

Press Release

Digital glass production: Grenzebach IIoT platform increases quality, quantity and efficiency

What will the glass factory of the future look like? What are the benefits when data makes glass production transparent? Grenzebach delivers clear answers – and at the Düsseldorf glasstec fair in October presents digital solutions which can be extended any time. “Digital Glass Production – Your Future Success“.

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"With high-performance technologies we pave the way for the glass industry towards the factory of the future. With digital solutions and new features, most important to the customer is a tangible added value: We are looking for a highly flexible system which can be modularly extended – locally at the customer site, but also using Cloud Services. This ensures added value – even for applications, we do not yet know of", says Roland Jennings, Head of Innovation at Grenzebach. The answer is a high-performance IIoT platform the company developed in-house: the Grenzebach Application Server. Main features of this platform are connectivity, modularity, data management and analysis. The Grenzebach Application Server controls all processes in production and the warehouse as well as the shipping department, integrating equipment parts and devices of numerous manufacturers. The Windows-based framework grants customers in the manufacturing industry and system providers in mechanical and plant engineering access to Glass Industry 4.0 – towards the factory of tomorrow. A local solution for the IIoT (Industrial Internet of Things) for all industrial applications; with the integrated expandability of Cloud computing.

At the world's leading trade fair glasstec in Düsseldorf from Oct. 23. – 26, visitors to the Grenzebach booth will be able to experience the new platform – booth 15D23 in hall 15.

Assistance systems for the employee

Various Apps already today allow the following applications:

Predictive Alert

Predictive alert to the operator: The system independently generates a warning message to the operator. He can then retrieve detailed information. Example: One part of the equipment shows an unusual temperature rise. The complete history is available. The system forecasts that in case of a continuing trend over the next 48 hours, functional failure will occur, or if the situation worsens within 6 hours. "The operator receives only relevant and detailed facts and instructions and knows how much time is available for decision-making and interim maintenance", says the Grenzebach expert Roland Jennings. This assistance application helps to avoid a multi-hour production downtime in glass production or to have it at least significantly reduced. Localization of error ranges, finding root causes, informing maintenance technicians at an early stage and holding spare parts available delivers a crucial edge.

Maintenance Manager

Planned maintenance: The Grenzebach Application Server uses sensors in the field to detect equipment data and forwards information to the staff by matching stored limit values and maintenance intervals via the event ticker. This allows better and more efficient planning of the interventions of the maintenance staff and

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automatically identified spare and wear parts can be procured and stored in the warehouse to be available in time. This is supported by the Electronic Spare Parts catalog, a web service, which is connected to the Application Server, as well as electronic documentation and maintenance and service handbooks.

Task Manager

Efficiently on tour: The Task Manager provides a plus in resource efficiency. For example, it provides information to the driver of a fork lift truck via tablet or smart phone early on about a pending travel order, including all necessary data and connections to the optional warehouse management system.

Settings Manager

Guaranteed quality: The Setting Manager holds all machine settings and recipes and marks them with a time stamp. This ensures traceability at all times over which settings certain production runs took place, directly linked to the product ID. Process data can be exactly documented – this is very important to ensure product quality and to make it traceable.

For all industrial applications

From single applications to a general additional value with the Grenzebach Application Server: The IIoT platform allows a unique horizontal and vertical connection of hardware and software beyond the manufacturer limits – with a direct connection to the already existing IT infrastructure. A local solution for IIoT for all industrial applications to gather, process and analyze data, which can continuously be expanded to Cloud computing and makes all information globally available.

Central control room for glass production 4.0

The Grenzebach Application Server is the distributing center for all processes of the factory of the future. Everything is kept highly available; efficiency is increased. Machinery, processes, control systems, Automated Guided Vehicles or the following systems can be integrated without regard to the manufacturer. Individual analytical blocks and smart reporting make inner-company sequences and requirements of tomorrow transparent. “Of course we also offer technology to directly show the man-machine collaboration on this platform”, says Roland Jenning from Grenzebach.

- » **Increase in efficiency:** The Grenzebach Application Server holds a multitude of assistance systems which allow for optimization of product quality, product quantity and use of resources.

