



Tebulo Industrial Automation Systems

Case study: Metal Fabrication

Applications

- Surface cleaning
- Marking
- Destrapping

Products

- Hot steel slabs
- Hot steel coils



ABB robots for Tebulo industrial automation systems

Tebulo Industrial Automation specialises in the design, engineering and turn-key creation of industrial automation solutions. The delivery programme includes marking and labelling machines for hot and cold coils, as well as machines for applying and removing strapping. The steel industry is one of its main markets. Here, robots are put to a great many uses, because of their high degree of reliability in adverse conditions. Tebulo has opted for ABB robots for various marking solutions

Marking hot steel slabs

Throughout the steel industry, marking systems are used for quality control and other purposes. The steel, which is delivered in various grades to

different customers, has to be continuously tracked and must be identifiable during and after the production process. Tebulo recently developed a new system for marking hot steel slabs, constructed around the ABB industrial robot, type IRB 6650. Hot steel slabs, which leave the production line at a temperature of around 1,000°C, can be directly marked using this system.

The robot is equipped with a specially designed marking head with a triple function. Firstly, the position of the hot steel slab is determined. Then a high-pressure water system is used to jet off the mill skin. This consists of flakes which adhere to the steel but which burst off it during the cooling

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process. To prevent the marking being lost when this happens, the flakes are removed. During the cleaning of the surface, the temperature of the slabs falls from 1,000°C to 700°C. Finally, the marking is put on the 'cleaned' surface using a heat-resistant paint. For the application of the paint, a special spray-gun has been developed which continues to perform reliably at high temperatures.

Tebulo's marking system is characterised by a high degree of flexibility. This is due in part to the fact that the ABB robot is freely programmable, and that its parts can be changed quickly. All robot modules and components can be changed in under 30 minutes.

Destrapping

A second design specially developed by Tebulo, and likewise based on the ABB's IRB 6650 robot, is a machine for removing the strapping which is placed around steel coils. The system has been designed so that strapping can be removed safely not just from

steel coils but also from steel plate and profiles, for example. The removal of strapping involves serious risks. Employees can be touched by steel coils, and the flying strapping can cause injuries. Moreover, when the strapping is manually cut, the steel coil can be badly damaged. The robotised destrapping machine prevents these problems.

The destrapping machine is based on a strapping recognition system and a hydraulic tool which cuts through the straps. The strapping recognition system makes it possible to bring the steel coils into any position. Steel, PP or PET strapping can be removed with the machine. For optimal flexibility, the recognition system and tool are housed on an ABB robot. For removing the strapping and breaking it down into small pieces, use is made of a winding or chopper unit. The whole machine is characterised by an extremely robust design, and is ideally suited to heavy industrial environments.

ABB's IRB 6650 robot has full vertical and horizontal stroke movement and a considerable forwards and backwards reach. This makes the six-axle robot suitable for numerous applications, including spray-painting, press operation, material handling, spot welding and injection moulding.

Benefits for Tebulo with ABB robots

- High degree of flexibility:
 - ABB robot is freely programmable
 - Quick change of parts
- Safety:
 - No risk for employees
 - Extremely robust design