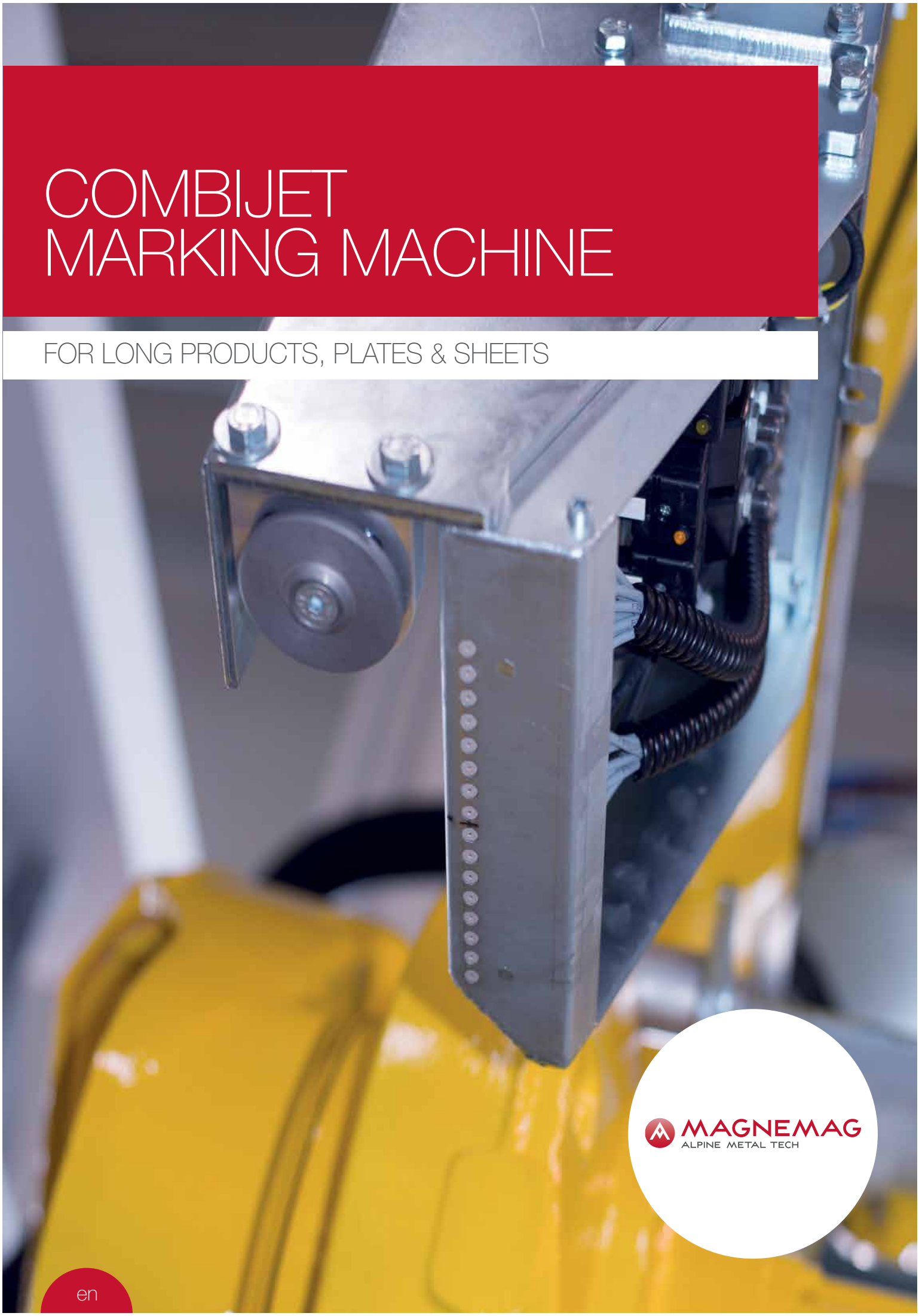
COMBIJET MARKING MACHINE

FOR LONG PRODUCTS, PLATES & SHEETS



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COMBIJET MARKING MACHINE

FOR LONG PRODUCTS, PLATES & SHEETS

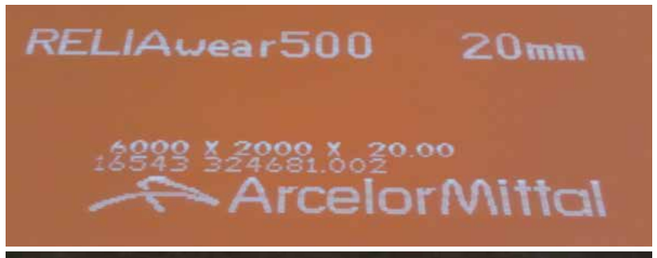
The CombiJet Paint Marking Machines are designed for marking plates and sheets as well as long steel products, even in harsh industrial environments. CombiJet Paint Marking Machines are distinguished by their high resolution markings and ability to mark in a variety of sized fonts and numbers of lines, while the product is moving or during standstill.

