

Case Report

noax panel pcs at an appliance manufacturer



Industrial PCs
at Bosch und Siemens Hausgeräte GmbH
Completely enclosed – IP65
For extreme environments
Simple touch screen operation

noax[®]
Technologies

noax Industrial PCs automate machine data and the acquisition of operational data at a worldwide leading manufacturer of domestic appliances.

"As a leader of innovation, we are in the forefront of our field." This is one of the corporate

Overview

Customer:

BSH Bosch and Siemens Hausgeräte GmbH, an appliance manufacturer (www.bsh-group.us)

Requirements:

- Industrial pc use in pre-production, at production lines and in packaging
- easily accessed by touch
- completely sealed enclosure (safety standard IP65)
- protection from humidity, oil, mist and dust
- shock and vibration-proof
- small dimensions
- compatible with Windows 2000 and XP
- network capable via wireless LAN
- connection options for peripheral equipment via USB, COM interfacing
- bright and very legible display
- service friendly
- professional support and service for the entire running time
- lengthy availability
- maximum operational reliability

Installed noax products: C8, C12, C15

- noax motherboard NGB
- Intel Celeron – 400 MHz (C8)
- Intel Pentium – 1400 MHz (C12 and C15)
- 8", 12" and 15" TFT display (800 x 600), (1024 x 768)
- safety standard IP65
- resistive touch panel
- completely sealed enclosure

Product uses:

- acquisition of orders, and operational, as well as machine data
- determination of code numbers (incl. productivity)
- execution of test reports
- automatic production of nameplates



noax Compact IPC C15

image slogans of BSH Bosch and Siemens Hausgeräte GmbH, the worldwide domestic appliance manufacturer. It is similar to Jürgen Sing's motto: "always one step ahead." The team, which he supervises as a professional engineer, is responsible for the IT support of all production operations in BSH plants as an internet service provider.

Always a step ahead is most appropriate for the dishwasher production plant. The company not only designs new products, but also tests them during production. If a particular technology has proven itself, it will most likely also be utilized in other production plants.

In order to remain competitive in the high salary country Germany, a company such as BSH has to automate production, and constantly keep an

eye on costs, in addition to other measures. 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.

In Germany and in the whole world

The dishwasher plant using eight assembly lines. The noax industrial computers 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 and, if so, where it occurred. For specialized working procedures, a laser printer prints the unit description, as well as the type model, on the inside of the dishwasher door. In addition, industrial computers support the operators during quality inspections, particularly during high voltage monitoring. Shortly before the dishwasher is ready to be packaged for shipping, the industrial pcs check to see if the data on the packaging slip conforms to the contents. All these tasks are handled by noax Compact industrial computers 12" and 15".

In addition, the company utilizes noax 8" industrial computers on their forklifts. The drivers are provided with the necessary routing orders. The dishwasher production plant uses about 180 noax industrial computers and there are about 400 panel pcs in use at various plants worldwide.



The steel enclosure will be a dishwasher, the noax IPC shows the job data

A perfect team: The Meilhaus digital I/O card and the noax industrial computer

The computers run with Windows 2000 and Windows XP operating systems; however, the Jürgen Sing team developed the state-of-the-art BDE software system. The system at BSH communicates with the overriding SAP R/3 software. The order and origination data in R/3 is stored, and can be transferred and accessed by the respective IPCs, as soon as the dishwasher has passed each respective station, during the course of production. Laser scanners, located at each station, read the bar codes located on the appliances and pass the data on to the panel pc. The unit can immediately be identified and if there is missing data, it can be accessed from SAP with the assistance of the BSH software, in order to complete each respective operational step. This includes the printing of serial numbers, visualization of components for determining the proper configuration of all intended parts, 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 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 to the industrial

computer, indicating that a new unit is within proximity of the working area. As soon as this signal has been received by the touch panel pc, it can acquire the SAP data for this unit and complete the job procedure. 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. A Meilhaus I/O card is installed in almost every workstation. The combination of Meilhaus cards and noax industrial pcs has proven itself to be an ideal combination for completing the tasks at the individual production stations.

Made in Germany

BSH Bosch and Siemens Hausgeräte GmbH 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, particularly during the high-voltage tests, BSH Bosch and Siemens Hausgeräte GmbH relies entirely on the noax industrial PCs. Richard Stippler, a colleague of Jürgen Sing, states: "Even the testing station has a noax computer. Here, the unit number is scanned in. The computer acquires the relevant test requirements from SAP and after the test is concluded, the results are sent back to SAP. The computer then 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."

The IT specialists had a system in mind that would function even under extreme duress. They wanted the computer to be easily maintained



The printing order for bar code labels is controlled by a noax IPC

and be able to stand up to dust, oil vapor, high humidity, vibrations and shocks. Stippler has experienced the following: "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 competitive unit here with a plastic enclosure. It would have broken down at the smallest impact. We have not found anything which 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 standard 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 other countries, where temperature in certain areas of the plant can reach 104° F and where the humidity is very high, it was of great importance for the IT professionals that the industrial PCs are also able to function faultlessly under such extreme climatic conditions.

Of particular importance for both of them was fail-safe reliability. Stippler comments about that: "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."

Rugged and fail-safe



Nothing functions without it: a noax industrial PC is located at almost every production station



The high-voltage test is conducted by means of a noax IPC

The noax industrial PCs were designed exclusively for use in rugged industrial environments. All essential components are designed and produced by noax, instead of acquired at a discount price on the world market. This allows the hardware manufacturer to safeguard its high standards of quality and ruggedness. The computers are outfitted with an all-in-one motherboard, designed by noax, and all components are securely attached, making the unit applicable for industrial use. Principally, noax does not use sensitive plug-type connectors, since such connectors can come loose at minimal vibrations and cause the computer to fail, shutting down the entire production process. 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." Those responsible at BSH Bosch and Siemens Hausgeräte GmbH were already aware of this by the mid-90's and took appropriate measures. The oldest noax unit, which is still functioning today, was installed in 1996.

All noax industrial computers are entirely enclosed according to safety standard IP 65, there are neither ventilation slots nor external fans. Also loose cables are additional critical products of standard computers. With noax's construction method, dust, dirt and humidity cannot reach the computer circuit board, which can lead to a computer failure very quickly.

The complicated temperature adjustment of noax industrial PCs is handled by an ebm (evidence-based medicine) Pope ventilator inside the unit. It distributes the heat so that it can be optimally dissipated by the enclosure cooling fins. This method of construction not only proved itself in Germany, but also in countries with higher temperatures.

The noax industrial computers at the BSH Bosch and Siemens Hausgeräte GmbH plant in Dillingen have held up for over ten years. For this reason the production and its IT system is also used by other countries, where dishwashers, gas and electric stoves, exhaust hoods, washing machines and numerous other household appliances are produced, 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.

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The noax IPCs log out dishwashers at three packaging lines, as they leave the assembly line

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