The experts in ferrous slag

INSTITUT FÜR BAUSTOFF FORSCHUNG

FEhS

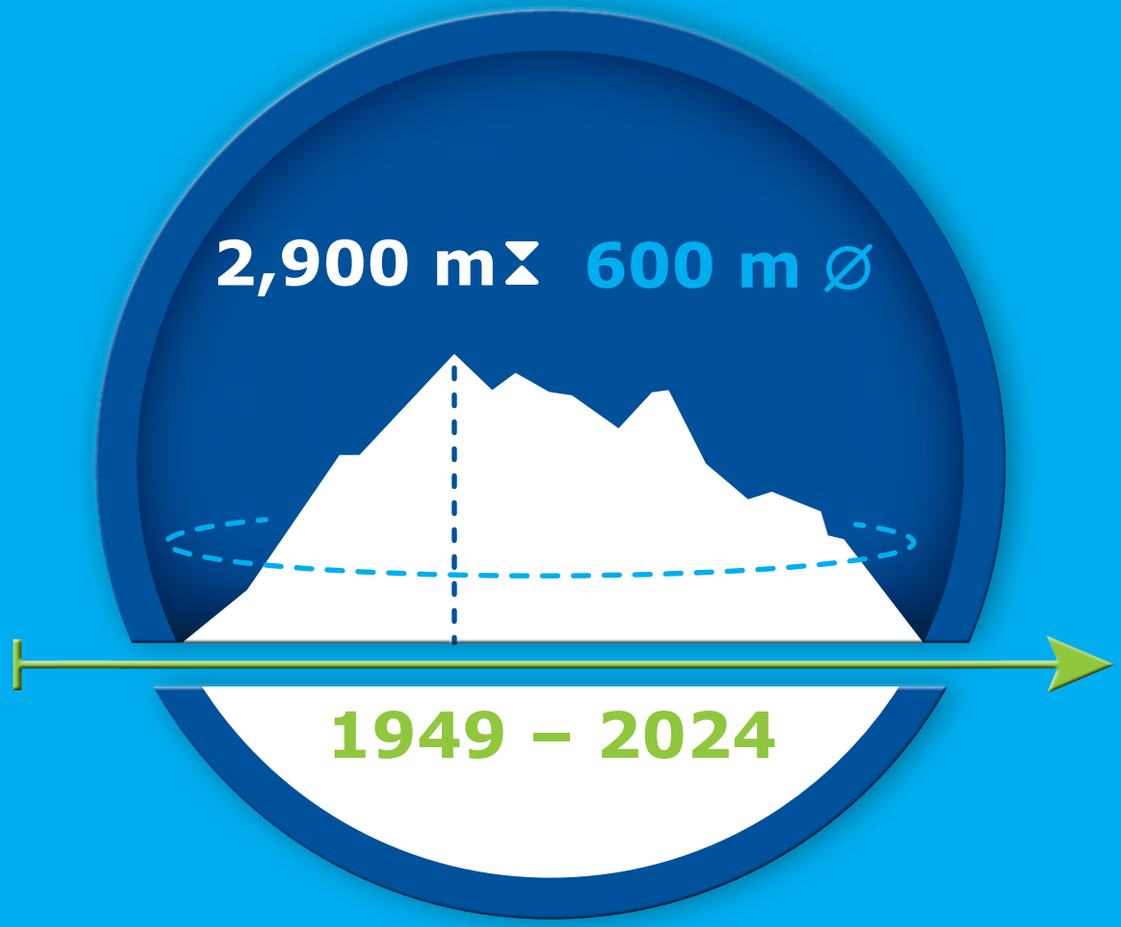
Sophisticated manufacturing processes are used to process 96% of ferrous slag into environmentally friendly, high-quality products such as cement, concrete, asphalt and fertilisers.

THE FEHS INSTITUTE: THE SLAG PROFESSIONALS

The FEhS – Institut für Baustoff-Forschung e.V. [Building Materials Institute] in Duisburg is the first address in Europe for research, testing and consulting in relation to ferrous slag, and the construction materials and fertilisers produced from it. The competence leadership of the organisations that went on to become the FEhS Institute is something we have continued expanding right up to the present day.

As a state-of-the-art service provider, our scientific experts, our Construction Competence Forum, and our network of industrial associations, public authorities, standardisation committees, companies in various industries, and scientific and research institutions, make us a desirable partner for our members, and for customers from around the world.

