

Handling of billets

GAUSS MAGNETI designs and manufactures since 1972 special rectangular electromagnets for billets are designed according to the customer's requirements for in-plant handling.

They are mainly used for the following applications:

- *Billets unloading from cooling bed end (for hot material up to 650°C);*
- *Loading and unloading of lorries, rail containers, ships;*
- *Storage in warehouse or depots.*

Due to their design these magnets are suitable to operate at high temperature. In fact the special thermal insulation and the double bottom plate hamper that the heat from the load reaches the coil assuring then the highest electromagnets reliability.

The particular coil design and the very low current density allow handling of billets and slabs at temperature up to 650°C.

In presence of billets layers with high displanarity, electromagnets with mobile poles are used in order to suit the load shape.

The main advantages are:

- *Operators can stay away from the hot material avoiding risk of accidents;*
- *Operators don't have to climb over the piles to slinging the load dramatically increasing the handling safety level and reducing the cost of the personnel;*
- *No damage to the material due to handling with mechanical lifting systems;*
- *Faster handling speed with handling cost reduction;*
- *Better use of the storage areas with the increasing the available space.*

The magnets can be used individually or combined under a beam.





The electromagnets are fed:

- From the mains through our electronic equipment with 4-quadrants digital converter allowing magnetic flux setting, counter-excitation for fast load release, coil temperature control by means of thermal probes or amperometric relays (important in high-temperature magnets),
- In case of power failure, from lead or Ni-Cd batteries with automatic switching and charging system and continuous control of the battery charge condition.

Gauss Magneti has also successfully developed the electropermanent magnets technology. Electropermanent magnets hold their magnetization also in case of mains failure or cable break, so they do not need buffer batteries or mechanical safety forks.



Their peculiarity lies in that they are activated by a current pulse lasting few seconds and that they hold their magnetization till a second current pulse – opposite the first one – deactivate them.

Beside the obvious advantage of handling safety, they also assure the highest reliability being actually exempt from internal Joule heating.

Coming on the market of high performance magnetic materials has also allowed in electropermanent magnets a weight and dimensions reduction preserving the same capacity.

Also for electropermanent magnets Gauss Magneti offers special versions able to handle high temperature materials (up to 600°C).

They can be used individually or combined under a beam.

Electro permanent combine the benefits of both electro and permanent magnet technology with the following advantage:

- Safety: No accidental release of the load due to power failure or electric cable damage. They do not need buffer batteries or mechanical safety forks.
- Performance: They also assure constant performances being actually exempt from internal Joule heating.
- Reduced wear: Very low maintenance.
- Environmentally friendly: No emergency batteries needed.

Several tenths of magnetic systems for billets handling has been sold all over the world.



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