

HOT END



AUTOMATION SYSTEM

innovation
ENGINEERED IN GERMANY

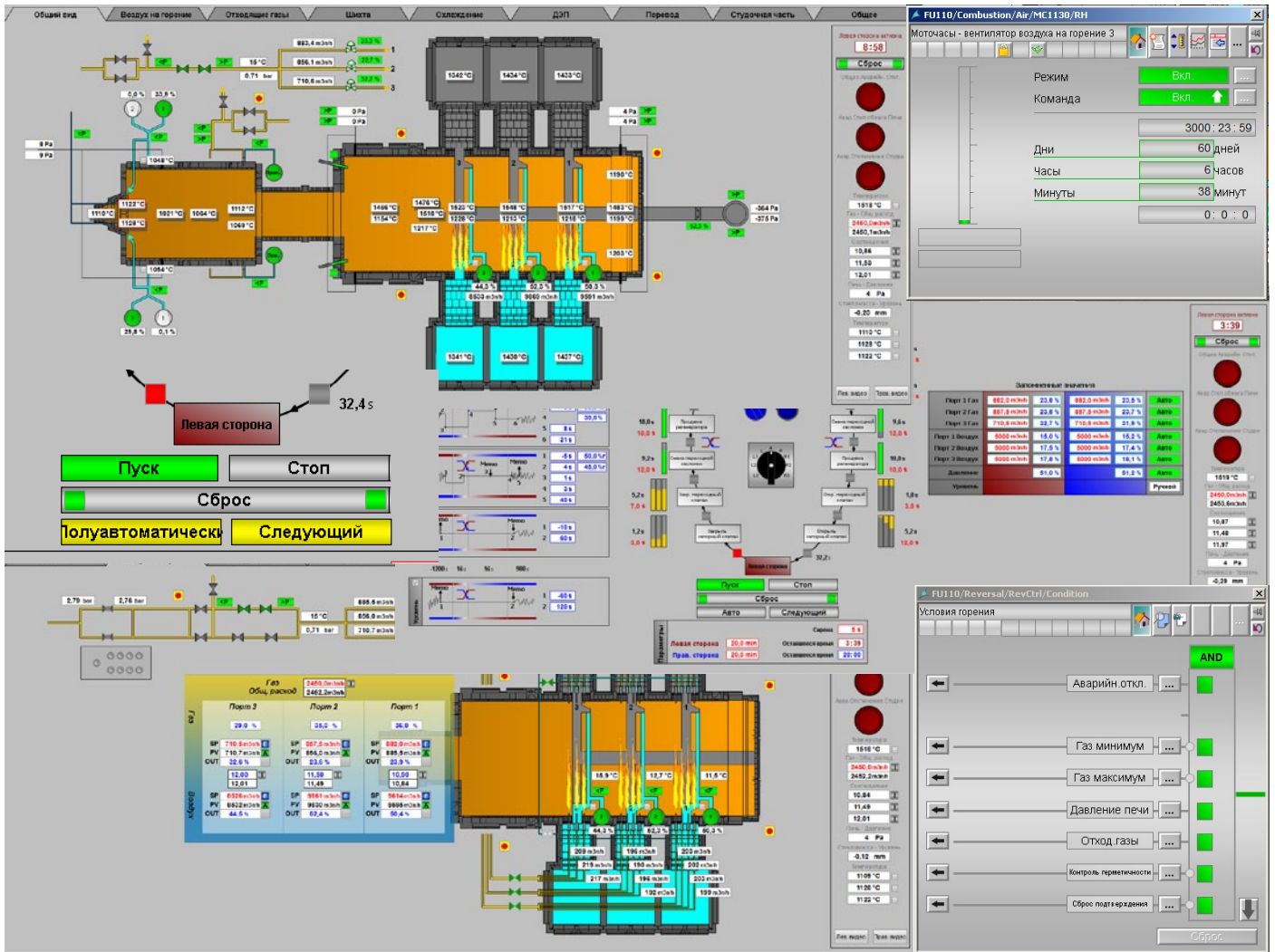
HORN
GLASS INDUSTRIES

HOT END AUTOMATION SYSTEM

Are you particularly interested in learning all about process automation? Benefit from a HORN Hot End Automation System which assists you in the background.