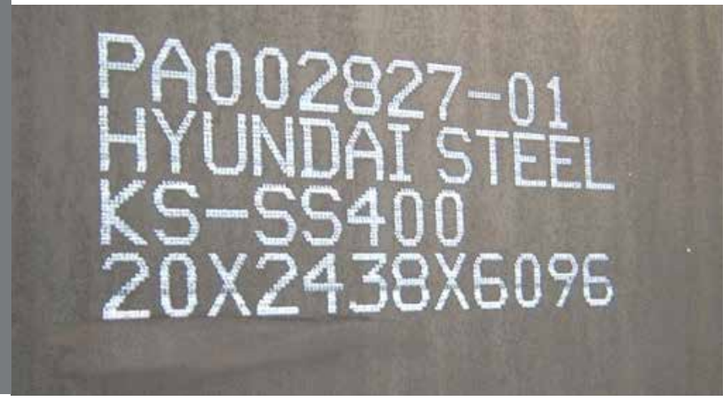
The marking equipment is available as a stand-alone machine or in combination with other marking technologies, such as punch, ringe or edge marking.

The equipment is manufactured using standardised modules and specially selected electrical and mechanical components, which are designed, tested and proven to function in the steel industry. This results in high reliability and low maintenance of our equipment.

Your advantages

- LOW RUNNING COSTS
  - Low maintenance costs
  - Approx. 30% less air consumption and 10-15% less paint consumption than conventional paint marking
- TIME SAVING
  - Marking at high speed without production stops
- EXCELLENT MARKING QUALITY
  - More nozzles equals higher resolution
  - Atomised dots resulting in low drying time and less overspray
- EASY MAINTENANCE
  - Only required maintenance is that the bottom shield of the marking head is cleaned with solvent once/twice a day
  - Fully automatic by-pass and cleaning sequence
  - No assembly parts or manual adjustments - „Plug & Play“ Solution





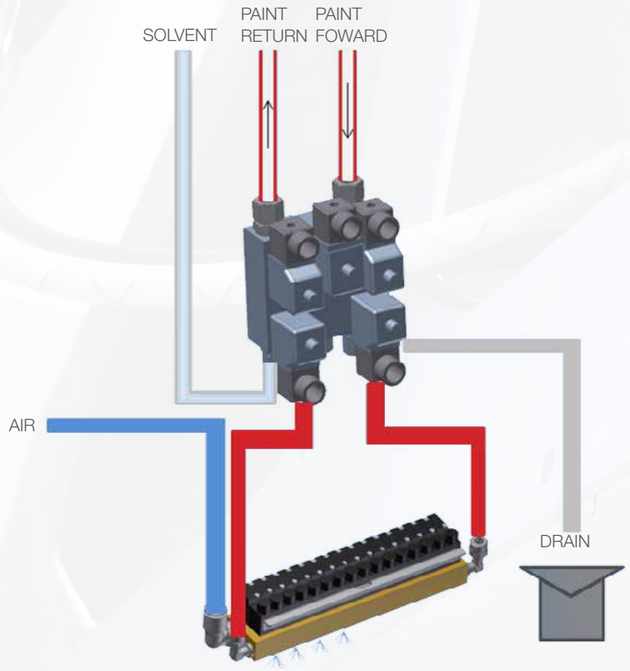
MACHINE PRINCIPLE

The CombiJet Paint Marking machine consists of a robust fabricated construction and the marking head that contains the marking sections, pneumatic manifolds and media distribution valve block.

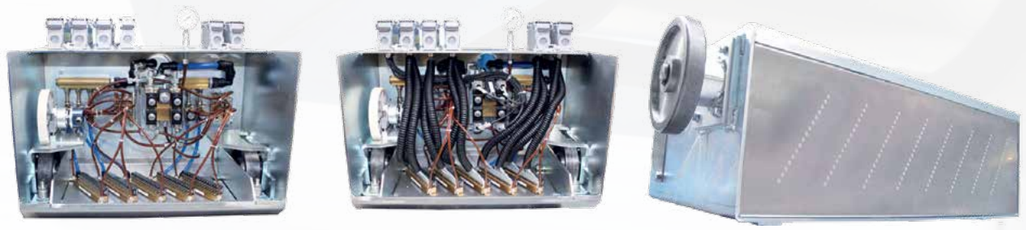
The marking technology is based on electromagnetically activated paint nozzles contained within the marking section. During marking, electrical signals and compressed air is sent to the paint nozzles, producing atomized paint dots with sharp edges and a thin paint layer, thus ensuring a consistent high quality marking with low drying time. The number of nozzles within a marking head can be specified for given marking requirements.

