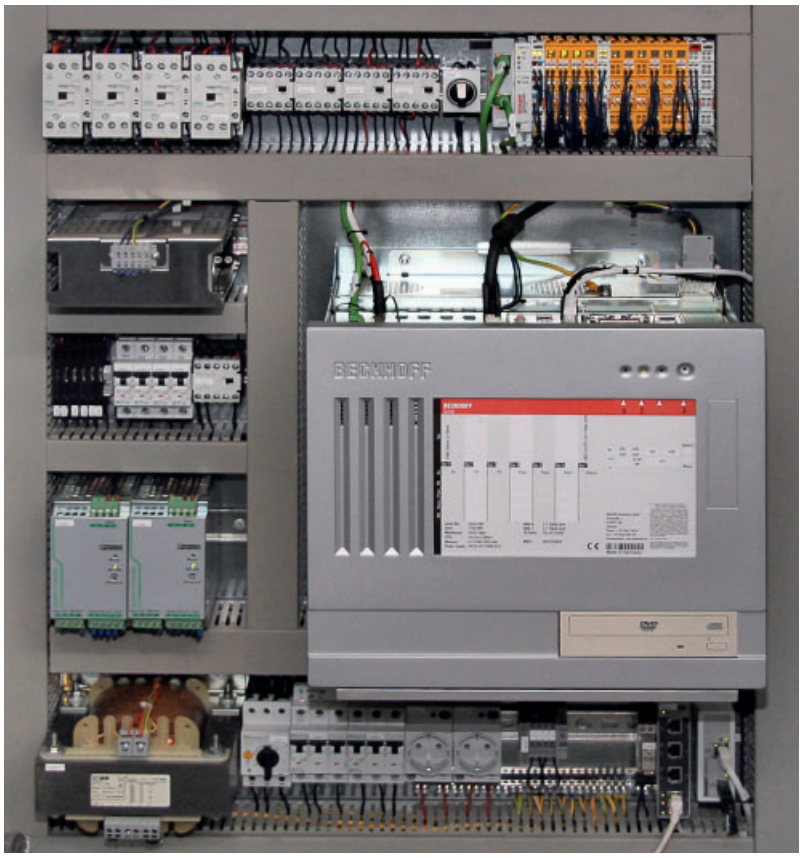
Voortman combines machines and logistics via software

TwinSAFE helps save engineering and wiring costs

According to Erik Dommerholt, software development manager at Voortman Automatisering, the advance of automation in steel production is only a matter of time.

The Dutch company Voortman Automatisering was founded more than 40 years ago and is one of the world's leading suppliers of CNC-controlled machines for steel production. While many competitors hold on to conventional control systems, the company with headquarters in Rijssen takes a different approach: with a modular machine concept and the application of a PC-based control platform from Beckhoff, Voortman is able to fully automate the processing of steel.

Voortman Automatisering, based in Rijssen, specializes in the design, production and worldwide installation of machines for processing steel profiles, angle steel and flat steel. The product range includes not only individual machines, but also complete systems that take in unfinished steel profiles and produce finished products that are cut to size, furnished with holes, surface-blasted, coated and even welded together with other profiles if required. "Traditionally, steel construction is an industry requiring numerous manual steps," said Erik Dommerholt, software development manager at Voortman Automatisering. "However, it is becoming increasingly difficult to find suitably qualified personnel, while at the same time companies must have more efficient production in order to remain competitive. Machines for sawing, drilling, cutting, welding, blasting and coating are always required in this sector. Through innovative automation one is able to establish a production system that requires almost no human intervention."



The Voortman machine is easily configurable thanks to the latest generation of IPCs and TwinCAT automation software from Beckhoff.

Software assigns responsibilities for the machines

The automation of steel production lines is only possible if the machines can communicate with each other and perhaps if they are coupled to an ERP system. "Voortman therefore developed its own software called VACAM (Voortman Automatisering Computer Aided Manufacturing), which runs on TwinCAT PLC automation software from Beckhoff," said Erik Dommerholt. "Meanwhile VACAM is used in 90 percent of our machines. The software determines which machine is responsible for what. When the machine is switched on, it automatically configures its runtime. The complete machine configuration is specified in an SQL database. But VACAM is capable of even more: it isn't just coupled with the configuration database, but also with a product and production database."