We will continue to apply our experience and expertise in ferrous slag and the products manufactured from it. With the aim of saving resources, advancing the cause of environmental protection, and promoting efficient and sustainable business practices.



If one were to make a heap of all the ferrous slag used in Germany since 1949 – over 1.1 billion tonnes – it would be 600 metres across and 2,900 metres high, making it the same size as the tallest mountain in Germany, the Zugspitze.

SLAG –
RAW MATERIAL OF THE FUTURE

During the manufacturing of pig iron and steel, ferrous slag is produced. Thanks to modern methods of cooling and further processing, a melt flow at 1,500 to 1,600 degrees Celsius is converted into ground granulated blast furnace slag, air-cooled blast furnace slag, and steel mill slag.

These are very similar to natural magmatic rock in terms of their production and composition, and have very homogeneous mechanical properties. Companies in the construction and agriculture industries around the world value the exceptional quality of slag-based products such as cement, concrete, aggregates for transport construction, and fertilisers.

Another advantage of ferrous slag: it is environmentally friendly! When properly used, it is safe for soil, water and air, and its use reduces the quarrying of large quantities of natural resources such as natural stone and sand. This also reduces emissions of the climate killer CO_2, particularly in the manufacturing of cement.

SLAG CREATION


Blast furnace slag
Air-cooled blast furnace slag
Ground granulated blast furnace slag
Steel mill slag (BOF slag)
Crude steel
Steel mill slag (electric arc furnace slag)

197 Mio. t

CO_2-Emission

Through the use of granulated slag in place of Portland cement clinker in cement, the emission of 197 million tonnes of CO_2 could have been avoided in Germany since 1949.

THE TRANSFORMATION OF THE STEEL INDUSTRY AND „NEW SLAGS“

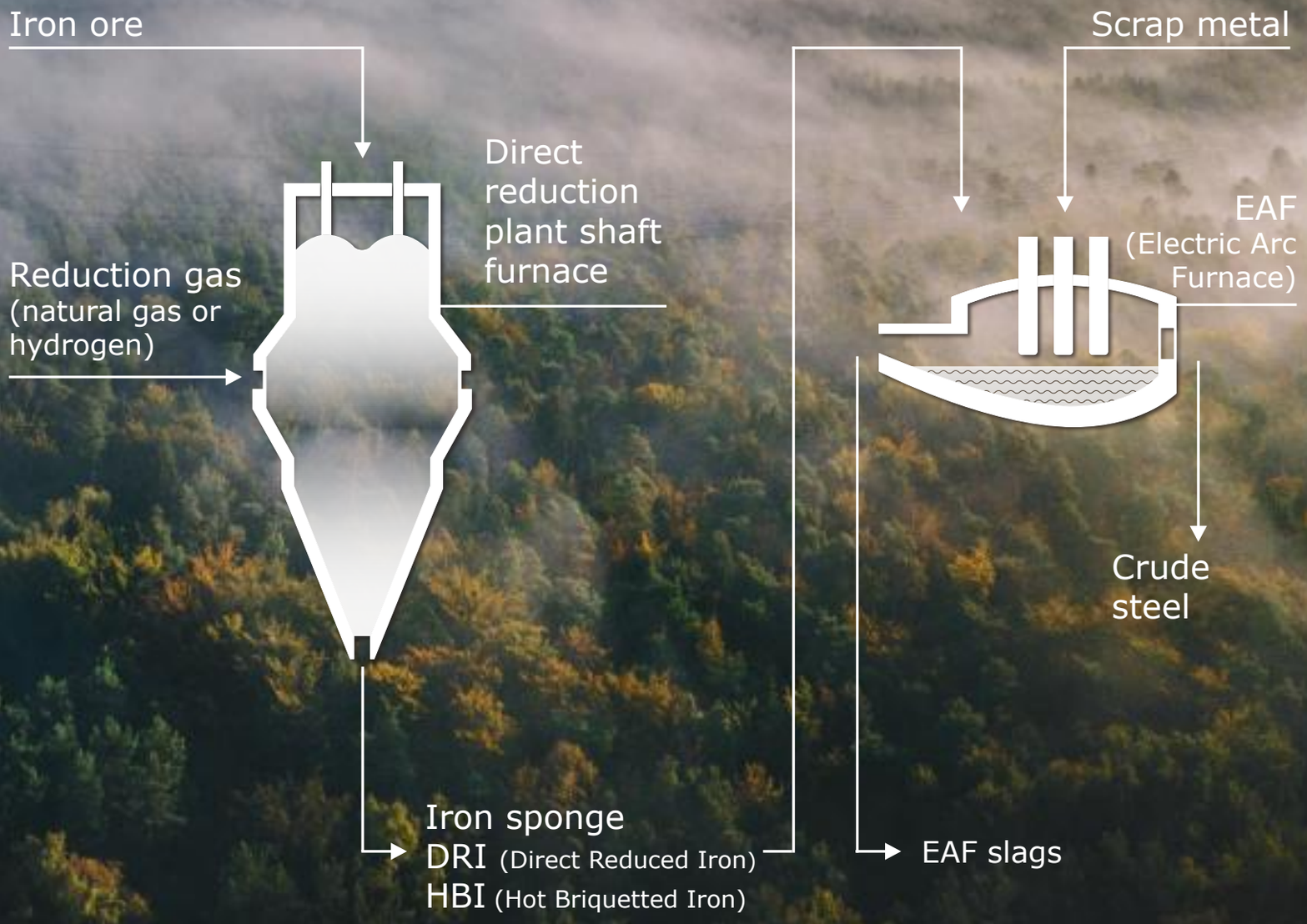
The transformation of the steel industry means decarbonization in production of steel. The implications: the large-scale refurbishment/new construction of the integrated steelworks and, as a result, slags that have an entirely different composition.

