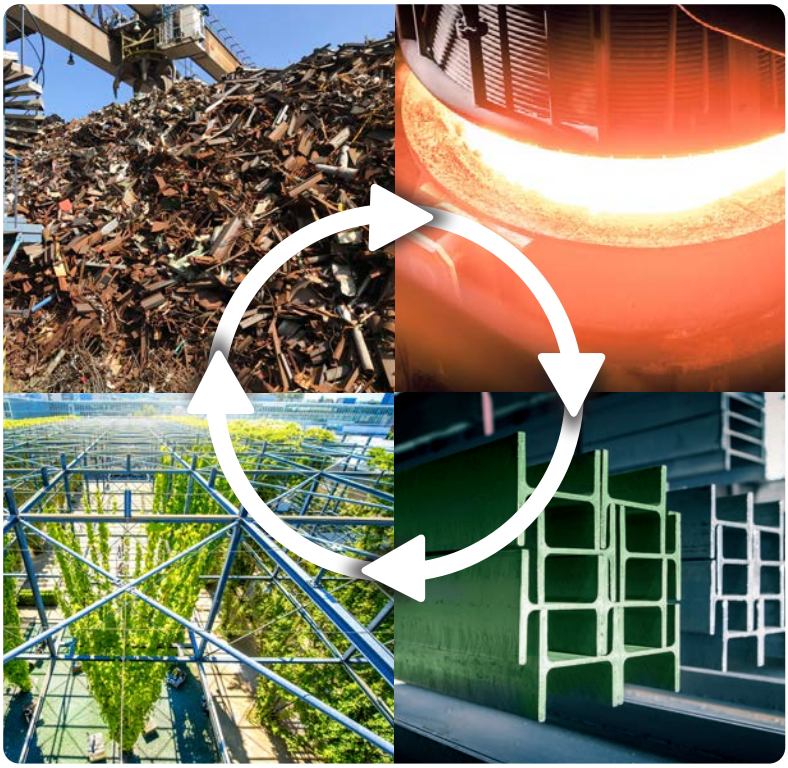
CSN
Companhia Siderúrgica Nacional



Sustainability

SWT
STAHLWERK THÜRINGEN
GREEN STEEL

Content

Sustainability

deeply rooted at Stahlwerk Thüringen

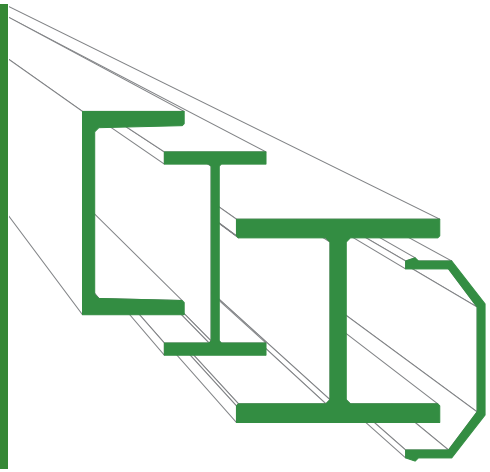
Management somewhat different

Steel based on a well-organised system

Well-functioning organizational structures are the foundation of our development and our success. Stahlwerk Thüringen was the first metallurgical company in Germany to implement and to work consistently on the basis of an integrated management system.

Today, our integrated management system ensures clear structures in the corporate processes as well as a smooth production flow and the achievement of our high sustainability goals.

In 2012, we implemented DIN EN ISO 50001, thus taking our energy management to a new level. With this certification, we are committed to our own resource-conserving energy policy.



SWT
STAHLWERK THÜRINGEN
GREEN STEEL

SWT Green Steel Strategy

Green Steel made in Thuringia – the green heart of Germany

Sustainability is the only key to securing our future and a central dimension of our corporate policy. To ensure this today and in the future, we strive for a climate-neutral design and development of our corporate processes. Our **Green Steel** Strategy includes three core areas:

