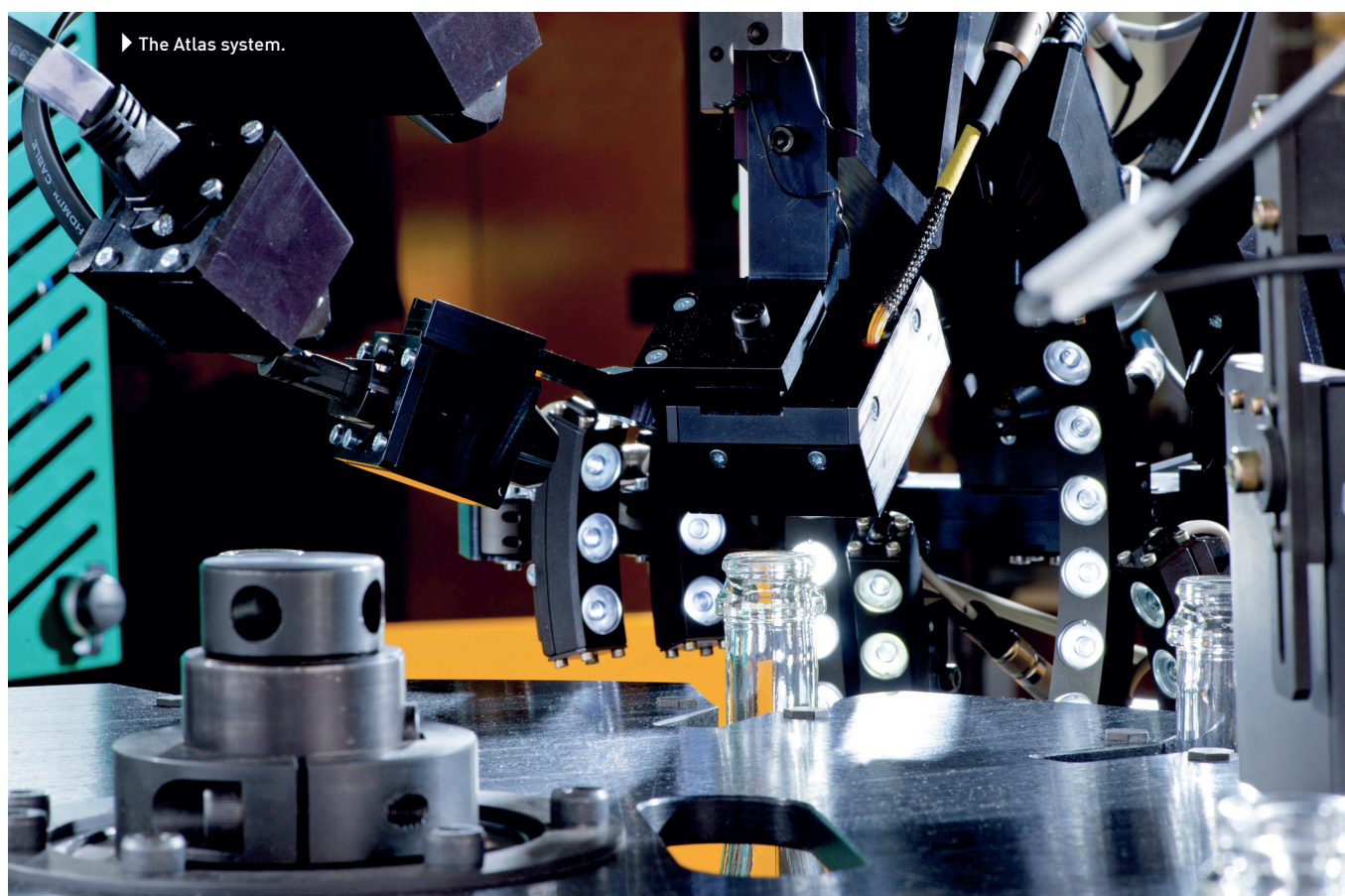


A carousel for the smart factory

The Tiama MX4 carousel is a specialist machine for cold-end inspection on hollow glass. As such, it must always be a step ahead to enhance glassmakers' productivity and profitability, reports Damien Defenouillère*.



The smart factory concept

How does Tiama consider the Smart Factory when applied to glass manufacturing? If we go through the literature on the subject, this concept is wide and undefined. However, the main purposes can be summed-up as follow. The objectives of the Smart Factory are to provide more agility and flexibility, to reduce costs while respecting workers and their environment. The ultimate goal is to improve customers' productivity with the digitalisation of the glass plant.

This equation is seductive but seems difficult to apprehend. How to enhance a machine performance, minimise its impact and reduce expenses at the same time? Tiama considers this challenge as vital and has been fully integrated in its strategy for many years.

