

thyssenkrupp: LD slag from Duisburg conserves resources

Sustainability has a long tradition at thyssenkrupp and is, in fact, an integral part of the corporate strategy. The objective is to reconcile business success with ecological and social responsibility. In this context, thyssenkrupp MillServices & Systems GmbH, a company belonging to the Business Area Materials Services, commissioned the Fraunhofer Project Group for Materials Recycling and Resource Strategies (IWKS) to carry out an eco-balance study on the environmental impact of the possible uses of LD slag.

For a long time now, most of the LD slag generated by thyssenkrupp has been successfully used as a mineral construction material for earthworks, road building and hydraulic engineering as well as a lime-based fertilizer (converter lime). In all cases, it serves as a substitute for such primary raw materials as iron ore, limestone, dolomite, basalt or granite. Another part of the LD slag is recycled in the iron and steel production processes at thyssenkrupp Steel Europe AG's Duisburg-based integrated steel mill.

At the heart of the ecological footprint assessment was the question what would be the bottom line if LD slag were replaced by primary raw materials. The results are quite clear: "Our LD slag is a resource-friendly, quality-controlled product that meets the high standards placed on mineral construction materials and fertilizers. The study showed that the environment would suffer more severely if the potentials of LD slag were no longer exploited and natural raw materials were used instead," states Dr. Michael Dohlen, Head of R&D/Quality Assurance at thyssenkrupp MillServices & Systems. He adds, "The efficient use of our LD slag reduces the burden on the environment. The additional greenhouse gases that would be emitted if our LD slag were replaced with natural stone as a construction material and fertilizer, would be equivalent to annually about 10,000 – 13,000 t CO₂ or 32 to 41 million km car journeys (Euro 5), the production of 15 to 19 million kWh electricity (production mix 2012 in Germany), or the storage capacity of 800 to 1,000 ha forest."

About slag

Slag is a by-product of virtually all metallurgical production and processing operations. In the course of smelting, the reduced density of slag leads to the formation of a homogeneous surface layer on the liquid metal. This is separated from the flow of molten metal and, still in its liquid state, channeled into the slag bed to cool. From there it is taken to the processing plant, where it is broken down and screened and its ferrous fraction is removed, depending on the envisaged use.

LD slag is generated in the production of converter steel according to the Linz-Donawitz process (LD process).

About thyssenkrupp Materials Services:

With around 480 locations in over 40 countries, the Materials Services business area specializes in materials distribution, logistics and services, the provision of technical services as well as services for industrial plants and steel mills. In addition to rolled steel, stainless steel, tubes and pipes, nonferrous metals, specialty materials and plastics, Materials Services also offers services from processing and logistics to warehouse and inventory management through to supply chain and project management.

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