With the HORN Hot End Automation System, you control the operating processes at the glass melting furnace, the tin bath and the lehr effortlessly from one location, with only a few precise mouse clicks.

Here in the air-conditioned and well-equipped control station, where all necessary control and visualisation components are located, the Hot End Automation System assists you in controlling a complex production process. Moreover the Hot End Automation System even coordinates the measurement and control technology of your production process to form a fully integrated process control system.



**Solution
Partner**

Automation

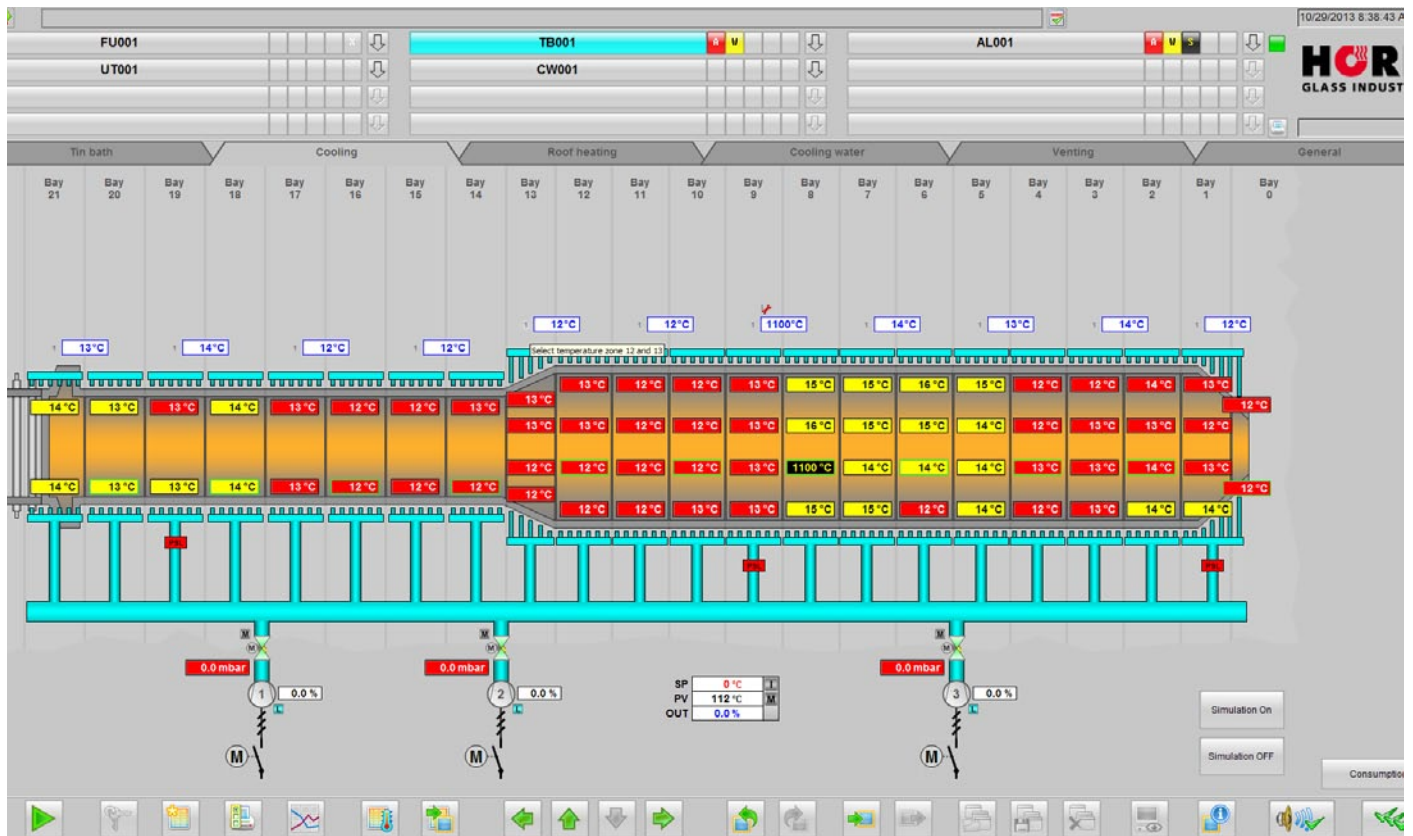


HORN has put all its knowhow and decades of experience in the field of measurement and control technology into the hardware and software of the Hot End Automation System. As the basis, HORN uses systems and components of all leading system suppliers.

For many years, HORN has been a solution partner of Siemens.

The measuring technology collects its data via the sensor system and passes it on to I/O modules.

From this point the electric signals are processed and passed on to the superordinated process control system. The programmatic linking of all analogue and digital signals is effected in the automation device of the system. The measured values are processed and scaled for the control technology.



Process integration is managed via three levels. The internal linkage between the levels of the entire measurement and control technology is executed via bus systems:

- Field level: The connection of the field devices (sensors/actuators) is effected via a field bus system, e.g. Profibus DP, Profinet, CAN bus.
- Control level: Here the automation and visualisation devices are connected to the superordinated process visualisation. This is implemented by an industrial ethernet network.
- Process visualisation: Here the integration of all process technology servers and operating stations is carried out. This network is designed as industrial ethernet network.

