



Case Study

BSH Bosch and Siemens Home Appliances Group

noax Industrial PCs automate machine data and the acquisition of operational data for a home appliances manufacturer



noax Industrial PCs on the production of dishwashers at a BSH Bosch and Siemens Home Appliances Group

Where reliability counts

"As a leader of innovation, we are in the forefront of our field." This is one of the corporate image slogans of BSH Bosch and Siemens Home Appliances Group, the worldwide domestic appliance manufacturer. It is similar to Jürgen Sing's motto, "always one step ahead." Sing, an engineer, supervises a team who is responsible for the IT support of all production operations in

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BSH plants as an internet service provider. He is always one step ahead which is important for the dishwasher production plant. The company not only designs new products, but also tests them during production. In order to remain competitive in the high salary German market, a company such as BSH has to thoroughly automate production. This means that control and test procedures are not only carried out by the operators, but are supported by Industrial Computers located next to them. The company installed their first Industrial PC in the early 90s, selecting noax technology to be present from the beginning. The dishwasher plant uses eight assembly lines. The noax Industrial PCs perform a number of tasks, such as job control and shipping container designations in pre-production, and they also control printing orders for equipment identification. This makes it possible for a unit to be traced throughout entire production. In the case of returns, it can easily be determined if an error occurred during production. In addition, noax Industrial Computers support the operators during quality inspections, shortly before the dishwasher is ready to be packaged for shipping, they check if the data on the

packaging slip is conform to the contents. All these tasks are handled by noax C12 and C15 Industrial Computers. In addition, the company utilizes noax 8" Industrial Computers on their forklifts. The drivers are easily provided with the necessary routing orders. The dishwasher production plant uses about 180 noax Industrial Computers and there are about 400 Industrial PCs in operation at various plants worldwide.

A perfect team: The Meilhaus digital I/O card and a noax IPC

The state-of-the-art BDE software system was developed by the Jürgen Sing team. The system at BSH communicates with the overriding SAP R/3 software. In R/3 the order and origination data are stored, and can be transferred and accessed by the respective IPCs, as soon as the dishwasher has passed each individual station. Laser scanners, located at each station, read the bar codes

attached to the appliances and pass the data on to the Industrial PCs. The digital Meilhaus I/O card is connected to a computer via a PCI slot on the Industrial PC. The I/O card delivers a signal, indicating that a new unit is in the working area. After completion, the rugged computer will again send a signal to the Meilhaus digital I/O card, so that the unit can be transported to the next station. The combination of Meilhaus cards and noax Industrial PCs has proven itself to be an ideal combination. This includes the printing of serial numbers, visualization of components, and test data storage of high-voltage monitoring and the printing of packaging labels. All these tasks are directed and controlled by BSH software, which was designed in such a way that intervention by the user is hardly ever necessary. An additional advantage of the system is that it uses standardized solutions in 26 BSH plants worldwide, and only requires a minimum of personnel for service and support.



The high-voltage monitoring is managed via the noax IPC

BSH Bosch and Siemens Home Appliances Group is a leading manufacturer of household appliances worldwide; in west Europe, the company is flourishing. The Dillingen location is one of the largest and most modern production sites for innovative products and production processes. BSH is able to further secure their competitive advantage with the help of noax Industrial PCs and their invaluable contribution.

Without noax, nothing works – at almost every production step a noax Industrial PC is installed



