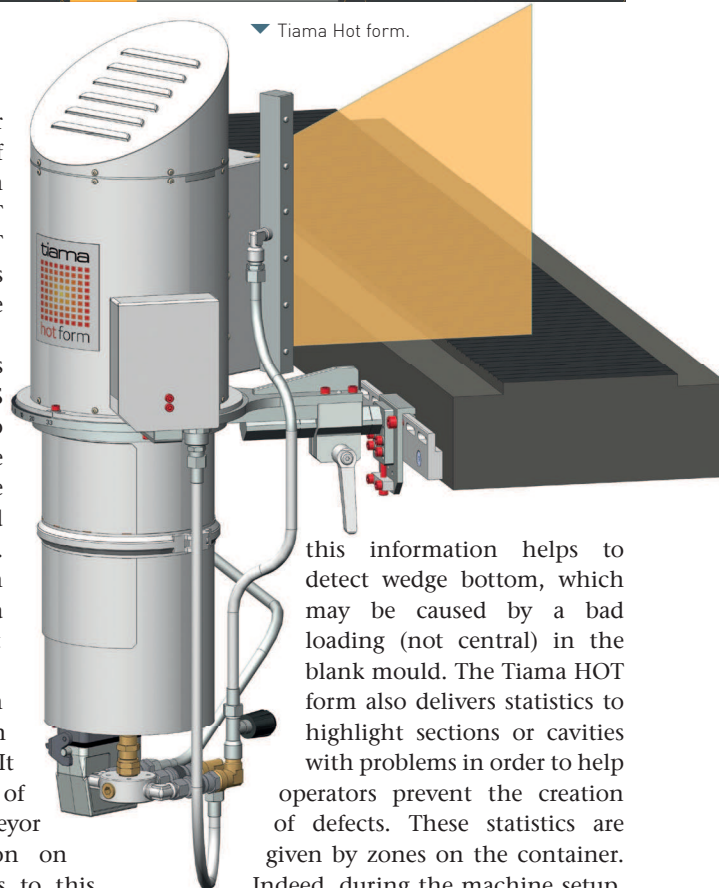


▲ Tiama HOT form and Tiama HOT eye main screen.

means that the customer will have a maximum of two tubes on his line even if he has a Tiama HOT eye and a Tiama HOT form. Also, both systems share the same software interface.

The Tiama HOT form is synchronised with the IS machine. This enables to link the images and the statistics provided by the system to the sections and cavities of the IS machine. Plus, when the system detects a defect on a container it can also reject it immediately.

The Tiama HOT form uses the latest generation of infrared cameras. It measures the radiation of containers on the conveyor which gives information on glass repartition. Thanks to this, the system is able to detect defects such as thin glass which may indicate a problem with blank mould cooling or with glass temperature. The system also provides right/left asymmetries measurements of articles. For example,



this information helps to detect wedge bottom, which may be caused by a bad loading (not central) in the blank mould. The Tiama HOT form also delivers statistics to highlight sections or cavities with problems in order to help operators prevent the creation of defects. These statistics are given by zones on the container. Indeed, during the machine setup, the user cuts articles into several areas. The user can then track cautiously the statistics on specific areas based with recurring issues.

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A user-friendly interface

The new software version has been designed to make machine adjustments and operations as simple as possible for operators. Automatic settings have been implemented to set alarms and reject thresholds. These improvements allow the operator to save time when adjusting the system after a job change. The main screen was also designed to quickly show the sections and cavities with problems to the operator to guide him in his actions on the process.