SWT Green Energy
for the substitution of fossil energy sources

+

SWT Green Logistics
for climate-neutral internal and external logistics

+

SWT Green Efficiency
for a reduced use of resources

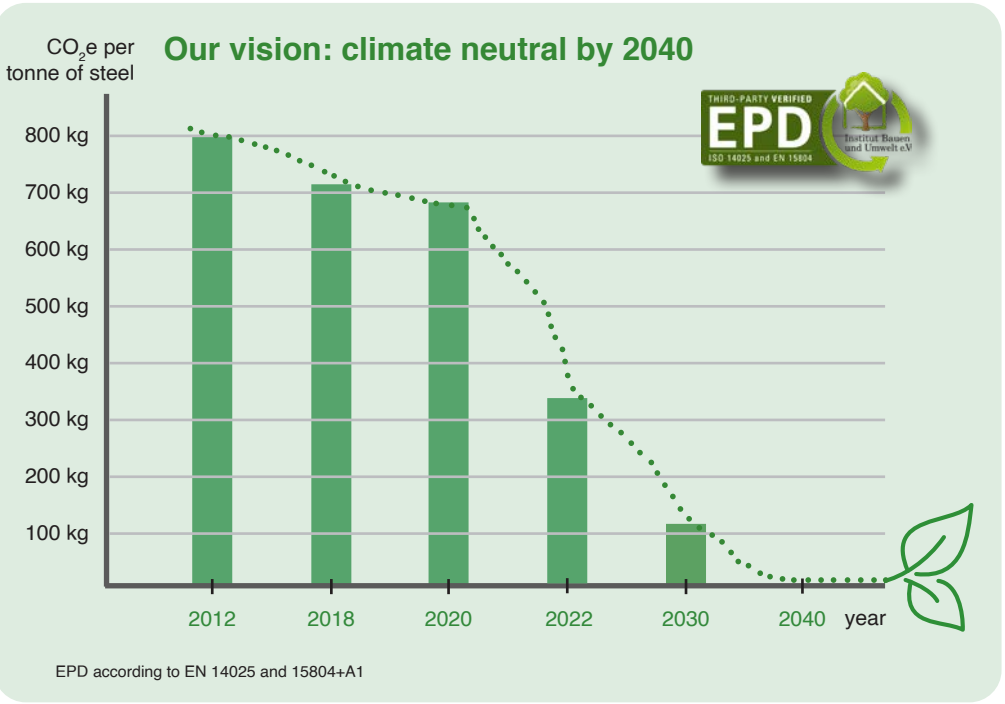
=

100% Future

Decarbonisation

Reduction of CO_2 emissions

We strive for supplying our customers with carbon-neutral steel products. Today, we can refer to **CO_2e* emissions of less than 330 kg per tonne of steel** in line with our verified Environmental Product Declaration (EPD) according to ISO 14025. For each tonne of **SWT Stahlwerk Thüringen Green Steel®**, we can provide the complete carbon footprint, which also includes transport to the agreed place of delivery.