The machine is controlled by a Siemens S7 based PLC with a standard interface, which can easily be connected into existing steel plant equipment and fault diagnostic system.

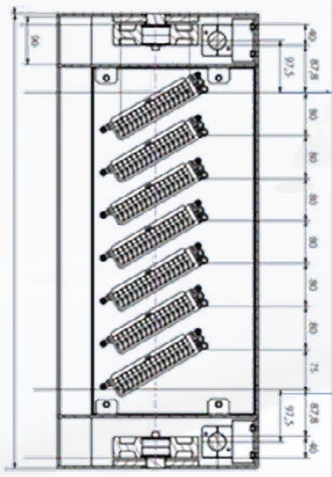
PRINCIPLE



MARKING HEAD



MARKING IMAGE



LOGO
32 nozzles high

CHINESE
16 nozzles high

CHINESE
14 nozzles high

LOGO
32 nozzles high

LINE 1, 50MM (10 dots high)
LINE 2, 50MM (10 dots high)
LINE 3, 50MM (10 dots high)
LINE 4, 50MM (10 dots high)
LINE 5, 50MM (10 dots high)
LINE 6, 50MM (10 dots high)

10 mm (2 dots character spacing)

MCU - DRIVER FOR PAINT APPLICATIONS

The requirements of an efficient marking machine include meeting a marking speed up to 8 m/s and an administration of more than 500 paint nozzles. In combination with a resolution of about 1 mm, this results in a real time clock of 100 µs. During this time the administration of the nozzles must be performed. The new Driver System meets not only all these requirements but is also able to work with high voltages that far exceed the standards.

MCU
MARKING CONTROL UNIT

The Marking Control Unit gives signals to the device control and communicates with the output cards in real time.

- 4 Digital Inputs, supply related; 4 Digital Outputs, supply related
- 2 Encoder Inputs (A/B, capable of 5V up to 24V differential inputs); 2 Encoder daisy chained Outputs (A/B, 5V outputs)
- 2-port Profinet connection (RJ45) for interfacing with a Siemens plc.
- TCP/IP v4 (RJ45) for interfacing with a PC or plc's without Profinet
- SD-Card for the driver firmware, settings and fonts.
- USB (not yet implemented)
- Output and Input for the fast bus system to the output cards; Output and Input for daisy chaining multiple MCU's

HVOC
HIGH VOLTAGE OUTPUT CARD

The High Voltage Output Card (HVOC) is engineered to be mounted on a standard socket. This brings the advantage for easy card exchange as well the opportunity to install the output card directly on the marking head (see also page 4 - Marking Head), which reduces the cabling in the drag chains. One output card is able to manage 16 outputs. The HVOC controls the CombiJet marking heads and switches with 320 Volt for rapide response times.

