



voestalpine
EINEN SCHRITT VORAUSS.

voestalpine Stahl Service Center GmbH

AUTOMATION SOLUTIONS FOR SPECIFIC FACILITIES

The voestalpine Stahl Service Center GmbH, an internationally approved competence centre for the European automobile industry, is one of the largest semi-finished product manufactureres in Europe. Its guiding principle says: from the material to high-quality products by means of components, modules and systems

In spring 1999, when the management of the voestalpine Stahl Service Center GmbH decided to install an additional slitting, blanking and banding line, two major issues were put at the agenda: achieving the highest possible technology and automation level.

Sprecher Automation (Linz/Austria) was engaged to provide a solution for this sophisticated automation challenge. The solution covered all of the manufacturing process from the data basis at the start (customer order) to shipment: integrated automation and paperless processing. Commissioning startet in autumn 1999. Green light for full operation was given in February 2000.

Integrated solutions

Sprecher Automation was responsible for the automation system and all of the electric equipment such as data connection to the AS 400 of the existing network, the resulting data preparation for logistics and manufacturing, the complete machine control by PLC and the complete wiring works for the whole system as well as its machines.

The whole project could be implemented and finished within record time. The slitting and banding lines were delivered four months right after order receipt. At the slitting line, sheet steel coils with weights up to 34 tons and widths up to 1,650 mm are uncoiled, aligned and slit into customer-specific band widths.



Control console before loop

Afterwards, the bands are re-coiled by simultaneously controlling the coiling hardness with regard to the full coil diameter. Slitting is carried out at a line speed up to 300 m/min which takes an installed driving power (DC) of 600 kW.

Subsequently, the bands are singularised, weighed, corrosion-protected and steel-strapped at the banding line. The bands are then further processed on at a rotary table, where a hoisting magnet devides the incoming bands into a maximum of 6 different stacks depending on customer requirements.

sprecher
automation

Great job

The ISO quality requirements demand a complete tracking of all steel bands, the according processing steps through all of the manufacturing process as well as the electronic storage and filing for any complaints afterwards. Printers for ring tags and package tags which are installed along the production line identify the products even then, when the coils have already reached the end customers. Additionally, the dispatch note is printed out directly in the manufacturing hall.

The production process at the blanking line is similar to the process at the slitting line. In distinction to the slitting line, the bands are not re-coiled. They are cut into steel plates by an double eccentric shear. The length of the plates are 200 up to 6,000 mm at a tolerance level of 0.1 mm.

The subsequent magnetic stacker order-related stacks the incoming steel plates up to 800 mm precisely edge above edge at a speed up to 100 m/min. The driving power (600 kW, AC) is servo-controlled.

On the basis of the slitting line and the subsequent banding line, the manufacturing and control process can be described as follows: The central server in the office building, which is responsible for slitting, is connected to the higher-level AS 400, from which it receives all necessary manufacturing data containing material, dimensions, production speeds, etc.

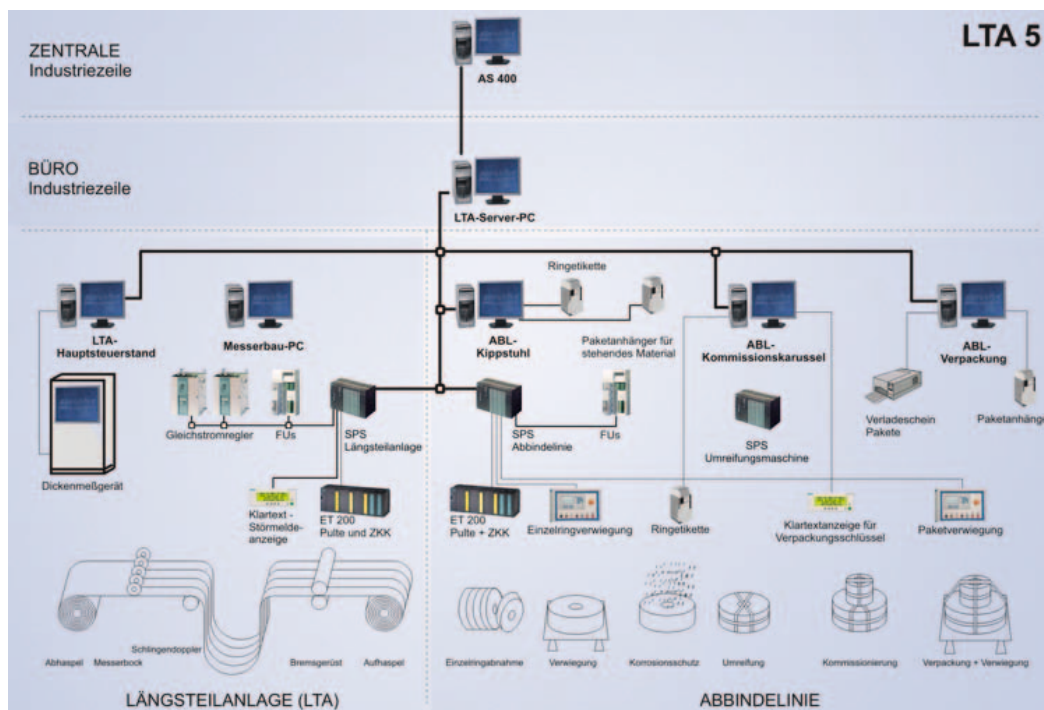
Also it contains all customer-specific requirements such as packaging dispositions, corrosion protection, strapping specifications as well as plate dimensions and therefore generates the specific production orders. Via Ethernet and optical fibres to the manufacturing hall, the server is connected to four PCs, which are located at the machine control stations, as well as to two control devices. The machine operator directly selects an order at the main control station and automatically prepares the whole system for production. For the operating personnel, all expenditure of human labor is simply limited to monitoring and con-firming of the manufacturing steps.

Communication via Profibus-DP

The field bus technology was consequently applied to the actuator and sensor level which means, that all power converters and frequency converters are connected to automation devices via Profibus-DP.

The complete sensor technology is directly connected to the machine (through field bus terminals), which in turn is connected to the control devices via Profibus-DP and ASI bus. Hence, time-consuming wiring could be enormously reduced. In addition, the operator faces a clear structured system which is easy to maintain.

Monitoring of access barriers, light arrays and rotary lasers guarantee adherence to operational safety regulations.



Overview of the system structure and network Example: slitting line 5 with banding line