Agile, flexible and modular

The first step leading to Smart Factory is to strengthen machine agility and flexibility. The Tiama carousel range, and globally all the Tiama products, are thought to be as versatile as possible to answer any possible customer need on hollow glass inspection.

The MX4, to focus on this specific machine, offers wide and innovative control devices without any compromise between its global compact footprint and its clever design separating the control unit in a dedicated isolated cabinet.

The MX4 provides more inspection stations (seven), more rotation devices (up to six), more flexibility on the article mix (22mm<Ø<180mm, 30mm<h<600mm, any shape) than any other carousel machine on the market.

Assisting the worker

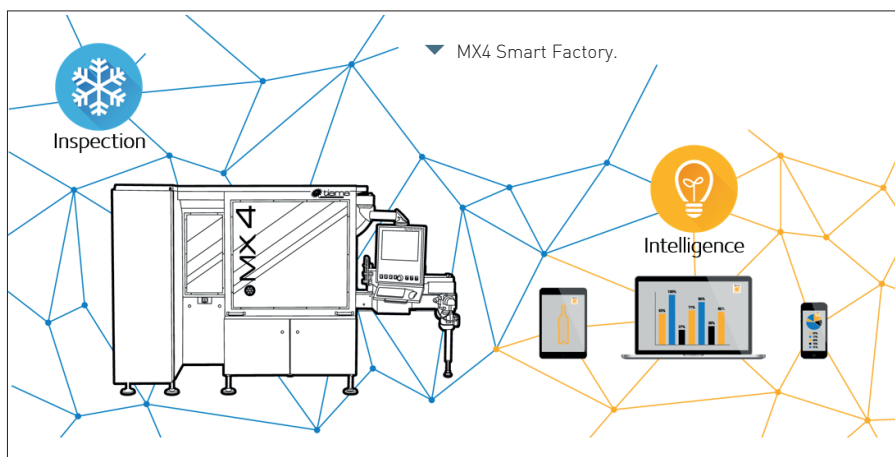
The MX4 has been designed not only to answer all customers' needs in terms of performance, but also and overall to ease the operator's life in mastering it. One of the answers to the difficult equation of Smart Factory is to offer a high level of automatisisation. With this target in mind, every single main axis of the machine is driven with servo motors, directly controlled through a user-friendly interface. During the job change, which is one of the most demanding tasks, the MX4 assists the user in his work by automatised setups.

For instance, the upper frame, which hosts the upper controls, moves up to the machine top, to free the workspace for

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▲ MX4, data provider machine.



handling setup, and down to its working position depending on the article height.

One of the best examples of Tiamo commitment to Smart Factory is the ATLAS inspection device.

Once all the container parameters are entered in the guided user interface, the job change assistant helps the user to quickly setup few mechanical angles.

Then, it will set up automatically the head position, the regions of interest on the 16 dedicated cameras and will start learning all by itself. The user will be able to focus on its real added value which is the decision of applying and adapting the calculated setups. No more painful, repetitive and tough work tasks are required from the worker.

The upcoming Tiamo inspection devices such as the updated version of the NCI-HCI were all thought to answer these expectations of getting agile, flexible & respectful of the workers tasks.

High value data provider

Another answer to the Smart Factory challenge is a full digital integration of the whole production line. To help glassmakers on their way, Tiamo has launched its own Smart Factory concept called YOUNiverse.

The Tiamo machines and specifically the MX4 machine are thought, since their first rounds, to provide a lot of measures and data. Tiamo's approach for

tomorrow is to consider its inspection machines more as data providing devices than binary sorting machines.

With this goal, the main purpose of MX4, like all other Tiamo machines, is to provide data to an external intelligent system: the Tiamo ECO-system.

This new system is a supervisory control and data acquisition system dedicated to Tiamo machines with which the user can have an overview of hot and cold end machine behaviour. For every single container inspected, all the

available measurements are recorded for all the different controls.

Then, all the measures and data are processed and enriched by the Tiamo ECO-system to deliver centered recommendations and to improve the customers' productivity.

YOUNiverse, the smart factory concept

Active component of the Tiamo YOUNiverse data providing philosophy, the Tiamo MX4 participates in the development of the Smart Factory.

The different exchange protocols gather and send high-value data, for every single container inspected.

Measures and data produced by all the different controls can be linked to a specific single ID thanks to Data Matrix or more simply associated to the original mould through a Mould Number Reader.

The information is sent into Tiamo Intelligent supervision systems such as Tiamo IQ scan or Tiamo ECO-system.

Instead of releasing a binary verdict, as we were able to do until now, Tiamo intelligent systems make it possible to follow production drifts and react with immediate actions at the hot end even before the real defect appears.

Therefore, glassmakers can prevent any container rejection and consequently improve their pack-to-melt ratio. This closer regulation loop therefore improves global production line efficiency. ■

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