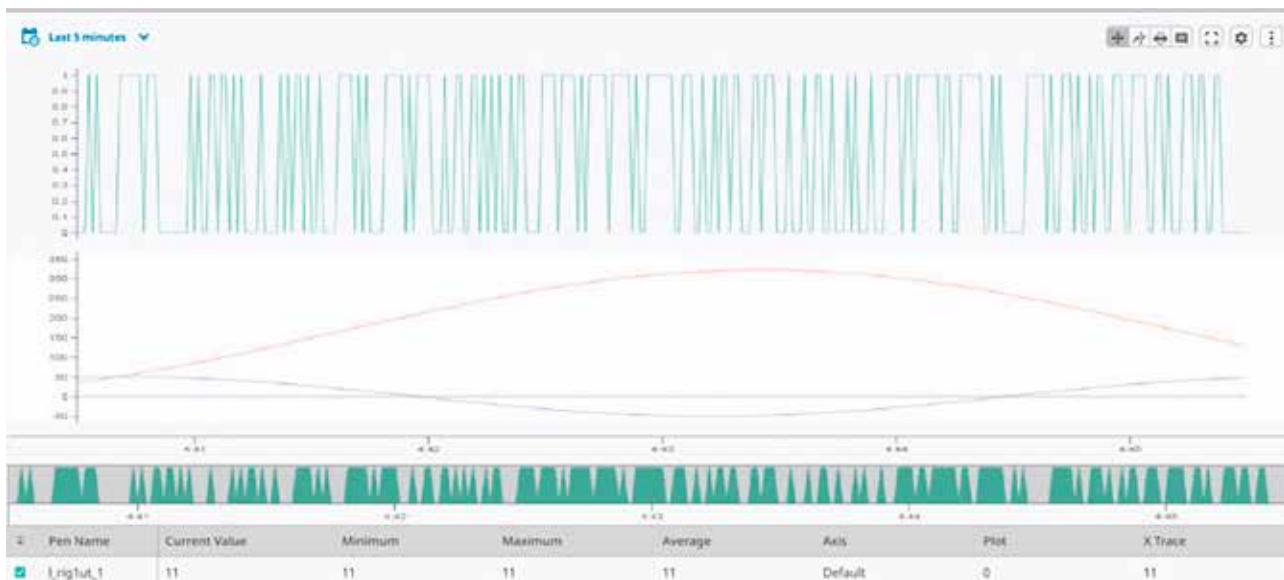## SUSTAINABILITY

Hastening net zero: BDF develops Panorama 4.0™

With a venerable legacy dating back to 1906, BDF addresses green challenges to meet today's environmental deadlines by emphasising historical insights. Leveraging regenerative furnaces and technology, the company also focuses on CO_2 emissions reduction, which led to its development of Panorama 4.0™ to advance real-time data management and decision-making - all in the pursuit of zero emissions across multiple sites.

Given the impending 2035 and 2050 deadlines, rigorous attention to current green challenges is widely accepted and is even more crucial today than ever before. Here, to support that drive, BDF solutions include its hybrid and all-electric radiative conditioning zone. Founded back in 1906, the gap in time now affords the company new opportunities to analyse its contribution to the industry over a trajectory that's spanned more than a century. Indeed, looking back can often be a good initial step towards shaping the future - mindful how significant historical developments are to geopolitics, industry and the market itself.

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HINDSIGHT LEADING TO FORESIGHT

In briefly focusing here on the various solutions currently under discussion for the mission of reducing CO2 emissions one can identify the regenerative furnace as being the state-of-the-art competitor in this regard - particularly for container glass production. Regenerative furnaces have a long history in the industry, with their initial appearance dating back to the 1850s. Since then, there has been tremendous improvement in terms of energy efficiency - especially over the last four to five decades. It's worth noting that during these years, energy reduction has been achieved in parallel with emissions control (SOx, NOx, CO) to prevent major corrosion of the refractory material. But all this begs a straightforward question, namely: How was such a significant performance upgrade possible within such a short period when compared to previous advances? The answer lies in technology, which has provided sensors and tools that are more precise, are faster, and are more accurate than ever before. This

has allowed for the evaluation of new materials, the conducting of new procedures, the employment of new equipment, using new fuels and innovative contributions to heat. Today the glass industry calls for ever closer attention to both emissions and process control. Here's why R&D at BDF has been focusing on green solutions while enhancing its process control level. This is achieved not only by increasing the number of sensors and the information provided but also by organising this data in a useful manner so as to secure reliable data that's readily available in order to ensure the best possible analysis and cross-checking.