* CO_2e means CO_2 equivalent

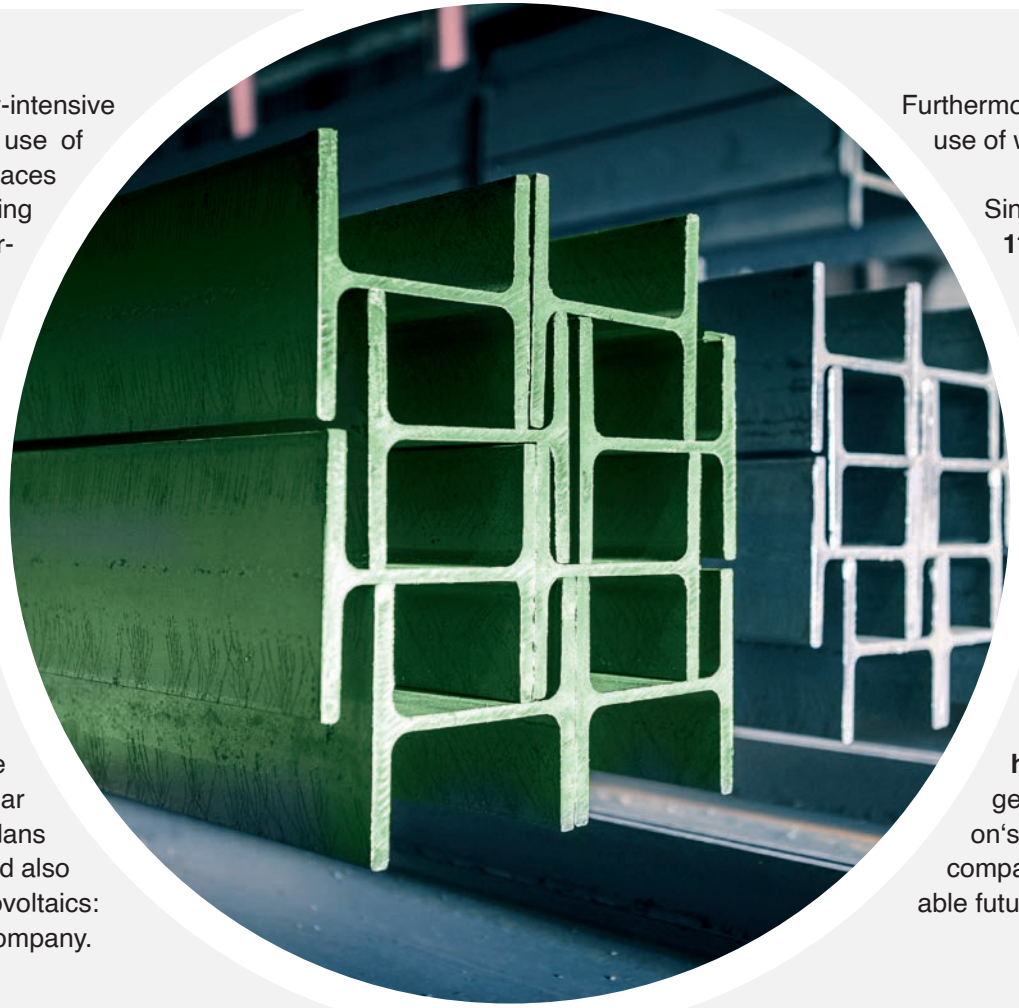
All measures required, resulting from our **SWT Green Steel Strategy**, are being examined and evaluated. They include all corporate areas and include, among others:

- 100% **green electricity**
- Increase in energy efficiency through **oxygen**
- Use of **hydrogen** instead of natural gas
- Use of **green feedstocks** instead of fossil energy sources
- High share of **green transports**
- Generation of own renewable energies through **photovoltaics**
- Increasing the use of **waste heat**
- Company buildings being **energy-efficiently** refurbished
- Closing material cycles through **optimised recycling management**
- Replace combustion engines with **sustainable technologies** for internal and external transports

Decarbonisation and energy management

Green electricity for green steel

enviaM Energieeffizienz NETZWERK



Stahlwerk Thüringen GmbH is an energy-intensive company. There is an indispensable high use of electrical energy and natural gas in our furnaces to manufacture our products. By implementing the **DIN EN ISO 50001**, we took our energy management to a new level. Under this certification we are committed to our own **resource-conserving energy policy**.

We have succeeded in taking a big step towards climate neutrality with our management's decision to use only green electricity from Scandinavian hydropower in the entire manufacturing process since 1st January 2021.

Stahlwerk Thüringen has launched extensive projects to expand the generation of regional renewable energy and to keep the electrical energy 100 % green. We initiate and drive forward regional solar power projects, also on SWT owned land. Plans are underway to use regional solar power and also to generate our own electricity through photovoltaics: on building roofs and suitable areas in the company.

Furthermore, we are investigating possibilities for the use of wind energy.

Since 2012, we have been saving up more than **110 million kilowatt hours** by implementing energy efficiency measures. For this purpose, technical measures were carried out, mainly on the furnaces, in order to optimize the process control.

We participate in the Energy Efficiency Network of Central Germany and ex-change ideas and information with other interest groups. Our company intends to develop, together with TEAG (Thüringer Energie AG), TWS Thüringen Wärme Service GmbH and Thüringer Energie- und GreenTech-Agentur GmbH, an economic concept for **using the waste heat potential**. In this way, Stahlwerk Thüringen contributes to significantly reduce the region's CO_2 emissions and, as an energy-intensive company, we thus help to create a more sustainable future.

