

HOT END AUTOMATION SYSTEM

HORN
GLASS INDUSTRIES

innovation
ENGINEERED IN GERMANY

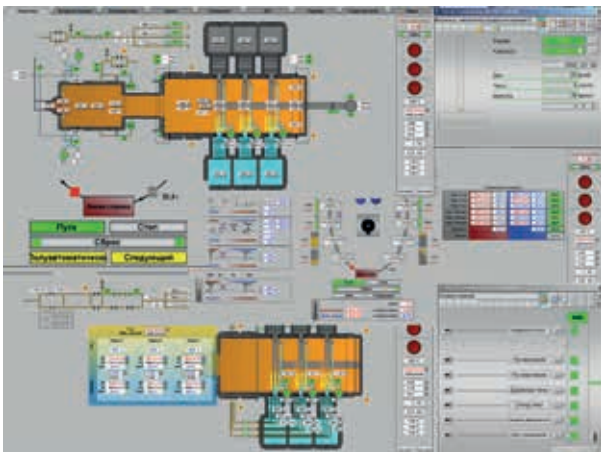
HOT END AUTOMATION SYSTEM

The HORN® Hot End Automation System represents the latest development in process automation, which assists the glass plant in the background.

By means of the Hot End Automation System the operating processes at the glass melting furnace, the tin bath and the lehr are effortlessly controlled from one location with only a few mouse clicks.

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

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 from leading system suppliers.



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



The measuring complex collects data from a system of sensors and sends it to I/O modules.

At this stage the electric signals are processed and transmitted to the higher-level process control system. The programmatic linking of all analogue and digital signals is effected in the automation device. The measured values are processed and scaled for the control complex.



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

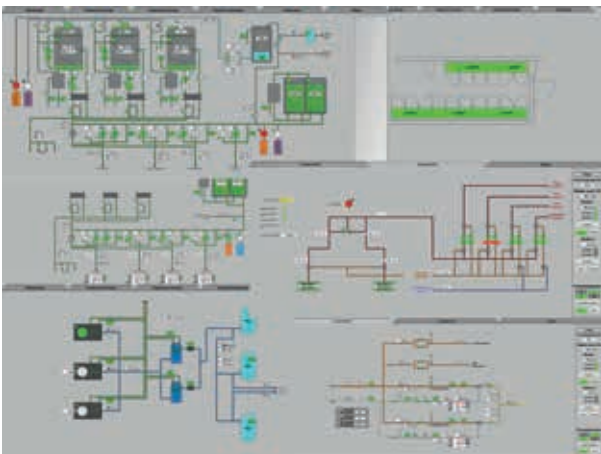
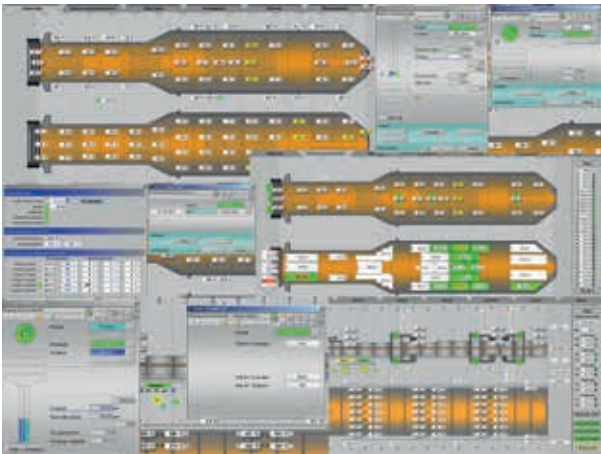
- Field level: The field devices (sensors/actuators) are connected via a field bus system, e.g. Profibus DP, Profinet, CAN bus.
- Control level: Here the automation and visualisation devices are connected to the higher-level process visualisation via an industrial ethernet network.
- Process visualisation: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

The process control system allows for monitoring and controlling the glass production process from a workplace equipped with monitors. All actions are effected in real time. All processes, including alarm management, can be monitored and controlled via this operator station. Graphical charts and historical data can also be retrieved at this station.

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. A major part of the control is managed by SPS and/or level 1 automations.
- Level 2: The main function is to optimise the operation of level 1 and to output actuating variables and control points
- Level 3: Serves for planning, quality control and documentation

The collected data is processed and sent to higher-level production planning software via interfaces. These MES and/or ERP systems can be integrated in a user-friendly way using an OPC solution.

**BENEFITS**

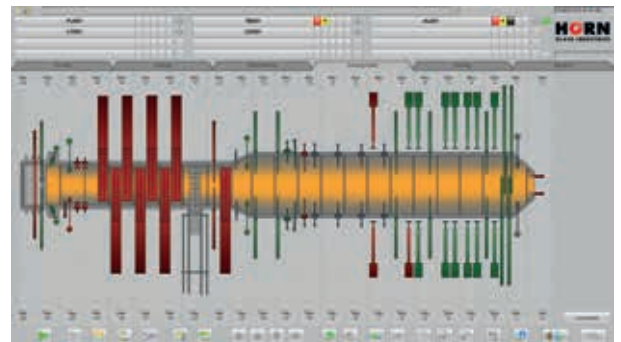
- **High performance**
- **Safety**
- **Reliability**
- **Intuitive operation**
- **Future-proof**

The custom-built software controls all important parameters of melting, forming and annealing of the glass.

For all critical processes, redundancy is implemented via a backup system. Switching between these systems can be performed "shock-free".

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

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



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The key to HORN®s extensive expertise in all fields of glass melting technology is the profound understanding of each detail within the entire process, making HORN® the specialist for technological progress and innovation for each aspect of a glass plant. In addition to its knowhow about individual elements such as furnaces, HORN® has expanded its services to become a one-stop supplier for turn-key plants. From initial planning to full operation - HORN® stands by you all the way.



**PLANNING +
ENGINEERING**



MANUFACTURING



**SERVICE /
INSTALLATION +
SUPPORT**



**LET'S GO
FULL CIRCLE.**

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GLASS INDUSTRIES

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