

The background image shows a complex industrial automation system in a factory setting. It features a large metal frame with various mechanical components, including rollers, belts, and a robotic arm. A control panel with a screen is visible on the right side of the machine. The overall scene is brightly lit, typical of an industrial environment.

SIEMENS

Ingenuity for life

Siemens won over Rockfon with a Totally Integrated Automation project

A Totally Integrated Automation project for Rockfon

When Rockfon took the decision to change the way they package one of their top products, they embraced the opportunity to be innovative. “If we do something, we need to do it properly”, was their first thought at Rockfon, so they called in their integrator ACE to fully automate the production line. ACE stepped up to the plate with professional keenness and, as always, counted on Siemens technology to get the job done.

Rockfon in Wijnegem, part of the building materials giant ROCKWOOL Group, manufactures fire-safe and acoustic system ceiling tiles. The ceiling profiles roll off the conveyor belts in Wijnegem. These are then manually packed into cardboard boxes, which is a rather labor-intensive job.

“The time was ripe to give the packaging step of one of our most popular production lines a makeover”, according to Martine Steenaerts, process engineer at Rockfon. They rang up ACE Ingenieurs- & Adviesbureau based in Lummen, an integrator who, after 15 years, is more like family in Wijnegem. “A great opportunity to build a packaging machine with cutting-edge technology”, commented Koen Aerts, project leader for automation at ACE.

Business challenges

- Rockfon needed a smaller packaging solution for its top product. Legislation around lifting and hoisting movements imposes lower maximum weights, and Rockfon has been working with smaller packaging in Scandinavia for a while now too.
- The packaging phase was a repetitive and physically demanding job for the operators. It was possible to automate this step by means of a ‘smart’ packaging machine.
- The whole production line needed to be managed more ergonomically and efficiently – ideally by 1 operator who can supervise 2 automated production lines.

Technical challenges

- Rockfon wanted to automate the whole process, to dovetail the process from start (profile forming) to finish (stacking of the boxes) seamlessly. Their aim was to find one technology provider who could handle the complete drive train.
- Automation of the packaging process was easier said than done: complex actions that are simple to do by hand (like putting an item inside a box) are not so easy for a machine to do as part of an automatic mechanical process.
- The existing profile forming machine’s control mechanism, which was still mainly based on relay control technology, had to be converted to a PLC control system and logically integrated in the overall automation of the production line.
- There was a need for remote service options for the packaging machine, but it couldn’t be connected to the business network.

Solution

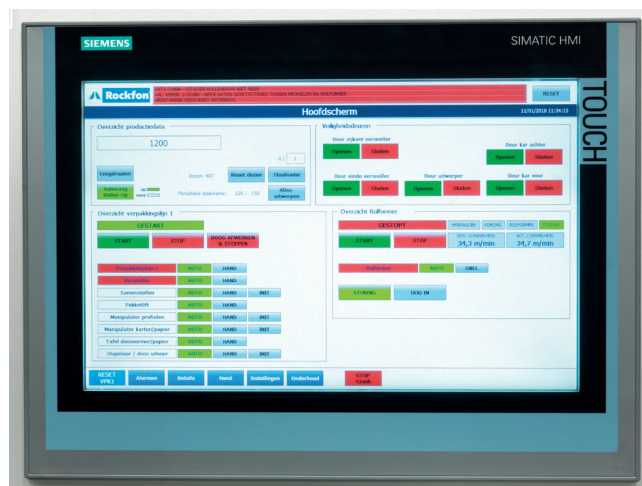
- It was apparent to ACE in the tendering phase already that they would opt for a TIA project. They had only good things to say about Siemens, who supplies their technology of choice.
- Siemens beat the competition when it came to the price/quality ratio. This pleased Rockfon too, as they were already familiar with the control components that Siemens offers. It was also their preference to stick to

one technology provider to maintain harmony and simplify maintenance.

- Siemens parts and products were chosen as far as possible for the installation and software, including the low-voltage equipment. The PLC of choice was the S71500 platform, which runs optimally with the decentral I/O ET200SP and ET200AL systems.
- The safety of the production line as a whole was also safeguarded by integrating it via an ET200SP1512-F CPU with Profisafe to the S120 drives.
- Newly installed comfort panels provide a clear display of the production line as a whole.
- S120 Booksize drives with Simotics servomotors were the drives of choice.
- Control, operation and remote assistance now take place via Sinema Remote Connect, which runs on a newly installed Siemens 3G router.

Results

- The machines are currently running at 90% of their anticipated capacity, and are improving all the time.
- The packaging machine runs a production cycle in 3 shifts, which has driven down personnel costs for operators.
- The job is now more ergonomic and workable for the operators who have since been retrained to become specialists on the new packaging line.
- False alarms and the associated time losses are now also a thing of the past thanks to controllers that work properly as well as careful alarm management. Alerts and hardware alarms at various levels have been integrated, which produces a more comprehensive overview and improved performance.
- The prototype machine soon outgrew its teething problems. "We recently bought the virtual commissioning software from Siemens called NX Mechatronics Concept Designer and the PLCSIM Advanced", says Koen Aerts. "Had we had this while we were designing this system, we would certainly have used it to predict the behavior of the profiles at critical points along the packaging line."
- The entire production line is controlled by one PLC, which includes the existing mechanics with their odd devices, motors and sensors.
- Sinema Remote Connect facilitates fast intervention and remote service options. The Scalance 3G router works independently of the Rockfon company network.



The way forward

- Rockfon is so satisfied with the TIA project that it has ordered two identical machines for two other 'lines'. These will be installed during the course of 2018, once again by ACE and with Siemens technology. The intention is to automate other production lines for large volumes later as well.

Project overview

- Industry: machine building & automation
- Customer: Rockfon
- Region: Belgium
- Technology: PLC S7-1500, Safety Integrated, I/O systems ET200SP & ET200AL, comfort panels, S120 Booksize drives, Simotics servomotors, Sinema Remote Connect, Scalance industrial router (3G), Sirius switching devices, Sitop power supply units.

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