"The performance of the facility was doubled – and that is a success."

Harald Schlader,
System Administrator
and Product Coordinator,
Lenzing

Modern Automation Technology for a Cellulose Fiber Manufacturing Plant
by Wonderware Austria

Goals:
• Efficient production;
• Increase production capacity;
• Seamless flow of information;
• Reliable production technology.

Challenges:
• Modernization of production automation system.

Wonderware Solution:
• ActiveFactory software;
• InTouch HMI;
• InTouch HMI for Terminal Services;
• Wonderware System Platform.

Results:
• Increased efficiency;
• Higher productivity.
Lenzing, Germany – The Lenzing Group, based in the Austrian city of Lenzing, is successful worldwide in the international Textile and Non-Woven market for the past decades. Lenzing today is market leader in many Business-to-Business markets: from special cellulose fibers to high-quality plastic-polymers.

To produce effectively in a high wage country like Austria, it is only obvious that state-of-the-art manufacturing plants are the keys to profitability. Seamless flow-of-information and digitalized production management are as fundamental to Lenzing engineers as functional tools for diagnosis, data collection and archiving. They rely on efficient hardware as the basis for automation architectures, and combine that with software products specifically modified for the different production divisions. This was also the case during the modernization of an existing cellulose fiber manufacturing plant, where perfectly integrated Wonderware software solutions allowed for a considerable increase in efficiency and a consequent boost in productivity.

Looking back on 70 years of experience in the fiber production, the Lenzing Group is the only manufacturer worldwide with expertise in all three generations of the so-called ‘man-made cellulose fibers’ - from classic viscose to modal- and lyocell-fibers. Lenzing’s success is based on consistent customer-orientation combined with leadership in innovation, technology and quality.

Next to the core business in fiber and synthetic material, Lenzing is also experienced in machine building and engineering. A high level of automation ensures an efficient production, in which the company invests continuously.

In order to update the automation system and adapt the production capacity to an increased level of incoming production orders, the existing hardware (Simatic S5) was replaced by more efficient Simatic S7 CPUs. Also, the automation system was to be integrated into the production area and to allow remote diagnosis.

“In the past, our production assistants had to be on site to collect data from meters and to manually put the data into the production database,” says Harald Schlader, Lenzing System Administrator. “Also, the electrical staff had to be on-site to evaluate a problem. Remote diagnosis was not possible.” Since Wonderware InTouch HMI (Human Machine Interface) software has been used for the visualization of the cellulose fiber production area for approximately 10 years and a large, continuously grown, object-library already existed, it was decided to put the modernization of the production area into the hands of Wonderware. “Our experience with InTouch HMI is very positive. Especially InTouch HMI for Terminal Services software has proven to be perfect for us,” mentions Harald Schlader with reference to the advantages of the visualization system.

Automation Solution Structure

Due to the unrivalled openness of the Wonderware software, regular PCs running with Windows XP operating system can be used as user stations in the control room. They are automatically connected to the Terminal Servers in the distribution room with InTouch HMI for Terminal Services. Based on the ArchestrA technology, this technology provides the user with a unified environment in which the information coming from different data sources can be integrated.

The environment offers a common infrastructure plus a unified set of services.
Lenzing also standardized the use of the Wonderware Historian as a production database. It is based on Microsoft SQL Server and allows access to real-time information for the analysis of plant and equipment data. The complete production data are automatically collected from various data sources, e.g., industrial OPC-Server or one of the +600 different I/O Servers. Lenzing also uses the Wonderware Historian to export production data into a higher-level ERP System.

For data trending, analysis and reporting, Lenzing chose Wonderware ActiveFactory software. This software offers tools for an optimal utilization of data stored in the Wonderware Historian. Functional point-and-click dialog boxes facilitate the retrieval of production and process data and simplify troubleshooting, in case of potential process inefficiencies, eliminating time consuming error localization.

With DASSIDirect, Lenzing takes advantage of the powerful Wonderware DAServer for the communication with Simatic S7 PLCs based on TCIP/IP. A customized ‘SFCWizard’ enables the automated import of up-to-date information from the ‘S7-Graph’ from Siemens into InTouch HMI. Otherwise the display of current information would not have been possible.

Advantages & Benefits of the Wonderware Solution

InTouch HMI for Terminal Services was mainly chosen because of the long distance between the cellulose fibers production area and the rest of the production plant.

The maintenance staff can now solve minor problems directly from their workstations. And production assistants can now carry out certain production process optimization activities directly at their PC.

"Since InTouch HMI is Windows-based and Windows is our standard operating system, PCs in the production area can be maintained by our internal IT department," states Harald Schlader. "Also, InTouch HMI gives us full flexibility regarding the choice of server - unlike other Terminal Server Solutions suppliers. The open OPC interface of the I/O Server is another advantage."

The implementation of the InTouch HMI application was short and smooth, thanks to the vast
experience of the Lenzing engineers, but also the reusability of the SmartSymbols’ Library: the SmartSymbol technology allows the reusability of graphic templates. Object-oriented graphics include graphic-, script- and tag management tools, necessary for the appropriate use of application objects in a production environment.

New applications are created based on standards, that way ensuring the compliance with company procedures. Existing applications can easily be adjusted by changing the SmartSymbol template.

“We gradually enlarged and improved our library to make sure that the integration of new equipment is done as fast as possible. The SmartSymbols we used had to be changed only a little to fit the individual processes,” says Harald Schlader. He also compliments Wonderware Support: “The support agreement with Wonderware provides a continuous software upgrade of our software. The technical helpline staff is competent, quick and is of a great help.”

All-in-all, the Lenzing Group realized a vast improvement regarding product-control and material usage thanks to the use of InTouch HMI for the production of special cellulose fibers. “We doubled equipment performance – and this is a pretty big success,” concludes Harald Schlader.

Figure 4: A proprietary SFC Wizard providing the automatic import of Data in InTouch HMI is deployed for the visualization of actual information of Siemens S7 Graph. Without this software, a specific application for the visualization of real-time statuses would have been necessary.