Made in Germany

BSH Bosch and Siemens Home Appliances Group takes quality reliability as seriously as noax, since the slogan "Made in Germany" is a mark of quality, which still has an excellent reputation in world markets today. In regard to quality control, BSH Bosch and Siemens Home Appliances Group rely entirely on the noax Industrial PCs. Richard Stippler, a colleague of Jürgen Sing, states, "Even the testing station has a noax computer. The computer determines if the dishwasher will be packaged." Stippler can't emphasize it enough, "It is of the greatest importance that the computer is always operational, specifically here at the quality assurance area. It has occurred that a forklift ran into a computer. And what do you think happened?" He answers, "Nothing. Not a thing. The noax computer continued operating, as if nothing had happened. We once had a competitor unit here with a plastic enclosure. It would have broken down at the smallest impact. We have not found anything that can be compared to the ruggedness of a noax computer." The Industrial PC has to be able to withstand vibrations caused by production machines, as well as the shocks of forklift vehicles. In addition, the computer has to be easily maintained. The fact that it has to be entirely sealed, according to safety class IP65, was also one of Sing's and Stippler's requirements. Dust, oil vapor and humidity would otherwise be able to penetrate the units and destroy the components. Since the computers are not only used in Germany, where the weather is moderate but also in southern countries, where it was of great importance for the IT professionals that the IPCs are also able to function faultlessly

under such extreme climatic conditions. Stippler, "Production proceeds at a very fast pace, meaning that about 10 dishwashers are produced per minute, which equals 2.2 million units per year. If one link in the production chain fails, it would create immense costs. For this reason, we require a computer that is capable of meeting our demands and function as reliably as possible. The noax units have not disappointed us in that regard." Jürgen Sing makes the following calculations, "We have three packaging lines using noax computers, which package several hundred dishwashers per hour. Just one hour of production standstill could result in a six-digit loss in euros."

Rugged and fail-safe

The noax Industrial PCs were designed exclusively for use in rugged industrial environments. All essential components are designed by noax. The computers are outfitted with an in-house developed all-in-one motherboard, and all components are securely attached, making the unit applicable for industrial use. All noax Industrial Computers are completely sealed according to safety class IP65, there are neither ventilation slots nor external fans. With this construction method, dust, dirt and humidity cannot enter the computer, which would lead to a computer failure. The complicated temperature adjustment of noax Industrial PCs is handled by an internal ventilator, which distributes the heat so that it can be optimally dissipated by the enclosure cooling ribs. This method of construction not only proved itself in Germany, but also in countries with higher temperatures, like Spain or Turkey. Those responsible at BSH Bosch and Siemens

Home Appliances Group were already aware of this by the mid-90's and took appropriate measures. The oldest noax unit was installed in 1996. The noax industrial computers have proved themselves for over ten years at the BSH Bosch and Siemens Hausgeräte GmbH plant in Dillingen. For this reason the production and its IT system is also used by other countries, using the Dillingen installation as a model. Even here, it is important to always be one step ahead. For this reason, noax industrial PCs will continue to take over important tasks in production not only in Germany, but in the entire world.

"We have not found anything which can be compared to the ruggedness of a noax computer."



The noax IPC displays the job data clearly



BSH Bosch and Siemens Home Appliances Group

Company Profile:

The BSH Bosch and Siemens Home Appliances Group is located in 14 countries with 43 factories. The company sells its products under the names Bosch, Siemens, Neff, Constructa, Gaggenau and Termador for example. In fiscal year 2007 the company had employed 39,000 employees worldwide. The development and competence center at the Dillingen location is responsible for creating innovative and environmentally friendly high-end dishwashers.

More information online:
www.bsh-group.de

Specifications and Application

Objectives:

- ✓ In-time depiction and controlling of the production process
- ✓ Efficient collection of machine, order and facility data
- ✓ Determination of key figures (i.e. productivity)
- ✓ Optimize production processes
- ✓ Improvement of quality
- ✓ Better data exchange with inventory management

IPC Requirements:

- ✓ IPC operation at high temperatures
- ✓ Completely sealed according to protection class IP65
- ✓ Protection against shock and vibrations
- ✓ Narrow installment
- ✓ Protection against humidity, oil and dust
- ✓ Easy operation via touchscreen

Overview of Components

Hardware:

- Industrial PC Compact C8, C12 and C15
- In-house developed noax all-in-one motherboard
- Input: particularly robust touch panels
- Bright, high-contrast TFT display
- Protection class IP65
- Completely sealed, without external fan

Software:

- Operating system: Windows XP
- Application programs: Self-developed program by BSH Bosch and Siemens Home Appliances Group

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