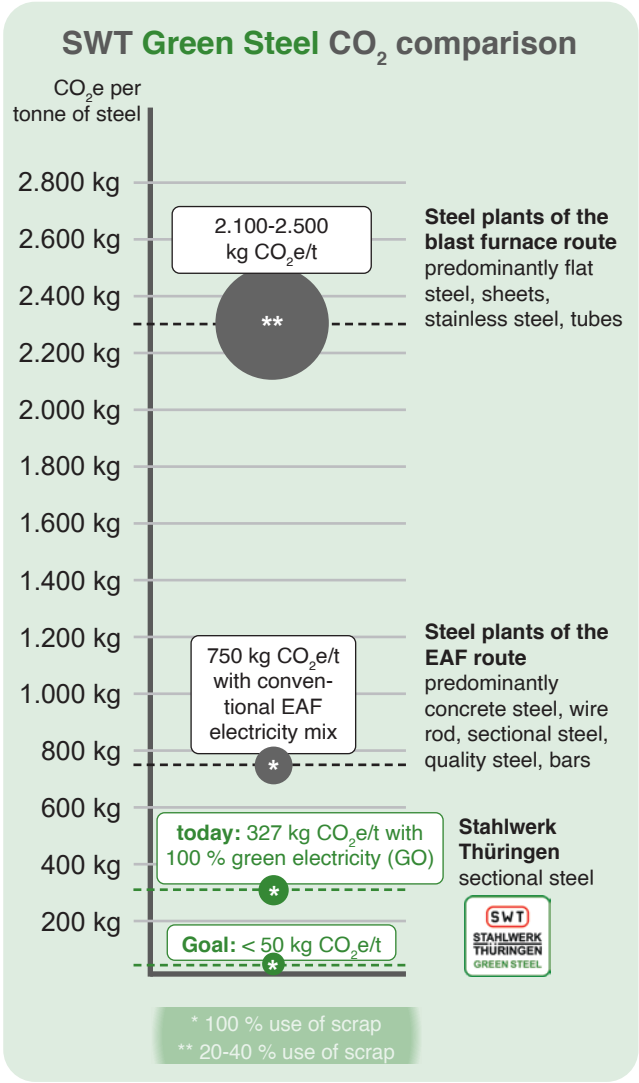
Decarbonisation in the production process

Quality meets sustainability

We are successively **replacing fossil fuels such as natural gas, coal, diesel, heating oil and propane gas with green feedstocks**. Our long-term goal is the use of 100 % biogas and biochar. The electric arc furnace (EAF) will gradually use biochar and green gases: Currently, our EAF has an annual consumption of 4,5 million Nm³ of natural gas. In order to reduce CO_2 emissions, the gas demand will be reduced, on the one hand, by increasing the electrical energy input and on the other hand we are going to gradually enrich the natural gas with biogas.

We are going to implement a hybrid heating concept for the rolling mill furnace: Natural gas is to be partially replaced by green electrical energy. In this context, we see induction technology for separate preheating as a promising alternative to natural gas as a fossil energy source. The heating process in the rolling mill furnace is supported by a further, downstream technology of electrical resistance heating. The remaining necessary heating energy will be supplied in the medium term through the combustion of a natural gas/hydrogen mixture, which in the long term is aimed at the complete use of hydrogen and a saving of 60,000 tonnes of CO_2e per year. We intend to use free capacity in our air separation plant to further save natural gas in the rolling mill furnace. This allows us to use additional amounts of oxygen in our combustion processes thus reducing heat loss and improving heat transfer.

Moreover, the lighting throughout the company is being modernised and converted to LED lamps. Individual areas were brought up to the current state of the art by renewing ventilation and air-conditioning technology. With these measures, we have been able to **reduce emissions by 2,600 tonnes of CO_2e** since 2012.



Every tonne of steel we produce means a significant saving in CO_2 emissions: e. g. our hollow sleepers represent **one seventh of CO_2 emissions** compared to our competitors products. When buying other sections, our customers **save 50% on CO_2 emissions** compared to products from other manufacturers.

