

■ Guardian, United Arab Emirates

Glass Roots

In a new glass production facility in Ras Al Khaimah in the United Arab Emirates, Guardian Glass benefits from an integrated solution based on automation, drives and power distribution technology from Siemens.

Mention “Middle Eastern company” and many people think of the oil industry companies. But there’s another industry for which the Middle East is extremely well known – the glass industry. In the Middle East 9,000 years ago, that industry was born, and it is likely the industry will be with us quite a bit longer. Now, glass is returning to its roots. The Middle East is becoming a boom region for glass production, supporting the major building projects currently under construction there.

Guardian recently completed a float glass plant in Ras Al Khaimah (RAK), United Arab Emirates. The plant is one of the largest non-oil projects in the region and will produce 700 tons of float glass per day, including high-performance coated glass for use in automobiles and construction. The plant employs about 300 people and is expected to generate as many as 1,000 regional jobs relating to distribution.

The new plant exploits the benefits of Totally Integrated Automation by using Siemens systems and technology throughout the plant. The new plant was built in just over a year, one of the fastest completions in the industry. The Siemens Solution Partner program was a significant factor in the successful and timely completion of the project, which was truly an international effort, with manpower coming from Dubai, Belgium and Germany. A local company was responsible for the mounting and cabling of the systems.



Siemens solutions every step of the way

For the batch house subsystem, designer Zippe Industrieranlagen GmbH of Germany used Simatic S7-300 and S7-400 programmable logic controllers (PLCs), with Simatic ET 200 distributed systems. Zippe also used Simatic technology for the cullet recycling system, in which leftover glass is returned to the batch house. These PLCs can be set up easily without the need to observe slot rules, and the S7-400 can be reconfigured on the fly.

The medium-voltage switchgear was engineered, delivered and commissioned by Siemens Dubai. The roof heating system in the tin bath was provided by the Siemens Solution Partner AEG SVS Power Supply Systems and is also equipped with Simatic technology networked with Profibus. The drive cabinets and motors that controls the batch chargers, lehr drives, top rollers and other drivers were designed, delivered and commissioned by Siemens Belgium. Simosyn 1FU8 motors were used in coordination with Sinamics S120, G120, and G150 drives. These drives were designed to offer integrated functions through the platform concept, total integration in engineering and a high degree of flexibility and many combination possibilities. Siemens also supplied analytical equipment for the RAK plant.

The cold end, in which the glass is inspected, packaged and labeled for shipping, was designed by Grenzebach. Simatic S7-400 PLCs and Masterdrives are well suited for the complicated and sometimes awkward task of moving and packaging the delicate finished product.

Proven partner for the control solution

For the distributed control system (DCS), Guardian contracted Siemens Solution Partner STG Cottbus of Germany, as Guardian has a long-standing and positive experience with Simatic technology and STG. The RAK plant is the tenth float glass automation project that STG has executed for Guardian. Since 1996, Guardian Glass relied on the expertise of STG and Siemens automation technology in a total of 12 projects.

The DCS project had to be implemented in a very short time, with just twelve weeks from the initial order to the factory acceptance test. All systems were delivered just fourteen weeks after the order. This short-track project execution was possible only due to STG's library of customer- and application-specific control modules. The pretests of all systems were

Modular control for glass: Simatic

The modular Simatic Controllers have been optimized for control tasks and specially designed for ruggedness and long-term availability. They can be flexibly expanded at any time using plug-in I/O modules, function modules and communications modules.

- ▶ Simatic S7-200: The low-cost micro system for simple automation tasks, easy to install and configure
- ▶ Simatic S7-300: The modular PLC for system solutions in the manufacturing industry with a wide range of modules
- ▶ Simatic S7-400: The Power PLC for system solutions in the manufacturing and process industries, with high-speed processing and enhanced communication performance
- ▶ Simatic C7: The complete machine control in the smallest possible space, comprising Controller and Operator Panel in one device

Process control solution

STG Cottbus implemented a process control system for the furnace/reversal unit, the tin bath, the lehr and the utilities, with a total of 11 Simatic PCS 7 automation systems. These systems are connected to the subsystems via Profibus, MPI and Modbus. Subsystems include:

- ▶ 20 Simatic ET 200M I/O systems
- ▶ 15 Simatic S7-300 controllers
- ▶ 44 Sinamics drives
- ▶ 57 AEG thyristor controllers
- ▶ 2 encoders (Temposonics)
- ▶ 3 Simatic TP 277 panels for backup visualization
- ▶ 11 Simatic OP 77 panels
- ▶ 1 MicroSAM process gas chromatograph

performed at STG in Germany, and the commissioning of the systems was performed as plug and play: The entire control system was installed, connected and almost immediately operational.

Looking ahead

An integrated solution using automation, drive and power distribution technology from Siemens will enable Guardian to operate its plant reliably and economically, and to maintain its leading position in the important growth region of glass in the Middle East. ■

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