Load temperature > 120°C

Example: Hot billet handling up to 600°C

Thanks to the transport of hot material, sequential processes in the steel mill can run at “the same temperature”. This means, that material does not need to be heated up again for further processing, thus saving considerable time and energy.

Figure 1: TRUNINGER-Magnet system for load temperatures up to 600°C

General Considerations for Handling Hot Loads

For magnetic handling of hot loads a number of physical properties and design issues need to be considered:

- Steel loses all of its ferromagnetic properties at temperatures above 768°C.
- Hot metal products are not as stiff as cold products. The increased flexibility of the product results in more deflection. This increased deflection needs to be carefully considered in the design of a suitable magnet handling system.
- At load temperatures of 600°C, the lifting force of the magnet is significantly reduced compared to the force generated by an equivalent magnet at 0°C.
- Special precautions must be taken to protect the magnet electrical system from the heat.
- The design of any magnet spreader assemblies needs to be as simple as possible. Active (motorised) spreaders require drive assemblies which in most cases are not capable of withstanding constant exposure to high temperatures. Lubrication of moving parts is also more difficult due to the generally lower melting point of lubricants used for moving parts.

- Devices such as proximity switches or sensors are also generally unreliable when constantly exposed to high temperatures. Sensors must be either removed or protected against the heat.

TRUNINGER “HOT” Magnets

Our long term experience as a manufacturer of magnet systems allows us to offer a wide range of magnet lifting solutions for hot load handling. Thanks to the following features, hot loads at temperatures of up to 600 °C can be transported safely:

1. High temperature resistant sealing compound
2. High temperature resistant insulation material
3. Reflective plates to protect the magnet coil from radiated heat
4. Thermal insulation layers within the magnet to separate the magnet coil from the heat
5. Magnet housing designed for passive cooling
6. Heat resistant power supply cables with additional heat protection device