



Figure 1: SIL4.0 collects data everywhere in the glass plant where sensors can be connected. Red points correspond to places where SIL is already connected in some plants.

Innovation and supervision system solutions

According to Ulas Topal, technological innovation through Industry 4.0 is essential for the glass industry to overcome ongoing technical, economic and ecological challenges. To date, more than 150 production lines in Asia have been equipped with Vertech's SIL supervision system.

It is necessary for glassmakers to find answers to many key questions: How to produce the strongest and lightest articles? How to produce articles with the maximum quantity of cullet? How to reduce the carbon footprint in glassmaking?

Indeed, in modern society, industries are expected to produce even faster, while being even more effective and producing even higher quality articles. In recent decades and in particular since COP21 in 2015, additional objectives must also be taken into account in order for manufacturers to reduce their carbon footprint.

Glassmakers throughout the world are affected by these technical, economic and ecological issues. There is no exception. These subjects are at the heart of senior managers' discussions within glass companies and only a good balance between them will lead to success and sustainability. Nevertheless, the perfect balance is difficult to find, a lot of data is required to conduct analyses on the past and to anticipate the future. But glassmakers are not alone on this path. Vertech' accompanies them at every step in the search for the perfect balance between technical, economic and environmental parameters.

Going beyond current development frontiers

The theme adopted for the 43rd ASEAN Glass Conference, 'Going beyond current frontiers of development', was in full accordance with Vertech's vision of Industry 4.0. With more than 650 lines equipped in 29 countries, Vertech' is the leading company in manufacturing execution systems for the glass container industry and keeps looking for innovative solutions to meet customers' needs. The French company invests more than 25% of turnover in R&D and



Ulas Topal presents SIL4.0 at the 43rd ASEAN Glass Conference in Cebu in October 2019.



Figure 2: KPIs displayed on fully customisable dashboards.

stays up-to-date on the latest innovations to offer state-of-the-art solutions. The company can also count on reliable relationships with partners and trustful collaborations with clients to develop the most consistent system.

As a result of these initiatives, Vertech' has been working for the past few years on its latest product: SIL4.0, which is the company's answer to the challenges currently faced by glassmakers.

The concept

SIL4.0 is not just a software product; it is a concept and a vision. For more than 20 years, SIL has been acquiring data on production lines. Digitalisation of the production process is not new. It has been the core business of Vertech' since its creation in 1995.

The big difference of SIL4.0 is the number of places where data is collected, in as many places as there are sensors along the line, even before at the batch. As long as SIL can connect to sensors or machines, it is able to collect data. All in all, SIL4.0 is everywhere in the glass plant. The client chooses the information required and SIL connects and collects the data (see figure 1).

Communication protocols

As a data acquisition system provider, Vertech' has already worked with many different communication protocols: Webservices, OPC-UA, Profibus etc. And as a totally independent company, Vertech' develops further protocols whenever necessary. Furthermore, advice and support are brought to clients who wish to develop their own protocols.

In SIL, communication was previously one-way. Data was collected from machines and sensors, before being sent to SIL. But in SIL4.0, communication can also be bi-directional, as the system is now able to send information to machines. This may be the case for settings to IS machine or temperature to the lehr.

KPIs and dashboards

The second step in the philosophy of SIL4.0 consists of displaying the acquired information on fully customisable dashboards. It is up to glassmakers to decide which KPIs they wish to display and how they want to organise information.

Collected data can be of very different types. Stocks of raw materials, daily CO₂ emissions, the temperature curve in the lehr or belt speed are typical examples. It is worth noting that multi-plant dashboards can be created, making benchmarks between several plants within the same group much easier. Figure 2 shows examples of KPIs displayed on fully customisable dashboards.

Analysis and anticipation combined

The next two steps in the Vertech' vision of Industry 4.0 involve analysing the past, in order to anticipate production events. Many correlations are to be found in all collected data, thus leading to algorithms,

allowing predictability. Vertech' has already generated some interesting results and is working in close co-operation with data scientists and research institutes on this ambitious area.

Innovation never ends. SIL4.0 is a state-of-the-art software system in constant evolution. Results to come will be very promising for the glass community as a whole. ●

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