- » **Connectivity:** The Grenzebach Application Server is equipped with communication adapters to the shop floor participants, such as data-generating devices, sensor technology and actuators in the production environment. This is why the standard system already understands a multitude of protocols and data messages. This modularity allows to add further communications adapters. It makes the system flexible for future data structures, which we do not yet know of. Furthermore, a multitude of communication adapters to overriding data base systems is available, such as e.g. ERP (Enterprise Resource Planning) and MES (Manufacturing Execution System), as well as Cloud Connection. It can connect the Grenzebach IIoT solution to the global data world of the operators if needed.

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- » **The use of Big Data:** The Grenzebach Application Server takes the role of the "enabler" and gathers, collects and processes data and makes Big Data usable. Data is gathered, evaluated and actions derived from the data. For this purpose, the system transforms signals and data of different machinery and equipment into uniform information. All these are available for Smart Devices. Data exchange with customer-own systems is possible as well. Always in strict compliance with legal data privacy requirements and customer-own IT guidelines.
- » **Analysis without limits:** Analysis modules can be integrated according to individual requirements. For prognosis, preventive action – or to establish a self-learning system; Always with the aim to generate a defined additional value for the equipment operator because quality, quantity and resource efficiency are the motivators.
- » **Work safely:** The safety architecture is structured according to relevant, modular aspects. An authentication system ensures that, according to the individually saved rolls and rights concept, only authorized staff receives access and the respective authorization to carry out activities.
- » **Inform individually:** Reports can be created individually for the respective target group in the company – customized KPI evaluations (Key Performance Indicator) are available locally and via mobile at any time.
- » **Expansion as required:** The Grenzebach App shop allows to add further applications if required. Customers only pay for what they request and really need in the factory of the future. Convenient payment methods round off this service.

Data on glass – Glass sheets with digital fingerprint

In the age of digital glass products, gapless **Product Traceability** is of utmost importance. Let's have a look at a functioning glass facade on a building: The glass sheet came a long way in the value-added chain. At some point it was bent, cut and stacked on the float line; then it was ground, heat-treated, coated, laminated, processed into insulating glass, framed, fixed - and now dwells on the building. "The long travel generated numerous data about the final product – a real abundance of information", says Peter Seidl, Product Manager Glass at Grenzebach.

This product is interesting from several different perspectives, for glass manufacturers, glass processing factories, transporting agencies, planners, facade engineers, and facility managers, just to name a few. Important data includes manufacturer's designation, production time, glass sheet ID, dimensions, process and treatment parameters and position on the building. All of this makes up the digital finger print of the product. "We offer the glass industry a large spectrum of technologies to add the digital finger print to their product", says Seidl. Identification numbers, bar codes or QR cods carry this information and can be applied onto the surface or by means of laser engraving.

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Detection of complete glass racks with RFID

Pretty new for the glass industry is the RFID technology (radio frequency identification). With radio frequency many products can be detected at the same time contact-free and without optical contact, such as complete glass racks. This data in turn can be transferred to the Grenzebach Application Server. The process steps and data with the unambiguous glass sheet ID are linked and a product resume is created.

With the RFID tag, a label with integrated memory chip and antenna, data can be read out and reregistered.

The product has relevant data readily available needed by following actors in the value chain.

For example a glass sheet can transfer glass failure data via the RFID tag, such as the failure type, classification, failure position to a cutting table and can optimize to the best possible cut-to-size result.

„These technologies strengthen the trust between the manufacturer, processor and end user of the glass products“, explains Grenzebach expert Seidl. Identification of every single product at any time adds to transparency and is a big step in towards Industry 4.0.