REAL-TIME DATA

Such is the foundation upon which BDF developed its Panorama 4.0™. Modern industrial process management increasingly requires real-time and statistical data from process control. Here, to provide its customers with the ability to access real-time process data on their desks, the company offers a solution that integrates with the basic supervision system. Glass manufacturers can now manage data from BDF furnaces, forehearths and IS machines - all through this intelligent application. Panorama 4.0™ is the product BDF has designed for mathematical management, thereby enabling the

acquisition and long-term historical storage of the main parameters from BDF systems. Panorama 4.0™ is designed to work on a web browser, making it accessible not only from fixed workstations but also from mobile devices. Here both database and historical storage are supported on standard SQL - with different versions available such as MySQL or SQL Server. Not only. Panorama 4.0™ consists of various modules that make up a complete package, providing scalable management that can be adapted to each customer's needs. The basic package includes historian storage management and enables the viewing of graphs with numerous associated functions, such as data export to Excel or CSV files. The default dashboard provided with the basic package allows for the viewing of both instantaneous and historical variables. Advanced user management ensures that each user can view only the data and functions that are relevant to them.

SOME SPECS

Besides the basic package, Panorama 4.0™ offers additional modules, including alarm notifications via SMS. Its functions encompass:
- The possibility of using virtual or physical servers
- User-configurable variable display dashboards
- User-configurable production reports
- Recipe logging and BDF IS machine configuration
- Historian module
- Report module with an option to schedule and modify automatic report emissions
- Alarm notifications via email or SMS
- Multi-Plant Architecture for gathering data from several plants of the same glass manufacturer

The Panorama 4.0™ network structure consists of two distinct networks, with the data logger serving as a bridge/router between them. Of these, the former is configured with the SCADA or PLC for real-time acquisition of process data while the latter is connected to the factory network, thereby allowing access from the entire intranet (factory PCs) and the internet (external PCs and mobile devices).

