

Digitalisation creates added value. How the manufacturer-independent communication standard OPC UA can contribute to this will be illustrated at glasstec from 20 to 23 September 2022 in Düsseldorf at the glasstec conference, among other events.

OPC UA - The dawn of a new interface generation

Digital transformation has long since taken hold of the flat glass industry and is progressing rapidly. People increasingly just monitor manufacturing processes rather than doing the jobs themselves. Skilled labour shortage, growing demands made on the flexibility of machinery and equipment as well as increasing sustainability requirements require intelligent monitoring of production processes.

Producers can generate particular added value by pursuing a mechatronic approach. It is therefore worthwhile focusing on data and intelligent man-machine, machine-man communication and – last but not least – on the communication between machine and software. Especially since a growing number of machines and the operating software of different manufacturers need to communicate with each other. Currently, most interfaces required for this are still implemented as custom solutions for the respective application. But rather than investing a lot of time and money in programming individual interfaces, a standardised, manufacturer-independent, inter-operable communication standard, as offered by the Open Platform Communications Unified Architecture – or OPC UA for short – would provide a solution offering high potential along the value chain.

A standard “picks up speed”

OPC UA transmits machine data such as controlled variables and measured values and has the ability to describe these semantically in a machine-readable format. Developed in the USA, the standard is now gaining increasing importance in Europe. A cross-sectoral study published in 2021 by the VDMA e.V. (German Engineering Federation) illustrated the relevance of interoperable interfaces and the associated standards in companies: over 90% of those surveyed saw a need for interoperable interfaces. According to the survey, the dissolution of proprietary interfaces is of the greatest strategic importance, as this is what makes plug and produce possible in the first place.

According to estimates, some 10% to 12% of plants in the glass industry are equipped with this platform. Demand for OPC UA, however, also depends heavily on the target market. “Our lines are already fitted with this communication standard. However, demand for it in Asia is still of secondary importance compared to Europe,” says Peter Seidl, Head of



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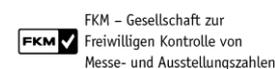
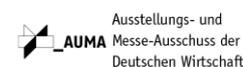
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Product Management Business Unit Glass at Grenzebach, describing the current situation. In addition, integration of OPC UA without the associated Companion Specification cannot exploit its full potential. Interoperability is only achieved when the connected machines and systems understand the interface content due to this Specification – in order words, speak the same language.

To define this and make it work for the flat glass industry, manufacturers and software providers are involved in a Joint Working Group (JWG) of the VDMA and the OPC Foundation. The latter has worked out the first Companion Specification for the flat glass processing, which was published at the OPC Foundation in November 2021. This Specification is applied in production management. “With this Spec we no longer have to worry about how we communicate but only what we communicate,” says Seidl, who advocates the introduction of OPC UA in the JWG, looking to the future of interoperability.

Key to more value added

Dr. Markus Schoisswohl, General Manager at Hegla New Technology and a chairman at the JWG, adds: “If we succeed in replacing the proprietary protocols by OPC UA, we can eliminate enormous investment not only in terms of money and time for programming but also for individual tests during commissioning.” Especially as employees are confronted with growing plant flexibility demands. “Manufacturers are required to adapt their production to new orders with varying batch sizes at ever shorter intervals,” reminds Tobias Wachtmann, Head of Vertical Glass & Solar at Siemens. It is precisely this setup that OPC UA facilitates, as manual programming is eliminated and the number of different interfaces is greatly reduced. It also makes the integration of machines or components into existing production lines much easier and faster, thus increasing plant efficiency

Furthermore, OPC UA markedly simplifies the generation of a digital twin needed for adding new facilities or expanding capacities. Current production data in a standardised format assist in planning maintenance and improve resource efficiency while cutting response time in the event of errors. And data protection is also ensured: OPC UA boasts a wide variety of security mechanisms. Messages, for example, can be transmitted in an encoded format across various levels and signatures and authentication are also possible.

“Digitalisation must be manageable”

At present, the use of OPC UA in the glass industry is still a small piece of the puzzle. The flat glass industry is setting off to news shores. According to Dr. Schoisswohl, digitalisation must be manageable.

“We must not leave our co-workers behind but make them understand the benefit that the data transmitted by OPC UA brings.” Wachtmann suggests: “Just marketing proprietary solutions is too short-sighted these days. Interface standardisation, developed in close cooperation with suppliers and users generates the biggest benefit for the supply chain.” By introducing the first Companion Specification JWG has created a solid base. In future, it will get further specifications underway for more variables and production areas. Experts expect OPC UA to become established in the glass industry in a few years.

With a view to making the benefits of this interoperable standard accessible, the companies involved in the JWG plan to exhibit a Demonstrator at their glasstec 2022 stands. This will show how OPC UA positively impacts plant efficiency as well as resource consumption.

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Info Box

glasstec, 20 – 23 September 2022 in Düsseldorf, Germany

International Trade Fair for glass – Production, Processing, Products

The high proportion of international exhibitors and large number of top decision-makers among its visitors have distinguished glasstec for years. The trade fair is the platform for premieres of innovations in all areas of the value chain, from production to processing and finishing to final application. A feel for trends and future topics is also reflected in its extensive ancillary-programme. Thus, glasstec maintains its position as the leading global trade fair for the material that is glass.

From 20 – 23 September, glasstec 2022, the world's leading trade fair for all things glass, will be held at the Messe Düsseldorf exhibition center.

Captions

Grenzebach_Float_Glass_Line – Source Grenzebach:

“Also at the cold end – here a float glass line – OPC UA raises the potential in machine communication.”

Grenzebach_Digitalisation Platform – Source Grenzebach:

“OPC UA supports operators in communicating with machines.”

Siemens – Source Siemens:

“Forming an important basis for the successful communication along the complete process chain is the manufacturer and platform-independent exchange of data as offered by OPC UA.”

Hegla OPCUA_optimax_esguard – Source Helga:

“The float glass cutting line will in future communicate with the laser marking systems and even external plants ever more easily thanks to OPC UA.”

Hegla OPCUA_rapidline – Source Helga:

“OPC UA simplifies the installation of machines and equipment.”

Links

OPC Foundation:

<https://opcfoundation.org/>

OPC UA for flat glass production:

<https://www.vdma.org/viewer/-/v2article/render/39991943>

Study on interoperability in mechanical and plant engineering:

<https://www.vdma.org/documents/34570/4887803/2021+OPC+UA+Study+English.pdf/43f6737b-daa9-6634-513bdd54c218a5d8?t=1637576864859>