Decarbonisation in Logistics

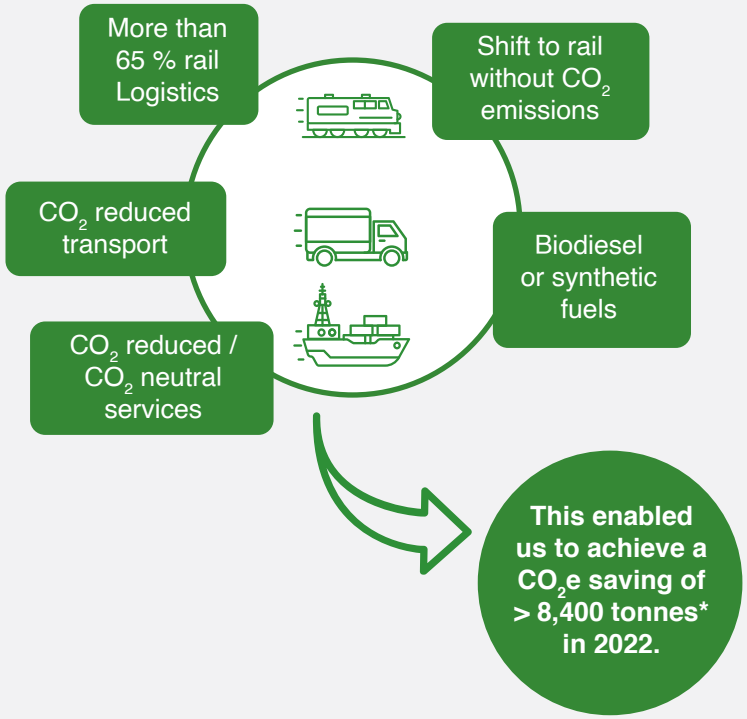
Going green to the customer

With an annual total transport performance amounting to more than two million tonnes, the Logistics represent an important factor in environmental management. Around two thirds of the finished products can be shipped, after direct loading on wagons, using the company's own and external railway companies.

For example, we already offer CO_2 neutral transport for a large number of destinations in Europe. This is achieved through cooperation with logistics providers, such as the Deutsche Bahn, that uses green electricity powered locomotives.


Das ist grün.
DB Cargo
Klimabilanz
Stahlwerk Thüringen GmbH
0 t CO_2-Ausstoß

Stahlwerk Thüringen was the first German steel plant to commission DB Cargo with CO_2 free transports. Since 2021, we have been using the tariffs DB-eco+ and DB-eco for transports in Germany, to Sweden, Denmark, the Netherlands, Belgium and Switzerland.



* Source: Federal Environment Agency „Comparison of the average emissions of individual means of transport in freight traffic".

Decarbonisation

We support sustainable construction

The demand for **green steel** is increasing: more and more customers attach importance to their carbon footprint. We support this approach with our production portfolio steel profiles, steel sleepers and special profiles.

Steel that carries in lightweight structures

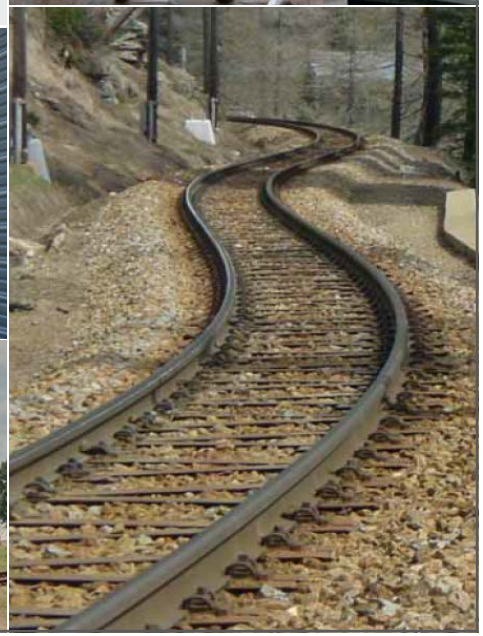
Constructions
for buildings, halls and bridges

Steel constructions
for **offshore wind farms**
and **sustainable agriculture**

environmentally conscious construction

The (Bio) Nature Hotel Wittelsbach,
one example that the demand for green steel is increasing

Noise barriers, railway superstructure and wagon construction:
railway associations attach importance to the carbon footprint and durability of the products used



Production process

„Less material used to erect the same building; S460 makes it possible! This is sustainability.“

Frank Wagner
Production Manager

Our products – a cycle

The production process at Stahlwerk Thüringen is part of a cycle. Everything starts with steel scrap, which is brought directly into the electric furnace via the scrap yard. Within just eight hours, the molten steel goes through the entire process until it is processed in the section mill. Since our steel plant and rolling mill are directly adjacent to each other, we do not need any vehicles for intermediate transport in the production process. After the cooling and sawing process, the finished steel sections are delivered to our customers for processing into products for constructions and buildings and for plant engineering as well. The cycle begins anew when these products are delivered again as scrap after many years of use.