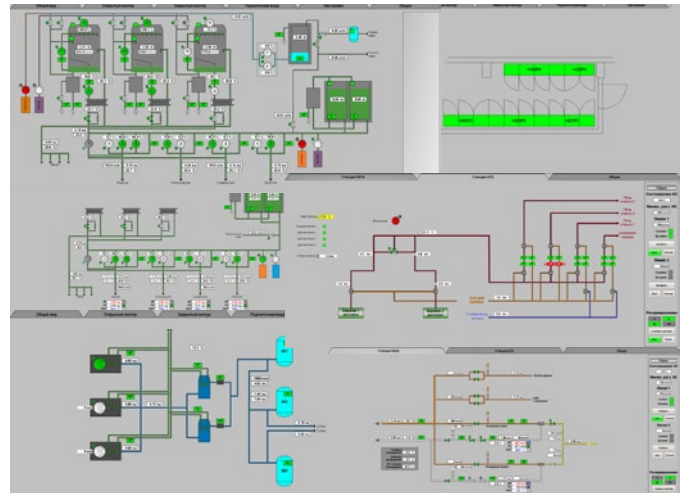
The control technology provides process stabilisation or process management. The regulation is basically a combination of measurements (taking a measurement) and the processing, based on control algorithms (output of a control value) in terms of a set value (nominal value) with simultaneous existence of disturbances.

The process control system allows monitoring and controlling the glass production process from a monitor-based workplace. All actions are effected in real time. All processes can be monitored and controlled via this operator station, from where alarm management can be also operated. Trend charts and historic data can be retrieved at this station.

HOT END AUTOMATION SYSTEM

The system is based on 3 levels:

- Level 1: Monitoring and visualising the central/decentralised systems as well as controlling and regulating the entire process. The major part of the control is managed by SPS and/or level 1 automations.
- Level 2: The main function is to optimise the function of level 1 and to output actuating variables and control points.
- Level 3: This serves for planning, quality control and documentation. The collected data is prepared and provided for higher-level production planning software via interfaces. These MES and/or ERP systems can be integrated user-friendly through an OPC solution.



Specially developed software controls all important parameters of the melting, forming and annealing of the glass.

For all critical processes, redundant functions are integrated via a backup system. Switching between these systems can be performed "shock-free".

Visualisation is effected at operator stations and at decentralised operating panels.

All machines and equipment of HORN plants have a high level of automation. Thereby maximum process and machine safety are achieved. Maintenance effort and routine activities are reduced to a minimum. This leads to optimum production and a longevity of the plants.



Benefits:

- High performance
- Safe operation
- Reliable
- Intuitive handling
- Ready for the future