

Case study



Industrial PCs at Carl Schnicks GmbH & Co. KG

It's more efficient – IPCs streamline production data acquisition, machine data acquisition and warehouse logistics in plastics processing

noax[®]
Technologies



noax IPCs streamline the production, warehousing and shipment of window profiles

Design and functionality of the highest quality

"Our products are typical semi-finished products. In other words, goods that are used to produce a complete window. We only produce the profiles. The customers of our holding company manufacture the final product. Quality is our top priority. That's why we need noax IPCs." Michael Hoffmann's job as a plant controller means that he is responsible for ensuring the operational processes at Carl Schnicks GmbH & Co. KG are correct. He knows best about the profit potential of using the most modern IT in production. noax units are there from the word go.

The production of window profiles takes place in several stages and begins with mixing the source materials. There are three mixing lines for this purpose in Weißenfels. All source materials are delivered in powder form. With approx. 88%, PVC is the basic element of all profiles. There are also other materials, such as stabilising agents, pigments and fillers. During the mixing process, the material is heated in the "heat mixer" by the frictional heat generated. The material is not suitable

for storage in this state, as it would stick together in an unshaped mass during intermediary storage. This is why the powder

mix – called "compound" henceforth – is cooled down again in a cooling mixer.

"We were looking for units to be installed in the production areas – right next to the extruders."

Shaping at 200 degrees

The next step in production is extrusion. The compound is pressed in 33 extruders with a special tool that gives the window profile its final shape.

During extrusion, noax C15 IPCs carry out production data acquisition (PDA) and machine data acquisition (MDA). Hoffmann explains the advantage of controlling production with a noax IPC: "Errors in the product can be localised accurately with MDA. It allows quick intervention to resolve the error. This is how we keep scrap down to a reasonable limit. And that saves money." Beate Vogel, IT administrator, adds: "Besides that, the program also has the classic MDA functions. The software lets us know, for example, how long we need to start up the machines, when a tool needs to be replaced or if the system is at a complete standstill."

In the company's plants, employees as well as IPCs are in action around the clock. An extruder



noax IPCs support "chaotic" warehousing.

processes between 120 and 600 kg of material per hour. When a length of six meters of the window profile has been cooled, the machine cuts off the profile and stacks it on a pallet. Each pallet has its own barcode. Once the pallet is filled, its data is scanned and transferred to a noax IPC via WLAN. The PDA software on the industrial computer notifies the SAP system when the order is complete so that inventory management can manage the material. In addition, information on the contents of the pallet is saved on RFID chips, which play an important role in warehousing.

Once these jobs are done, forklifts bring the pallets with the completed window profiles into the "base body warehouse" where Schnicks has implemented "chaotic" warehousing. noax IPCs support chaotic warehousing by calling up data on the RFID chips and displaying it to the forklift driver. Even in warehouse logistics, noax IPCs provide indispensable services. Using the IPCs, Schnicks employees post the storage location, and can also accurately identify a particular pallet with its contents and find it in next to no time.

Database for chaotic warehousing

The noax IPCs at Schnicks are also part of the warehouse management system (WMS) comprising hardware and software elements. WMS takes on a multitude of tasks. It records incoming goods and returns, streamlines shipments or inventory reporting of stock levels.

Each forklift has two transponder antennae which pick up the data of the transponders, read and transferred to the IPCs on the forklifts, which in turn communicate with the company network via WLAN.

As a subsidiary of Schüco International KG, Carl Schnicks GmbH & Co. KG enjoys particular importance within the company group. The company's semi-finished products are used to produce windows that meet requirements for functionality and design of renowned architects around the world. To streamline its operating procedures in production and logistics, Carl Schnicks GmbH & Co. KG relies on Compact IPCs by noax.

noax IPCs ensure greater efficiency in the warehouse and on extruders.



The IPCs on the forklifts and side loaders are constantly exposed to vibrations and impact because the vehicles move over bumpy ground. That's why IPCs must be built to resist impact and vibrations. In a noax IPC, all components are secured so that they can cope with strong vibrations without any difficulty. Loose cables or other sensitive components that could cause computer downtime are simply not to be found in a noax IPC.

Climate control

Because warehouse vehicles with IPCs are constantly moving back and forth between production areas and external warehouses, they need efficient

climate control. Temperatures can reach up to 50 degrees Celsius in the production areas. In winter, on the other hand, the IPC occasionally has to survive outside temperatures of minus twenty degrees. It also has to handle the sudden change between the two extremes when the forklift is driven outside from the production halls in January.