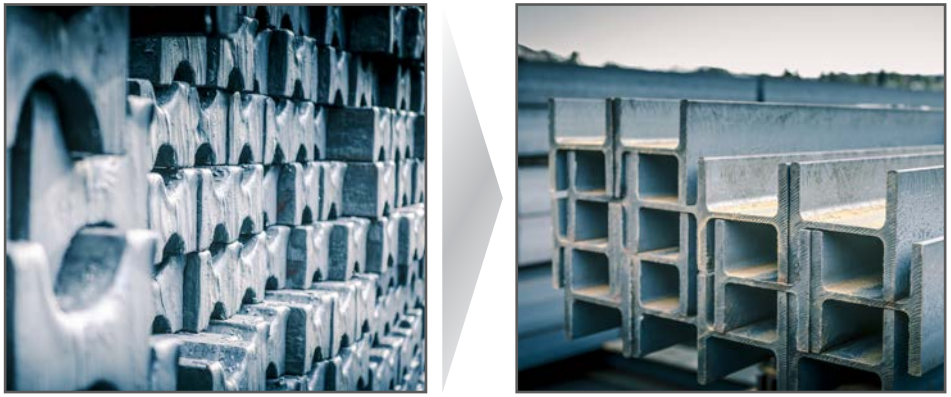
Our special sizes, such as IPEA 500, are offering special features, such as a narrower web and flange. Moreover, our steel grade S460 is characterized by a higher load-bearing capacity, thus saving not only material, but also transport costs and CO_2.

Stahlwerk Thüringen uses exclusively recycling scrap for the production of sectional steel and has a **need for scrap of 3,500 tonnes per day**. To date, scrap delivered by around 500.000 railway cars has already been recycled at Stahlwerk Thüringen. The scrap is mainly delivered from a **radius of 300 km**.

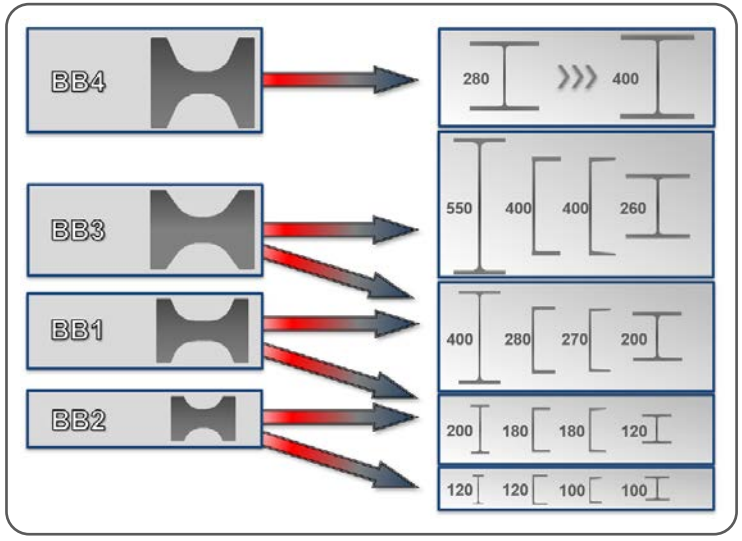
Besides the scrap deliveries, alloys and aggregates are necessary for the steel production process as well. In this area, we encourage and expect our suppliers to maintain effective policies, processes and procedures for to create **sustainable supply chains** and to save CO_2, especially to be implemented in the finishing process of lime and dolomite, that previously required large amounts of natural gas for drying.

Products

From Beam Blank to Section



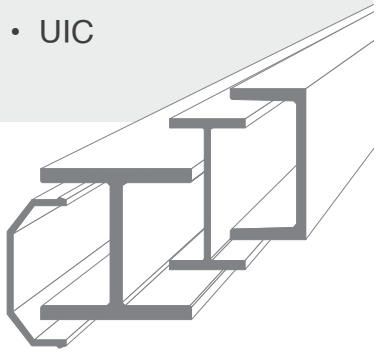
More information on our products:
www.stahlwerk-thueringen.com/products/