LVOC
LOW VOLTAGE OUTPUT CARD

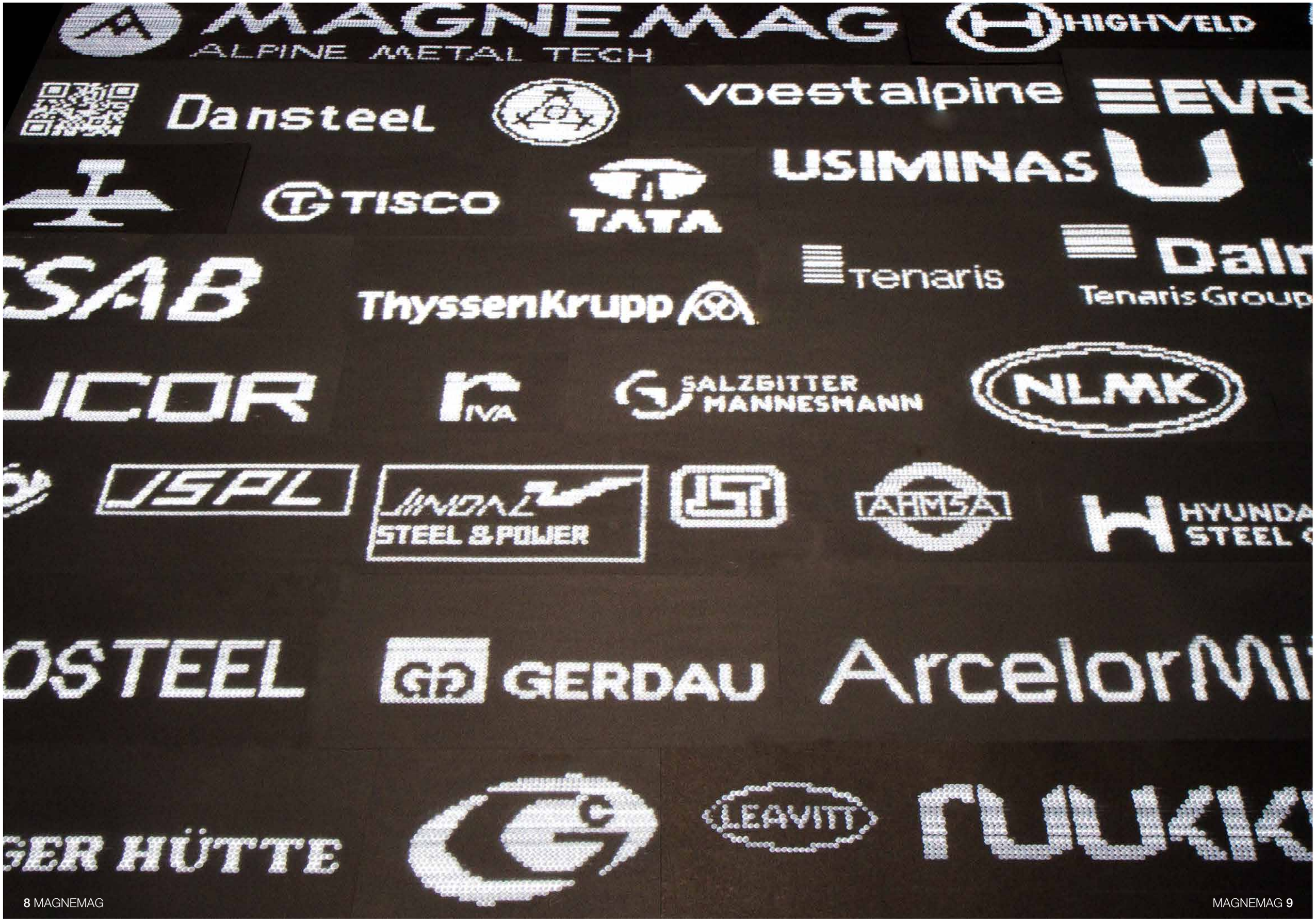
The Low Voltage Output Card (LVOC) is suitable for all other types of AMT marking heads. Additionally the card is used to control the cleaning system of the combijet marking head. One output card is able to manage 16 outputs. The LVOC is able to switch with a range of 24-80 Volt.

STANDARD PACKAGE (OEM)

The Standard Package consists of the CombiJet marking head, the paint/pneumatic supply unit and the control unit with HMI. Automatic and manually activated cleaning functions secure significant high reliability and low maintenance requirements.

The Standard Packages provides the following features:

- Easy to integrate the package into any production line, on a robot or other new/existing equipment
- Automatic and manually activated cleaning functions
- Flexible marking with more lines, logos, classification symbols and machine readable codes (data matrix, barcode and dot code)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Tenaris Group
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UCOR
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NLMK
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AHMSA
HYUNDA
STEEL
OSTEEL
GERDAU
ArcelorMi
GER HÜTTE
LEAVITT

COMBIJET MARKING MACHINE

TECHNICAL DATA

Machine types	Bridge, cantilever, robot	
Usual application	Long products (pipes, profiles, tubes, sections) Plate, sheet	
Temperatur range	-10 °C to 300 °C Product temperature -10 °C to 40 °C Ambient temperature	
Usual application	Alphanumeric, classification symbols, logos, branding, cyrillic, farsi, and machine readable codes (data matrix)	
Marking data	Character size: Dot size: Marking head with: Number of lines: Marking speed:	75 - 2500 mm 3 - 5 mm 16 - 500 nozzles Depending on number of nozzles (full flexible) Up to 8 m/s
Electrical data	Main supply: Power consumption: Control voltage:	3 x 400 V, 50 Hz (Other voltages possible) Approx. 3 - 7 kVA 24 VDC
Pneumatic supply	Medium: Pressure: Consumption:	Filtered and drained Min. 5 bar Max. 7.5 Nm^3/min

V 1.0

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