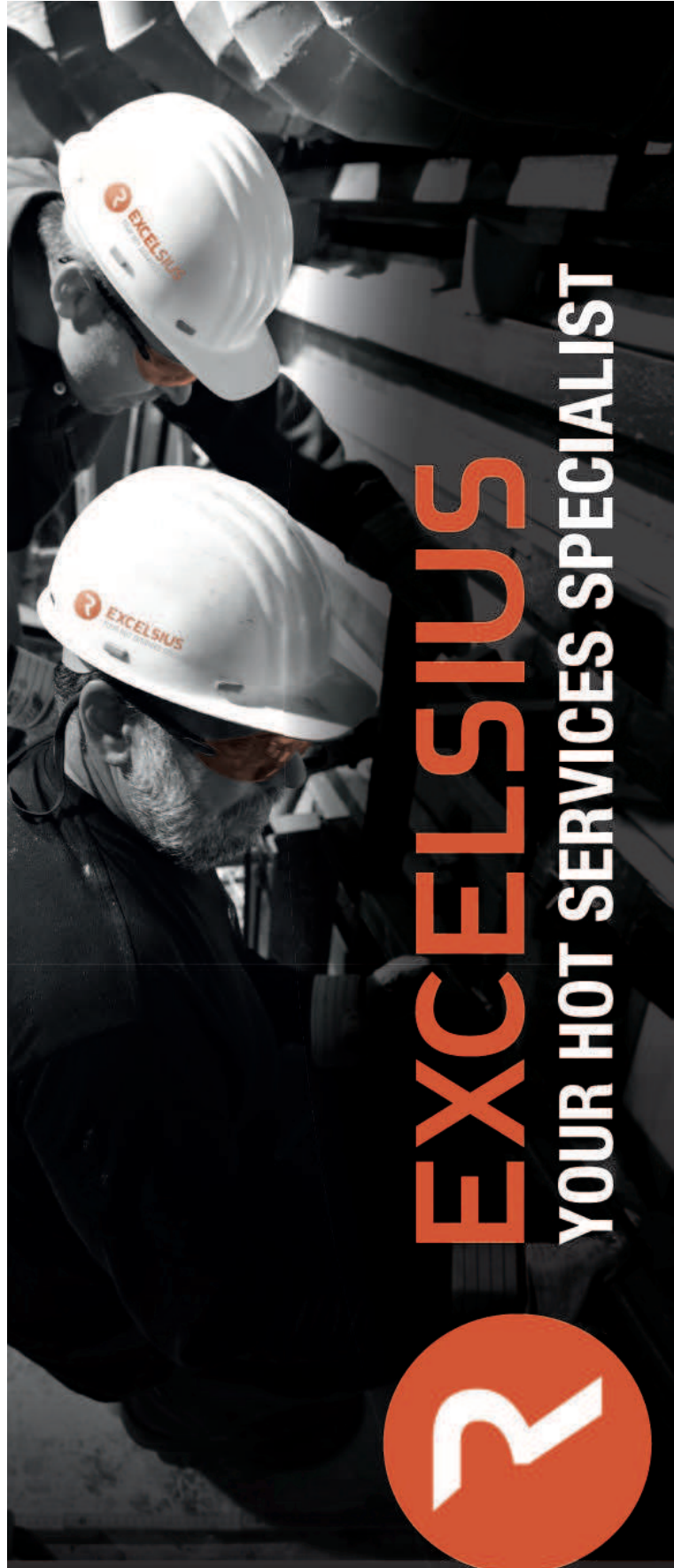
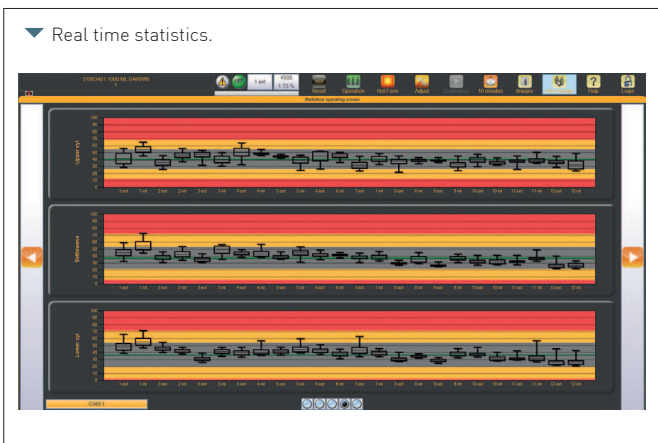
The Tiamo HOT form displays trends in the process and can highlight its deviations so that operators can react as quickly as possible. If a problem is found, corrective actions on the IS machine can be taken immediately. There is no longer a need to wait for a cold end feedback. The reaction time is much improved as the lehr time is saved. It also means productivity gains and increased pack-to-melt ratio.

Inside the Smart Factory

The Tiamo HOT form fits in perfectly with the strategy developed by Tiamo under the concept of the Smart Factory. By sending data on glass repartition for every single container through different exchange protocols, the Tiamo HOT form is a key sensor in the Tiamo YOUiverse data providing philosophy.

Tiamo launched its concept called YOUiverse at glasstec 2018 which explained how its five fields of expertise are all necessary to move towards a Smart Factory. Traceability, Inspection, Intelligence and Services are all important in the Tiamo strategy and Monitoring is key for the YOUiverse to live. The information provided by the Tiamo HOT form is sent into Tiamo Intelligent supervision systems such as Tiamo IQ scan or Tiamo ECO-system. It allows the customer to have a complete view of its process and a better control of it. ■

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