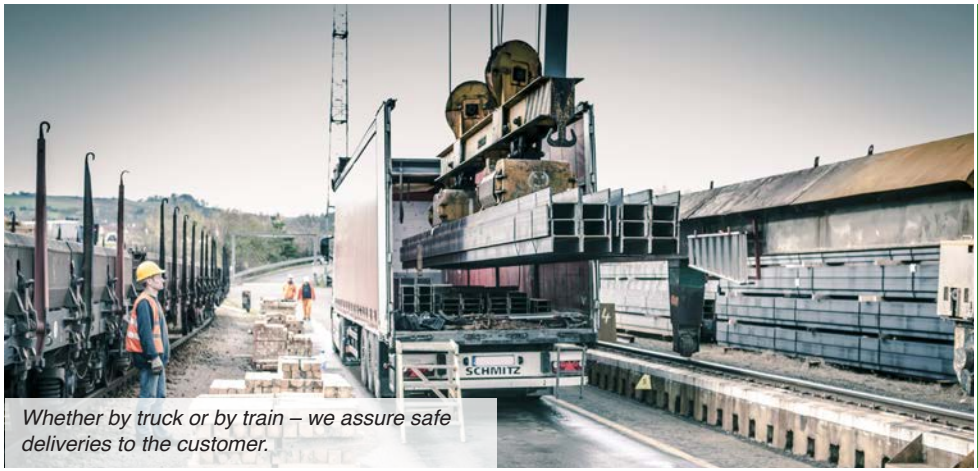


Our products at a glance

Stahlwerk Thüringen produces a large range of more than 300 hot rolled steel sections according to various international standards.

European	HE • IPE • UPE • UPN • HD • HP
British	UB • UC • UBP • PFC
American	W • C • HP • S
Steel sleeper profiles	SW • HYS • UIC
Japanese H-section	H





Whether by truck or by train – we assure safe deliveries to the customer.

Products

NAThüringen
Nachhaltigkeitsabkommen Thüringen

Quality – the basis of sustainable development

Stahlwerk Thüringen GmbH has the required manufacturer-related product qualification (HPQ). The certificate is confirmed, via an approval procedure, by Deutsche Bahn and regularly monitored within the scope of audits. **The HPQ certificate** is the necessary prerequisite for the use of the supplied steel products in the scope of structural engineering according to Ril 804, railway bridge construction of Deutsche Bahn AG. This also applies in particular to noise barriers in the railway area.

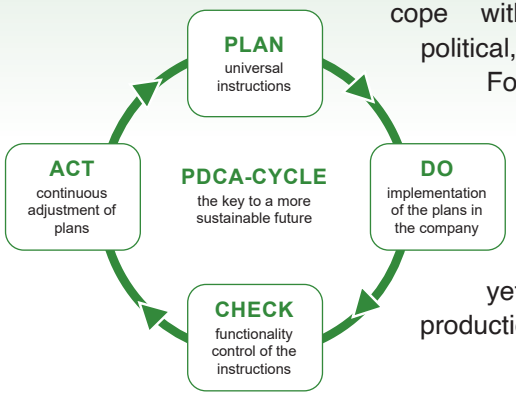
Stahlwerk Thüringen created its **own Environmental Product Declaration (EPD)** in accordance with ISO 14025 and EN 15804+A1 for the first time in 2021, the revised version of which was verified and published by the "Institut für Bauen und Umwelt e.V." (IBU) in October 2022. The value determined here for module A1 to A3 of **327 kg CO_2e/t** steel is the basis for our new product line **SWT Stahlwerk Thüringen Green Steel®**. The IBU-verified EPDs are now mutually recognized by many countries: France, Great Britain, Italy, Spain, Denmark, Norway, Sweden and North America. In addition to the global warming potential, an EPD contains other life cycle assessment-based indicators that describe the contribution to resource use and the impact on people and ecosystems. Based on a standardized analysis, steel can be compared with other building materials, such as wood and concrete. Architects and investors can thus select the right building materials for sustainable and environmentally friendly buildings.

Our efficient quality management system is one cornerstone of our high product quality in all phases of the production process. To achieve this, the material properties are tested at several points in the production process. Our materials testing laboratory is accredited according to **DIN EN ISO/IEC 17025** and is equipped with modern testing technology and machines.

We demonstrate our responsible procurement policy, the implementation of management requirements in the supply chain and the sustainable development of all corporate processes with the certification based on the **BES 6001** sustainability standard, meaning our customers can be confident they are working with a supplier who is committed to sustainability and that it is embedded into our company ethos.

Continuous Improvement Process? Of course!

