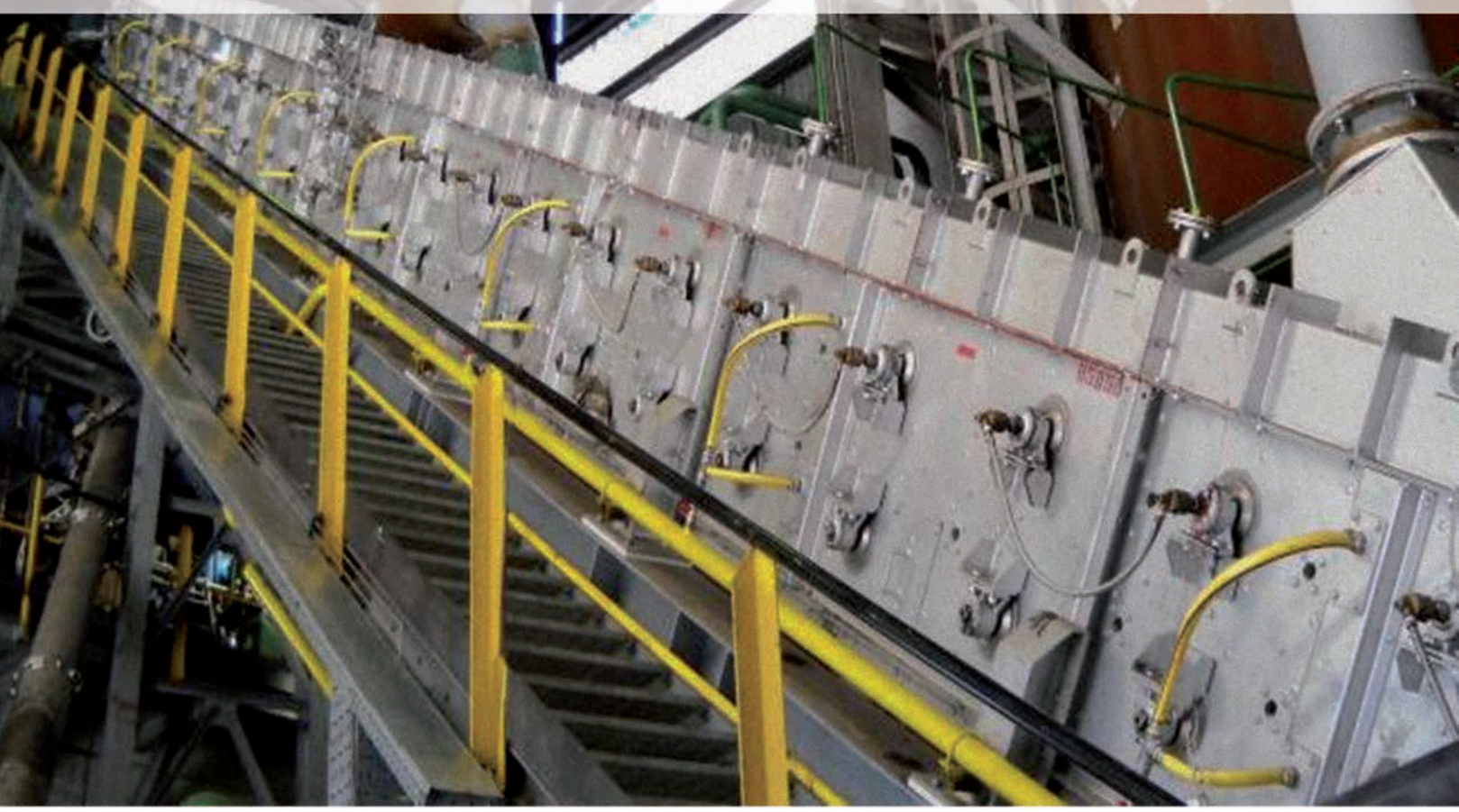
ECOBELT® DRI

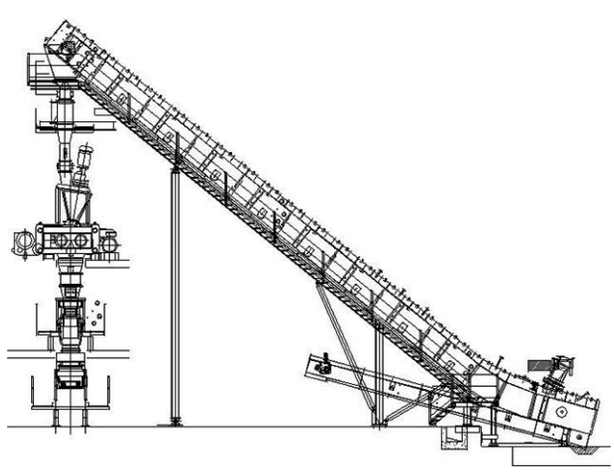
Steel belt conveyor for DRI



The **Magaldi Ecobelt® DRI** is the ideal and reliable conveyor for handling very hot and reactive bulk materials, like Direct Reduced Iron (DRI) produced from rotating hearth furnaces (RHF) before further processing stages.

