

Knauf Fiberglass

Integrator Automated Interface Solutions Builds and Deploys Ethernet-Based Opto 22-Wonderware Solution to Replace Installed System for Process Control and Data Acquisition

Knauf Insulation is a leading US manufacturer of thermal and acoustical fiberglass insulations for residential, commercial, industrial, marine, and original equipment manufacturer applications. The company's numerous products include fiberglass pipe insulation, insulation board, duct wrap, and pipe and tank insulation.

One of a number of building materials companies owned by the Knauf family of Iphofen, Germany, Knauf Insulation was formed in 1978 as Knauf Fiber Glass, when the Knauf family purchased an existing fiberglass production facility in Shelbyville, Indiana, USA. Shortly after its acquisition, Knauf—already well established in Europe in the areas of gypsum, lime/cement and other building products—initiated and completed a renovation program to modernize its US plant and increase capacity. This commitment towards continuous process improvement in its facilities has resulted in increased confidence among Knauf customers (both OEMs and end users) who always know they are receiving the highest quality products.

As part of its operations in Shelbyville, Knauf had three fiberglass production lines that utilized gauging systems to measure the density of the product during the manufacturing process. Accurate density measurements are critical in the manufacturing of many different types of materials including fiberglass. As Curtis Davies of the Corporate Process Engineering Division of Knauf Insulation explains, "We have very rigorous quality assurance standards. Any deviations from in-house material specifications on any of our products can result in the necessity to scrap that product and thus many wasted man hours. Our corporate mission is to foster an atmosphere of continuous process improvement and online gauging

allows us to become more proactive in our approach to process control and consistent product quality."

To obtain the required density measurements, leading automation and control technology companies have developed modern, nuclear-based gauging systems. These systems apply a radioactive energy source to products while special receivers measure how much radiation gets through. By determining how much energy is absorbed by the product, a very accurate density measurement is acquired.

Knauf wanted to import this measurement data into Microsoft SQL Server to build production profiles for analysis, archiving and optimization. But perhaps most importantly, Knauf



Knauf Insulation's online gauging system measures the density of the product during manufacturing.

needed the data to make automatic on-the-fly adjustments to its manufacturing processes.

Unfortunately, the gauging systems used by Knauf at its Shelbyville facility couldn't communicate the data to Knauf's Microsoft SQL databases without some very complex engineering. Knauf, it seemed, was going to have to enlist software consultants to develop a custom application that would enable the hardware to communicate with SQL Server. And to make matters worse, the cost for this adaptation was going to be very expensive. With the current system being less than user friendly, often difficult to maintain, and clearly not meeting Knauf's functionality requirements in terms of data acquisition and control, the company made the radical decision to replace the barely fifteen-month-old system. But could it be done quickly? And with little or no disruption in production? What would the cost be? And would the new system be able to address all of Knauf's data collection and delivery needs without sacrificing performance in process control?

These questions were all answered for Knauf by Automated Interface Solutions (AIS), a division of Industrial Maintenance Engineering, Inc. and a leader in process control automation and integration.

AIS assured Knauf that its needs and expectations for its control system were both realistic and affordable. AIS recommended removing the existing control system hardware in favor of the more open and less expensive Opto 22 SNAP I/O-based solution.

"As a solution provider, we're constantly looking for best of breed hardware and software to integrate for our customers. One of the reasons we knew the Opto 22 hardware would be a best fit for Knauf was because

it's designed on and utilizes open, standard protocols and technologies," says John Young, President of AIS.

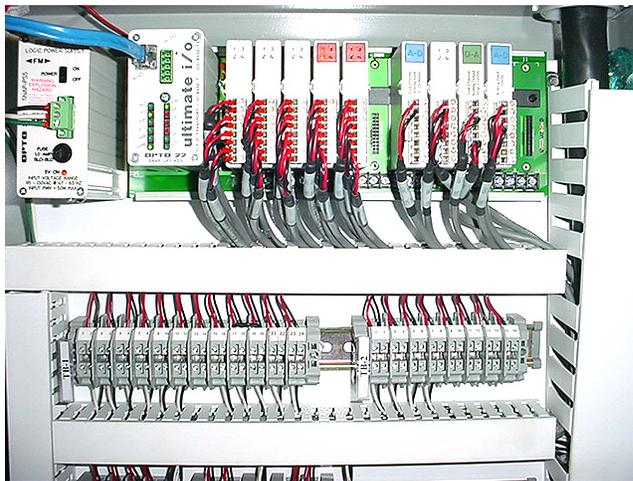
"A large part of the problem Knauf was having with their system revolved around that hardware's proprietary architecture and its resulting inability to send data readings to SQL. The Opto 22 hardware executes precise process control and can perform fast I/O scanning and acquire accurate measurements. But the SNAP system also has a high level of enterprise connectivity and can communicate I/O readings *directly* to enterprise systems and databases—like Microsoft SQL Server, Access and Excel—without the time, effort and cost needed to build custom interfaces."

