# AlpRobTAG-S

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UTOMATIC BILLET TAGGING SYSTEM

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## AUTOMATIC BILLET TAGGING SYSTEM

**AlpRobTAG-S** is a patented system devised to entirely automate the billet tagging process through a highly effective and efficient stud feeding and welding method. The system delivers a reliable product identification and tracing technique using heat resistant and wear-resistant synthetic tags fitted with special welding studs designed to withstand the challenging conditions of the steel industry.

### OVERVIEW

- Fully automated system based on a six-axis anthropomorphic robot
- Laser profile sensors for extremely precise tool guidance
- Accurate positioning and secure attachment of the tag using a special stud
- Wear-resistant tagging with steadfast printing
- Customised identification and enhanced product traceability
- Full compliance with operational safety standards
- Increased efficiency and overall productivity
- Limited maintenance requirements and regular after-sales service



Tagging a billet using the special welding stud.

**AlpRobTAG-S** employs an advanced laser vision system that pinpoints the position of the billet to then proceed with the tagging cycle. Through the use of a robotic arm equipped with an automatic welding gun, it accurately solders the tag fitted with the specially designed stud onto the billet. The stud has been conceived to firmly secure the tag on rugged surfaces and to tolerate powerful stresses to minimise its displacement and thus avoid loss of critical information. The heat-resistant high-tech tags, thanks to Data-Matrix, QR Code, barcode and even plaintext characters are highly customisable and can offer a wide range of information that is easily accessible and provide full and continuous material traceability, from the receipt of the raw materials to manufacturing and, finally, despatching.

#### SYSTEM ARCHITECTURE

**AlpRob TAG-S** system fits into an appropriate enclosure depending on the plant's operating conditions and in conformity with the safety rules. The robotised cell consists of a 6 axis anthropomorphic robot equipped with a customised automatic welding gun guided by a laser vision system. The dedicated patented pneumatic feeder ensures the continuous supply of the welding studs and it can be reloaded without disrupting the tagging cycle. The system also features two thermal transfer printers, or alternatively laser printers, which carry out the issuing of the tags and make sure that the printing remains uninterrupted even in the event of maintenance works on one of the units, The allocated custom HMI operator panel, designed and developed by Alping's technicians, completes the standard setup.

If required, the system can be further integrated with an auxiliary artificial vision system that scans the tag in real time to determine whether it was applied successfully, and the information printed correctly.



A screen capture of the personalised HMI control panel.



A detail of the automatic welding gun and laser vision system.



The optional **Smart Camera**, an integrated artificial vision system for added functionality.

#### HOW IT WORKS

The system first verifies the exact position of the billet, also identifying possible obstacles, by means of the integrated laser sensor. It then processes the acquired imaging data through a specially developed vision software and determines the coordinates of the optimal point on which to attach the tag. The anthropomorphic robot promptly retrieves the duly printed tag from the thermal transfer printer (or laser printer) securing its hold by means of a suction cup. At the same time the stud feeder ensures that the welding gun is properly loaded and ready to operate. The robot will then position itself according to the coordinates supplied by the system and proceed to solder the tag on the billet by means of the special stud. If the robotic arm has been equipped with the optional machine vision component, the *Smart Camera*, the system can further verify whether the tagging process was successful and, if a problem is found (e.g., incorrect, or missing information on the tag), it will take the necessary steps to address the issue.

TECHNICAL SPECIFICATIONS				
Robotic arm	6 Axes anthropomorphic		Tagging cycle	12 s/billet
Tagging area x-axis	± 200 mm		Min. billet dimensions	100x100 mm
Tagging area z-axis	0/400 mm		Welding stud type	Steel/Copper-steel
Tag temperature resistance <sup>1</sup>	Up to 550° C	Up to 1200° C	Welding stud diameter	4 mm
Tag dimensions <sup>2</sup>	Customisable	Customisable	Stud feeder capacity	4000 pcs
Printing technology	Heat transfer or Laser		Smart Camera <sup>3</sup>	Optional



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