Electromagnets and electropermanent magnets for coils handling

GAUSS MAGNETI designs and manufactures since 1972 special electromagnets devoted to handling coils with horizontal as well as vertical axis and weight up to 50 tons. Every electromagnet can handle a wide coils range thanks to the particular polar shoes which fit the coil profile.

They are mainly used for the following applications:
- Unloading the production of coils (also hot materials);
- Loading and unloading of lorries, rail containers, ships;
- Stocking in store or warehouse.

Handling of coils by electromagnets brings to a remarkable spare in store space reducing also the damage on the coil due to the traditional "C" hook. Moreover handling is carried out by one operator with consequent reduction of cost and risk for personnel. The electromagnets can be designed for handling both vertical and horizontal axis coil.
The electromagnets can be made also with double redundant coils so that in case one of the coil burns the remaining can hold the load safely.

The main advantages are:
- No damage to the material due to handling with mechanical lifting systems;
- Faster handling speed with handling cost reduction;
- Reduction of risks for personnel;
- Better use of the storage areas with the increasing the available space;

The electromagnets are fed:
- from the mains through our electronic equipment with 4-quadrants digital converter allowing magnetic flux setting, counter-excitation bringing to fast load release, coil temperature control by means of thresholds (important in high-temperature magnets), automatic switching to batteries, buffer batteries (Pb or Ni-Cd), automatic battery charging system and continuous control of the batteries charge condition.

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MAGNETIC EQUIPMENTS FOR HANDLING AND SEPARATION TECHNOLOGY
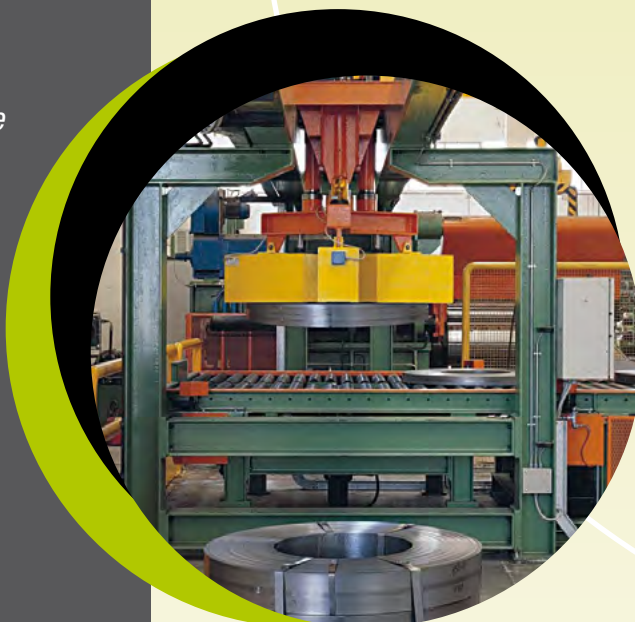
Gauss Magneti has also successfully developed the electropermanent magnets technology. Electropermanent magnets hold their magnetization also in case of net failure or cable break, so they do not need buffer batteries or mechanical safety forks.

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 – deactivates 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.
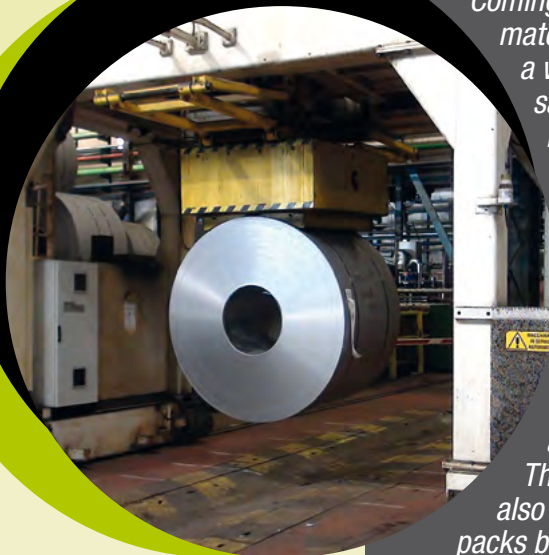
Handling of coils by means of electropermanent magnets is possible for limited air gaps and binding conditions. Electropermanent magnets cannot be used by large air gaps and not good coil binding.

Electropermanent magnets have replaced electromagnets in applications such as coil cutting lines (slitter) because of their higher safety degree and of the highest automation level which can be achieved.

Thanks to Gauss Magneti technology, it is now possible also with electropermanent magnets lifting thin coils from packs both manually by the operator and automatically by means of PLC.

Electro permanent combine the benefits of both electro and permanent magnet technology with the following advantages:
- 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.

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