Thanks to this infrastructure, Panorama 4.0™ can serve as an information concentrator for several production sites within the same organisation. The data logger function can be integrated into the base server module in the case of a centralised structure for a single production site. However, for multiple production sites or lines (furnaces) it can also be used in a decentralised manner and dedicated to a single production site or lines. The dashboards present real-time or historical variables of the system, are fully-configurable by the user and are even linked to each individual user. Through widget configuration, users can select and change the type of presentation dashboard for the variables from the various options available.
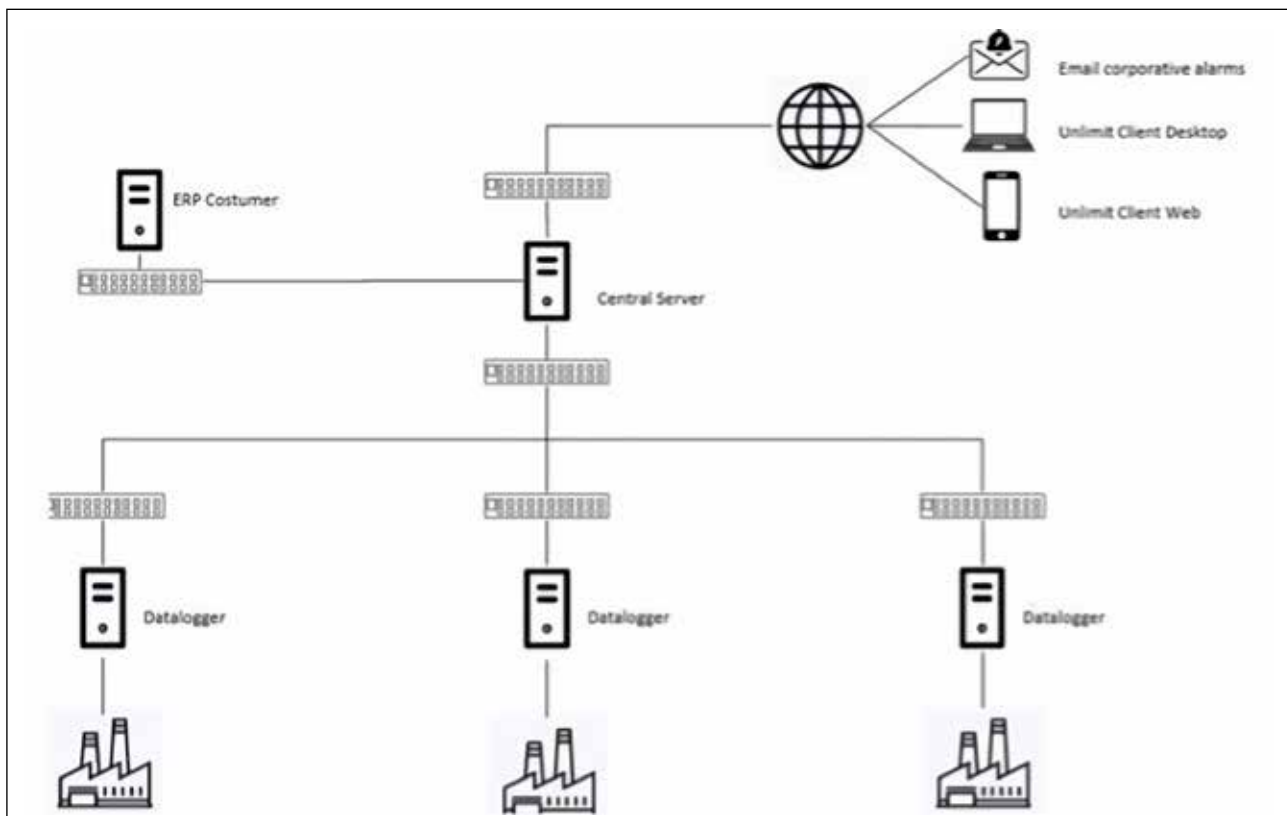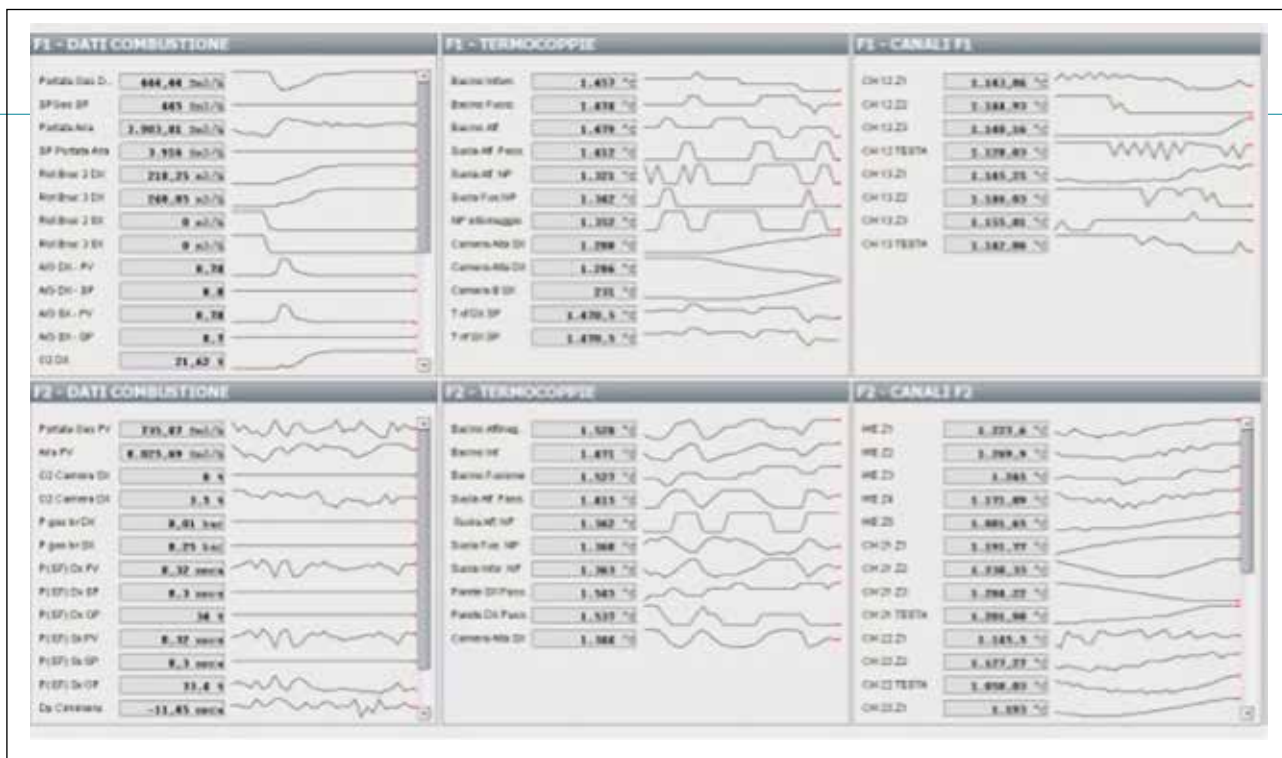
ACCURATE SYSTEM OVERVIEWS – AT A GLANCE

Much like standard SCADA and MES systems, Panorama 4.0™ similarly allows for the graphical representation of all variables contained within the database. The management and representation of variables are intuitive - making it easy to add variables to the histories, cross-reference them, and use simple tools to establish reference lines. It is also possible to integrate the IS machine data module, allowing for the acquisition of data from BDF IS machines, which can then be stored and made available for export to other systems. The log and events function permits management and viewing of all alarms and events within the system. Every alarm, anomaly or event is recorded and displayed within a dedicated screen. System administrators can receive notifications via email for major system alarms, such as communication loss or SQL engine block. Additionally, any recorded alarm in the system can be notified via SMS to specific numbers or via email to specific addresses.

REPORT GENERATION

The reports function essentially replaces traditional production books, thanks to the acquisition of variables. It allows for all the information previously contained in paper production books to be consolidated in a single electronic sheet. Reports can be generated manually or automatically through a scheduler. The variables to be included in the reports, like the dashboards, are fully configurable by the user, providing maximum flexibility in report management. Generated reports are saved in a user-defined location and can be stored in Excel spreadsheet format. In sum, Panorama 4.0™ is indeed a most valuable tool, particularly in today's context which necessitates a clear understanding of the steps required to achieve zero emissions. Evaluating each modification and its impact on multiple layers is something that begins now to warrant serious consideration. ■