AIS also found the SNAP I/O system to be significantly more affordable, with the Opto 22 hardware upgrade on each of the fiberglass lines costing about two and a half times less than the system it replaced.

Additionally, the SNAP I/O system has proven to be a superior solution for Knauf from a software perspective. SNAP I/O is programmed using ioControl™, a flowchart-based control application that also includes an advanced scripting tool capable of complex functions such as math, string handling, and PID loops.

"In the beginning, when AIS was first considering building solutions with the SNAP line of hardware, I visited the Opto 22 corporate headquarters for four days of free training," says Young. "Flowcharting was new for me but it turned out to be so simple and straightforward, in the end, I left the class thinking, 'This just makes too much sense.'"

With the robust, easy to use ioControl programming tool to pass along to its customer, AIS added an HMI package to its solution—Invensys' Wonderware® FactorySuite® software—which seamlessly integrates with SNAP I/O and provides a user configurable interface between operators and the fiberglass manufacturing control processes.



Knauf Insulation uses an Opto 22 Ethernet I/O process control and data acquisition system on its fiberglass production lines.

AIS presented its Opto 22-Wonderware solution as a less expensive, open architecture alternative to the existing system and initiated a pilot project for Knauf on one of its three Shelbyville lines. In just a few months, the customer was sold and ordered an additional upgrade for Shelbyville, along with a full system purchase for its facility in Lanett, Alabama.

“The open architecture was key,” says Young. “The platforms we design for customers must permit easy plant-wide integration and must also allow for component upgrades so that as technology advances, the systems won’t become obsolete.”

In this regard, the Opto 22 system’s ability to network with other intelligent controllers (regardless of the original manufacturer) is proving most valuable. In addition to Knauf’s gauging system sensors and actuators, AIS has also been successful in integrating the SNAP I/O hardware with various on-line x-ray, infrared, caliper, temperature, proximity, and moisture sensors used in other processes relating to sheet-good manufacturing. As a result, manufacturers are assured of the ability to acquire, display, and transfer data to SQL from all peripheral manufacturing processes—both present and future.

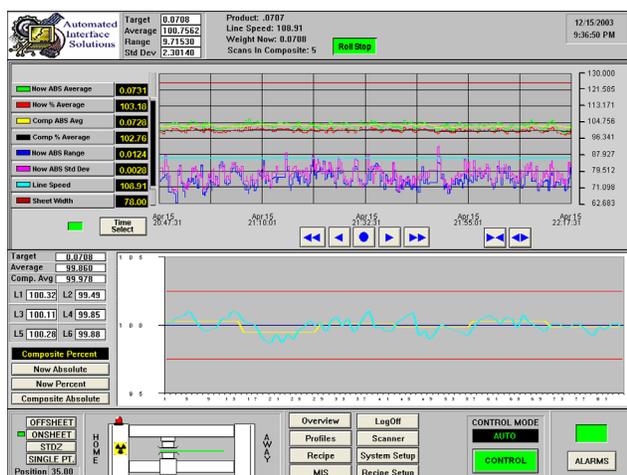
In all, Knauf is monitoring and/or controlling more than 30 I/O points with its new system and couldn’t be more pleased. According to Darrell Evans, of the Corporate Process Engineering Division of Knauf Insulation,

“AIS did a great job with the interfacing. When we came to the conclusion that the prototype version needed some revisions, they were able to make the necessary changes with installation in less than a week. Then, working with the SQL system programmer to ensure the appropriate flow of data, we were operational within two weeks. Today we are using the information for statistical analysis and very soon are anticipating to use it as input for automating our process control systems.”

Since the initial Knauf trial, AIS has been enlisted to similarly upgrade a particle and hard board manufacturing facility located in the state of Oregon, an extrusion process facility in Kentucky, as well an on-line coating application in Ohio.

“Outstanding performance in process control, better connectivity to enterprise databases, cheaper cost, open, and scalable—the Opto 22-Wonderware platform offers all these features and has been an excellent choice for integration with sensors, scanners, and controllers in all types of control and automation platforms,” says Young.

For more information about Automated Interface Solutions, call 1-877-viewAIS or 1-877-843-9247



An AIS-developed Wonderware HMI screen.

About Opto 22

Opto 22 manufactures and develops hardware and software products for applications in industrial automation, remote monitoring, and enterprise data acquisition. Using standard, commercially available Internet, networking, and computer technologies, Opto 22’s SNAP systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, or electronic assets that are key to their business operations. Opto 22’s products and services support automation end users, OEMs, and information technology and operations personnel. Founded in 1974 and with over 80 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability. Opto 22 products are sold through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-OPTO or visit our Web site at www.opto22.com.