To deal with both temperature ranges, the industrial computers have both a heating system and a cooling system consisting of several components. An internal fan quickly transmits the heat generated by the processor to the cooling fins on the housing. It is made of aluminum and quickly discharges the heat of the CPU safely. This design has also proven itself at the high ambient temperatures in the production areas. Interference-prone or fault-prone external fans or even ventilation slots are a big no-no in noax IPCs.

The heating system is tackled just as intelligently as the cooling system. A Micro-Controller switches on the heating as soon as it goes below a defined value. Once the optimal operating temperatures are reached, the heating switches off again. The functional capability at high ambient temperatures was a further and decisive argument in favor of noax IPCs. Beate Vogel: "We were looking for units to be installed in the production areas – right next to the extruders. You've seen yourself how warm it is there. That's why we set the condition that the hardware also had to work when it was more than 50 degrees. noax computers cope with that extremely well."

Automatic monitoring

The fully enclosed construction design in accordance with protection standard NEMA4X/IP65 also

carries some weight. Particularly due to the large fluctuations in temperature during the winter, condensation often forms on the forklift IPCs. However, condensation does not penetrate to the inside of the computer and cause short circuits on the electrical components. That would not just stop the computer but would also aggravate production processes.

Michael Hoffmann was already strongly in favor of IT solutions in production during the nineties: "We already bought the first noax computers for PDA and MDA applications for extruders in 1998. We installed a competitor's units on our forklifts. However, they were very highly fault-prone and so did not meet our requirements. With noax IPCs, we've had consistently positive experiences. That's why we have ordered noax IPCs for vehicles in the logistics terminals. Their hardware has always run smoothly on our forklifts and side loaders. Impact and vibration there result in heavy wear and strain."

The compact design of noax computers accommodates the needs of IT staff - at Schnicks. "The small dimensions were not a crucial factor, but they rounded off

the positive image of noax IPCs. And that was another bonus", explains the IT administrator. Meanwhile, 25 IPCs at Schnicks handle various jobs in production and logistics. Beate Vogel has nothing negative to say about the IPCs from Upper Bavaria: "We are very pleased with our noax units. I would choose noax again any time."

"noax hardware has always run smoothly on our forklifts and side loaders up to now. Impact and vibration there result in heavy wear and strain."



Using a noax IPC, an employee retrieves- MDA information.



Carl Schnicks GmbH & Co. KG

Company profile:

Carl Schnicks GmbH & Co. KG produces window profiles, typical semi-finished products. As a 100% subsidiary of Schüco International KG, Schnicks delivers its entire production to the parent company. The company is located in Weißenfels at the border triangle of Thuringia, Saxony and Saxony-Anhalt. Another branch is located in Haan, North-Rhine Westphalia. The window profile manufacturer has 400 employees. 250 are based in Weißenfels and 150 in Haan. For more information go to: www.schueco.com

Specifications and application

Objectives:

- ✓ Mapping and controlling production processes in real time
- ✓ Production and machine data acquisition
- ✓ Optimisation of production processes
- ✓ Increase in product quality
- ✓ More efficient warehousing

IPC requirements:

- ✓ 24/7 operation
- ✓ Can be used in the production area and outdoors (warehouse)
- ✓ Fully enclosed construction in accordance with protection standard NEMA4X/IP65
- ✓ Protection from powder and dust
- ✓ Protection from high temperatures, vibrations and impact
- ✓ Easy operation for employees
- ✓ Easily legible touchscreen displays

Overview of components

Hardware:

- Compact C12 and C15 IPCs
- N7B all-in-one motherboard (C12)
- N8C all-in-one motherboard (C15)
- Processor: Intel Pentium III – 933 MHz (C12)
- Intel Pentium M – 1.4 GHz (C15)
- 12.1 in. and 15 in. TFT display with analog resistive touchscreen
- Input: touchscreen
- Protection standard NEMA4X/IP65 (incl. plug cover), no external fan

Software:

- Operating systems: Windows 2000, Windows XP
- User program: cronet work by Industrie Informatik GmbH (www.industrieminformatik.com)
- BlockSTORE by Profi.S Gesellschaft für logistische Softwareentwicklung und Operations Research mbh (www.profi-s.de)

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