



Photo: Getty Images /

USE OF SCANNERS IN GLASS PROCESSING

The Scanner and the Internet

In the flat glass industry, we have a situation that in most companies, higher-level software is widely used for production management. The most important suppliers are explicitly specialised in the glass industry.

Industry 4.0 or the Internet of Things (IoT) form the basis for continuous networking and digitisation in the glass industry. This advanced digitisation also includes quality assurance systems, including the scanners used.

"Machines no longer only produce glass panes, but also a wealth of data and increasingly manage to get organised among themselves", emphasises Sales Director Peter Pfannenstill from Softsolution.

"In this respect, the Internet of Things offers significantly more possibilities. For example: A transport trolley can indicate its current location and its availability for re-utilisation. Or an edge processing machine can autonomously detect that a certain tool is not in stock and report this or can order it automatically and independently via the IoT if it is properly networked. Furthermore, a machine can trigger a process or order at a supplier. Particularly in quality assurance, communication from scanner to scanner and the connected processing machines are indispensable. In addition, a completely networked value-addition chain - from the glass producer

to the end consumer becomes possible", explains Sales Director Peter Pfannenstill.

Back to the scanner, here is an example: The LineScanner of Softsolution checks a glass pane after edge processing. In the process, it is determined that the glass pane is not yet 100% right in size, but is still slightly too "big". The scanner now sends this information back to the edge processing machine, in order for the glass to be processed again and adjust it to the correct size. The IoT will be an important building block, but not the only prerequisite for the implementation of digital and networked production.

Key factors when using the scanner

The scanner in quality assurance: Different types of glass have different quality requirements. Based on this finding, the LineScanner has been equipped with the latest technological features - such as anisotropy testing and edge membrane stress measurement. Complete documentation of the glass quality is essential and will be even easier in future thanks to Big Data and IoT.

If the data exchange of the LineScanner via the IoT is carried out by means of a scanner, not only a wide variety of data can be exchanged (Big Data), but the scanners can also be integrated into the advanced automation and work flow control



Photo: Softsolution

Different types of scanners are currently used at different positions in glass processing.

(key word: Management Console), and preventive maintenance & servicing and the integration of archive software are also possible.

By using the Internet of Things, Softsolution can make its LineScanners much more flexible - for example, to respond to customer requests and problems via remote or preventive maintenance. Furthermore, archive software can also be integrated. For data storage and data analysis via archive software, the LineScanner archive software is an independent application for finding a specific glass in the data base (by customer, bar code, order number, item number) and then visually displaying it. In addition, the data archive can be used to evaluate various statistics (production statistics, target/actual statistics, error per defect category...).

This data analysis also allows to determine and display comparisons of the qualities achieved, depending on the environmental parameters. Derived from this data, differences - influenced by different operators / furnace operators etc. - can be displayed. With regard to work flow control and automation, Peter Pfannenstill says: "We see that glass processors are increasingly investing in automation. There are various reasons for this, not least because the glass industry is severely affected by the shortage of skilled workers. As an advancement and in response to this, our LineScanner is no longer "only" used for quality inspection according to various criteria. Today, the scanners can transmit information about pane geometry, position of the pane on a horizontal transport and even rotation information to subsequent systems - with the highest precision." Among other things, it can also be used to control downstream machines, such as digital printing, without having to stop the pane or bring it into a specific position. Another example from the ISO production is the transfer of information to sealing robots or automatic uploading systems.

Big Data Optimisation

Due to the latest advancement of the LineScanner to measure both anisotropy and edge stress, these results provide significant information about the tempered safety glass quality achieved in the tempered safety glass furnace. In combination with this system, the furnace recipes and environmental parameters, the data provide an excellent basis for analysis and the resulting optimisations in production.

With the findings of Big Data analyses and the LineScanners, glass processors can increase their quality and production output, while at the same time minimising waste - an important prerequisite for success, especially in highly competitive markets", Pfannenstill says.

IoT and LineScanner Management Console:

A Softsolution system constantly informs about its current status and analyses in the form of so-called "messages". An excerpt of this information is, e.g. information about the scanner status itself: is the system online or off-line, which features are active etc. In addition, there is also product information, e.g. how many panes were scanned in a specific period, what qualities were achieved; are there deviations of the "usual" quality defects, to detect serial errors in good time.

Maintenance information is important in this context. For example, proactive maintenance can be recommended; what is the status of the IT systems in terms of capacity and utilisation etc.

The LineScanner Management Console gives the user a quick overview of all LineScanners in his production. Are the systems online or off-line? Which production quantities have been recorded? Are there/ were there any "alarms"?

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MEANING OF "INTERNET OF THINGS"

The IoT or Internet of Things refers to the linking of machines and devices in a structure comparable to the Internet. The goal of the IoT is, to automatically capture relevant information from e.g. production, link it to each other and make it available in the network. With appropriate machine software and IoT connection of the systems, these devices can communicate with each other. The devices can thus exchange information with each other, forward status messages or order missing spare parts independently. Or if an internal sensor in the Smarthome reports "too warm", the sun protection will be extended or the heating temperature will be lowered via the IoT connection.