Safe use of data, optimized processing

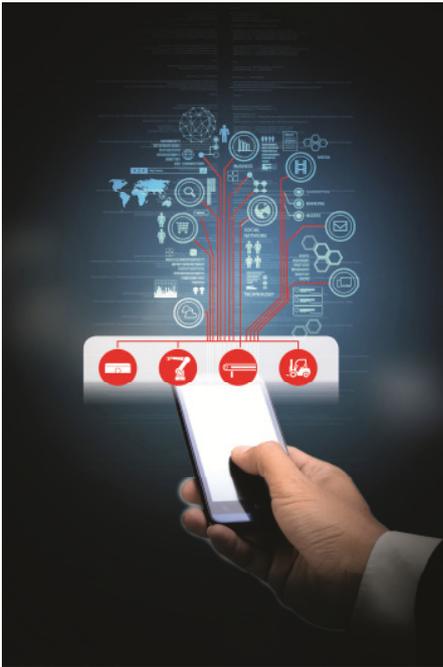
To all technologies and applications applies: When it comes to data safety, Grenzebach closely cooperates with the customer and offers solutions encompassing future developments.

Write-Read authorizations, coded memory chips, data management on the product, locally at the plant or in the Cloud. The system has numerous options to protect and forward data upon individual requests.

At the glasstec visitors will see how the digital finger print is generated on the glass and learn about its benefits for companies.

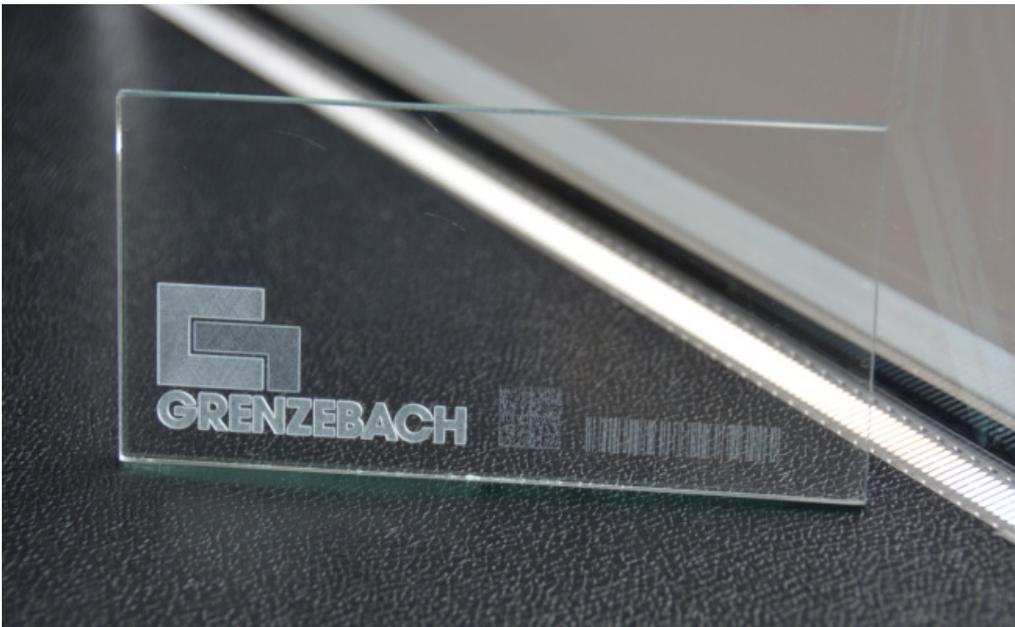
Besides the program at the booth, Grenzebach will hold a presentation on Wednesday, Oct. 24 at 3 p.m. at the VDMA glasstec conference Technology - interconnected production and new technologies (hall 10, booth C18-F18) Roland Jenning will talk on the topic: “Automation 4.0 in the glass world“.

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With an IIoT platform from Grenzebach, we offer a distributing center for Industry 4.0 - open for applications we do not yet know of.

Source: Grenzebach



Glass with up-to-date digital fingerprint - Grenzebach offers different systems for this purpose.

Source: Grenzebach

Grenzebach is a world-wide leader specializing in the automation of industrial production lines. By providing services encompassing the entire life cycle of a project, Grenzebach's tailor-made automation solutions have a positive impact globally in glass and building material manufacturing as well as intralogistics. Many years of experience, continuous development, and sustainable support services are what makes Grenzebach one of the most preferred partners world-wide. 3000 installed lines in 55 countries prove that the Grenzebach name stands for quality and reliability. Amazingly, 90 percent of Grenzebach's products are for export which reflects that the medium sized family-owned company from Hamlar is a global player in the industrial automation.