A direct reduction system replaces the CO_2-intensive blast furnace and, initially, produces sponge iron in a slag-free process (DRI – Direct Reduced Iron). DRI is melted down in downstream electrical units. New by-products are produced in this process: firstly, in the smelting reduction furnace, ERS (ERS – electrolytic raw iron slag), also known as SAF slag (SAF – Submerged Arc Furnace) is produced; and secondly, in the electric arc furnace, EAF slag (EAF – Electric Arc Furnace) is produced by adding scrap metal and DRI.

The application possibilities for the „new slag“ as a construction material, in road construction, as a fertiliser, or in new fields of use are currently being researched by the FEhS Institute and its partners.

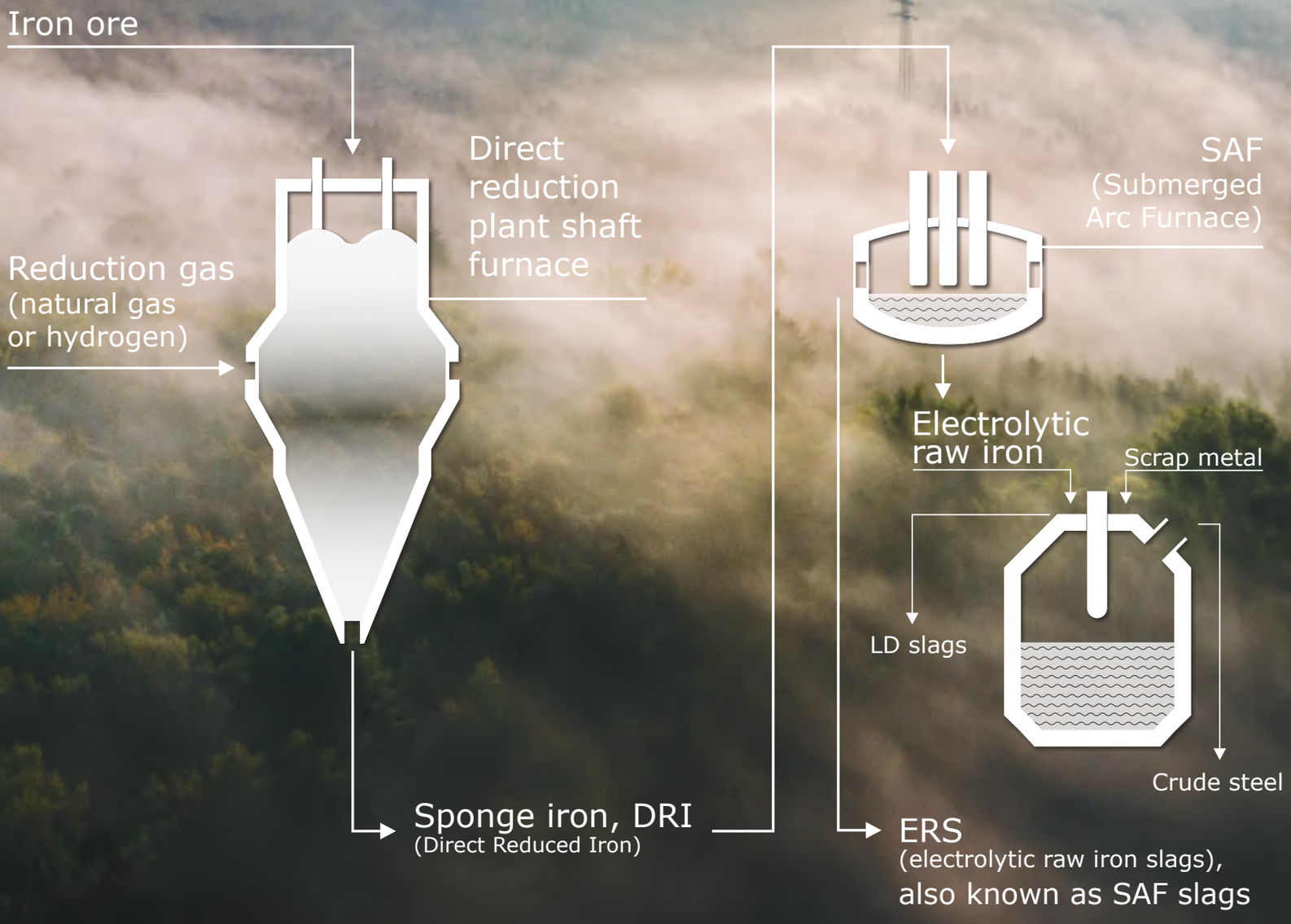
CRUDE STEEL PRODUCTION IN A DE

1-step process



ECARBONISED STEEL INDUSTRY

2-step process



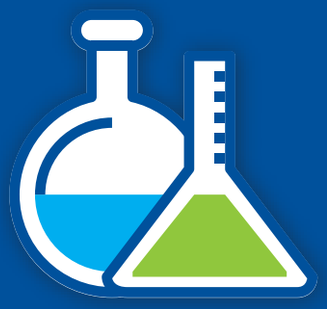
Through our decades of experience, our renowned engineers and scientists, and our cooperation in an international network, our expertise is the first choice in the construction industry, in transport construction, and in agriculture!

RESEARCH, TESTING AND CONSULTING AT THE HIGHEST LEVEL

Our research focus includes the subject areas of construction materials, fertilisers, secondary raw materials and slag metallurgy, environmental issues, and transport construction. For this purpose we have in-house access to state-of-the-art laboratories with numerous accreditations.

The FEhS Institute additionally maintains a testing, monitoring and certification body that is equipped and recognised under multiple international standards. The focus is on investigations relating to construction materials, construction and environmental technology, and on road construction.

Our strengths also include interdisciplinary teamwork, cooperation in national and international projects and committees, and dedicated quality assurance concepts. As a result, our consulting services in relation to slag, construction materials and fertilisers are widely trusted internationally.



"Our expertise in slag is our unique selling point. As a research service provider with a practical orientation and a long tradition, we know and solve the problems of our customers. Because we understand our customers."

Thomas Reiche,
Managing Director at FEhS – Institut für Baustoff-Forschung e. V.

THE PERFECT TRANSFER OF KNOWLEDGE: THE CONSTRUCTION COMPETENCE FORUM

Our Construction Competence Forum shows how to create the ideal link between theory and practice. We have been working in close partnership with the client for many years to develop optimal solutions in the technical, economic and environmental planning, execution and monitoring of new construction projects and repair work on concrete.

Our customers include construction clients, plant operators, planners, construction contractors and construction material manufacturers. Our knowledge of concrete, cement, asphalt, aggregates, construction material mixtures and soil is in demand above all when building structures are subject to the highest requirements in terms of structural integrity, durability and fitness for purpose.

Examples of our consulting competence include numerous projects for public and private clients, e.g. municipal utility and waste disposal operations, the chemical industry and energy sector, and the waste and recycling industry.

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