TwinCAT PLC as company standard

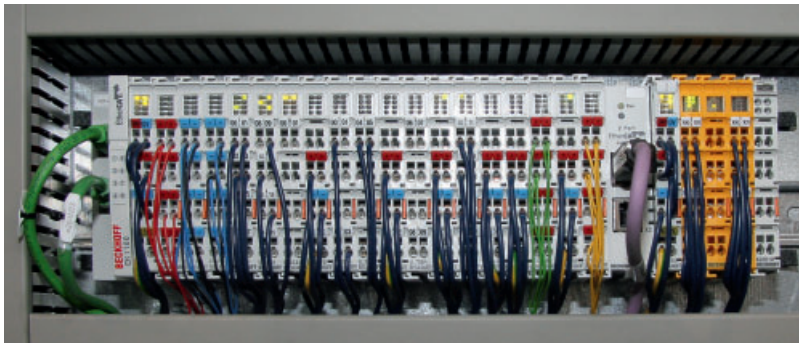
The relationship between Voortman and Beckhoff goes back to 1996. Erik Dommerholt explains: "At the time we developed our own real-time PC control system with a software PLC and used a Lightbus ISA interface card. In 2004 the first Voortman machines were equipped with TwinCAT PLC. Since 2007 this has been the company standard. Over the years, Voortman integrated all Beckhoff innovations such as EtherCAT and TwinSAFE into its machines. Today, all frequency controllers are controlled via EtherCAT, for example." All software and control parameters can be found in TwinCAT. Users can monitor all parameters with the aid of the TwinCAT drive manager.

TwinSAFE enables precise emergency stop analysis

TwinSAFE from Beckhoff enables implementation of a range of safety tasks. In principle it is possible to set up networks in which standard and safety signals are mixed or use separate networks. Jurjen Verhoeff from Dutch Beckhoff distributor, Industrial Automation Link, explains: "TwinSAFE can be used as an autonomous safety solution or as a local controller that communicates with a higher-level safety control system. The TwinCAT System Manager enables flexible integration of TwinSAFE terminals into the network. The safety solution from Beckhoff facilitates connection and decoupling of individual modules to and from a machine. This way, it is possible to expand the system without additional wiring."

The control components used by Voortman vary depending on the machine module:

- C6140-0030 control cabinet IPC with CP7032-1060 Control Panel, TwinCAT NC PTP or NC I, BK2000 Lightbus Bus Coupler with Bus Terminals
- C6140-0030 control cabinet IPC with CP7932-1180 Control Panel, TwinCAT NC PTP or NC I, EtherCAT Bus Coupler with Bus Terminals and TwinSAFE terminals
- C6920 control cabinet IPC with customized CP7932-1180 Control Panel, TwinCAT NC PTP or NC I, EtherCAT Bus Coupler with Bus Terminal I/O and TwinSAFE terminals



With the aid of the TwinCAT System Manager, TwinSAFE terminals can easily be integrated into the network.

Automation is becoming increasingly important in the steel industry.

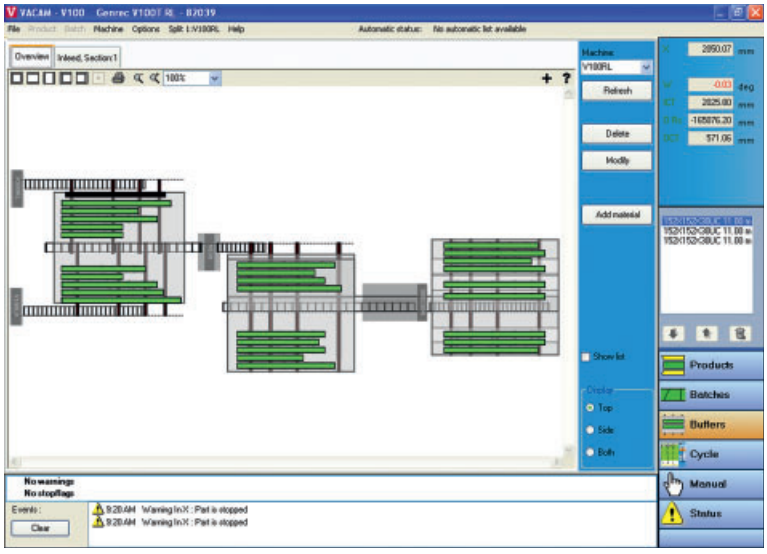
According to Erik Dommerholt TwinSAFE represents considerable progress compared with the previous safety solution. "In the past, large production systems had a single circuit. In the event of an emergency stop the circuit was completely switched off, and operators were regularly faced with the task of finding the cause. TwinSAFE is now able to pinpoint where the emergency stop was triggered. The response is also known, since the function is coupled to the module. In addition, wiring of the safety circuit is simpler. TwinSAFE enabled us to become much more flexible in terms of the safety circuit."

VACAM software makes production processes even more efficient

Over the years, Voortman Automatisering made substantial investments in the development of its machine software. "We now have 11 colleagues working on the software," said Erik Dommerholt. "The advance of automation in steel production is only a matter of time. Our machine software is programmed in C#. We integrate all objects that are required for controlling the machines and the complex production lines. In a production line with several machines the individual machines know their respective configuration. If a steel product is programmed in VACAM, the software determines where the product is cut, drilled or otherwise processed. The direction of the steel profile is also specified in the software."

VACAM also integrates the process of drawing a steel profile and the associated manipulations via a CAD function. During production the operator can use the software to determine where a certain product is located. The Voortman service engineers can use Netviewer for system maintenance purposes. "This is helpful for troubleshooting and it facilitates fast problem solving," said Erik Dommerholt.

The user interface of the VACAM control system can be used to monitor precisely which machines are connected.



Voortman Automatisering **www.voortman.net**
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