DRI is produced by passing hot reducing gases over iron ore, which is usually in the form of pellets. Although the process is conducted at high temperatures, the pellets retain their original shape, but are considerably lighter owing to the removal of oxygen from the ore. The pellets have a hugely porous structure, which makes the material extremely reactive and prone to re-oxidation on contact with air. Therefore, the DRI handling process demands an inert atmosphere inside the conveyor to avoid the material oxidation.

Downstream of the direct reduction process, a further stage



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may consist of briquetting or smelting hot DRI pellets. In the former case the **Magaldi Ecobelt® DRI** has the function to cool down the DRI pellets, since the working temperature of the briquetting machine is generally in the range 500÷700 °C. In the latter case the higher the DRI pellet temperature, the higher the energy saving from electric arc furnaces (EAF) to smelt the DRI pellets.

Ecobelt® DRI Advantages

- Eco-friendly. No material spillages mean no environmental contamination.
- No degradation or re-oxidation of DRI pellets as far as the conveyor discharge.
- Performance at the highest level of reliability and safety.
- Low maintenance and power demand.
- Compact design and safety operation.

Ecobelt® DRI Working Concept

The **Magaldi Ecobelt® DRI** key component is the Magaldi Superbelt®, the ideal steel belt to convey difficult materials in industries where high dependability is essential, that overcomes the frequent problems encountered by conventional conveyors, such as chain conveyors. The Magaldi Superbelt® is able to withstand chemical attacks, and is completely enclosed in a steel casing to prevent dust dispersion to the environment. High temperatures and tear issues are solved thanks to the patented method of connecting the pans to the mesh belt, that leaves all elements free to expand in any direction. The Superbelt® damage-tolerant design eliminates any risk of sudden failures, otherwise always present in the case of conveyors using chains. Wear is negligible, since material is slowly conveyed with no relative motion against steel parts. Power demand for conveying and noise are at the minimum levels.
The inner walls of the steel casing are coated with a suitable insulation to prevent heat loss during the transportation. The insulation thickness and its characteristics depend on the DRI pellet temperature required at the unloading point. Nitrogen or other suitable gases can be injected into the **Magaldi Ecobelt® DRI** to make the inner atmosphere inert, under a small positive pressure to avoid any oxygen leak and subsequent material oxidation.

The Magaldi Superbelt® is designed to separate the zones above and under the belt (see figure 1):

- The upper zone is kept hot at a temperature close to the DRI pellet one. In that zone, the edge and pan materials are properly selected to withstand the DRI (or other hot material) temperatures. An adequate thickness of the inner insulation keeps the external surfaces of the casing at temperatures suitable to allow a safe operation.
- The lower zone is relatively cold, while the carrying idlers are water-cooled.

If the handling process requires the material to be cooled, the **Magaldi Ecobelt® DRI** keeps the same basic configuration.
A few details may change:

- No water-cooled idlers.
- Addition of cold inert gas, crossing or skimming over the hot material bed.

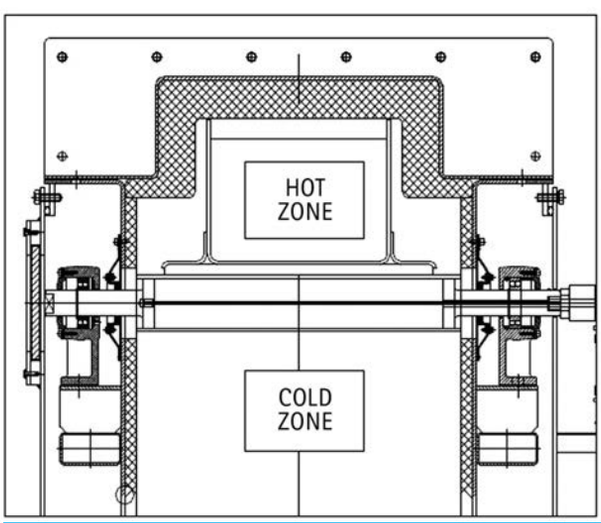

Figure 1

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