Stahlwerk Thüringen GmbH strives for a sustainable improvement process to cope with the growing environmental, political, economic and social requirements. For this reason, the instructions of the management manual are also constantly updated in compliance with the "PDCA-cycle". This enables short decision-making between our company areas and yet results in precise directives for the production process.



Our integrated management system is certified by the **DQS**. SWT has product approvals granted by numerous national and international accredited acceptance companies, such as DNV, Lloyd's Register EMEA, Bureau Veritas, American Bureau of Shipping and Deutsche Bahn AG.

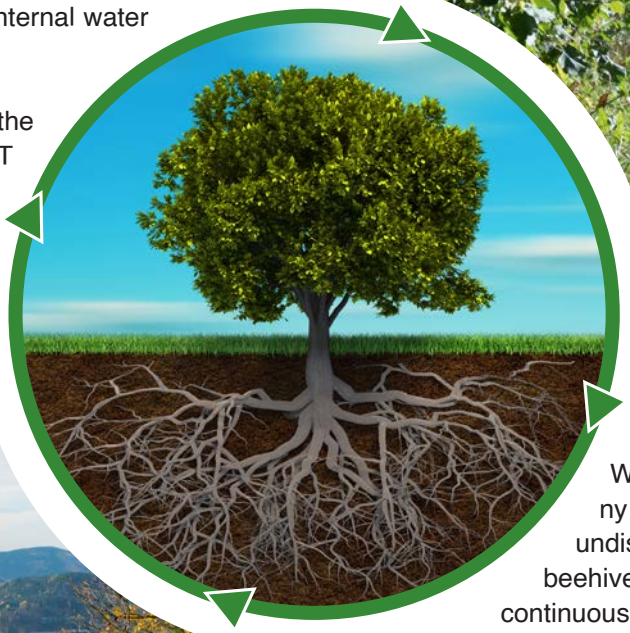
KIT Karlsruher Institut für Technologie · BBAV · ABS · DNV · Lloyd's Register

Environmental Management

Water protection

We capture around 1 million m³ of water per year from the river Saale and approx. half of this volume is cleaned and returned to the Weira, a Saale river inflow. Any relevant wastewater parameters are constantly monitored and samples are taken regularly for extensive waste water monitoring in our internal water treatment plants and our main drainage.

We also carry out an extensive groundwater monitoring in the inflow and outflow of the industrial dump as part of our SWT dump operation. So, in comparison with the eluate analysis results of our metallurgical by-products, we can check the full functionality of our landfill base seals and protect the groundwater.



Ecology

We only mow once a year designated area on the company premises to contribute to species protection. They offer undisturbed habitat for animals and insects. Placing insect hotels, beehives and raised hides for birds of prey is another approach to continuously support this development.

Shrubs and trees are planted on the company premises to improve the landscape. This stock was expanded in 2020 by 200 shrubs planted around the scrap yard.

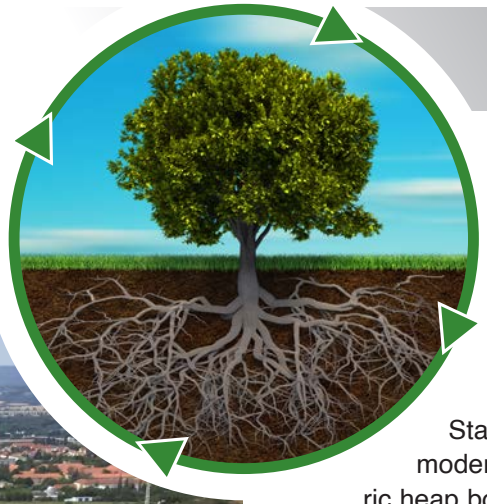
In 2021, we planted approx. 2,000 seedlings of various native tree species in the forest districts of Pippelsdorf and Leutenberger Höhe. This countermeasures against the bark beetle damages were implemented in cooperation with the responsible forest district managers.

Environmental Management

Immission Control

Dust and noise are two components that have been associated with the steel industry for a long time. We are committed to dispelling these prejudices.

In 2018, we have equipped our rolling mill with sound absorption cassettes, especially in the finishing department, in order to constantly reduce our noise emissions and we annually continue this process. We strive for a reduction of the CO_2 emission through innovative technologies and extensive research, thus approaching stepwise our objective of carbon neutrality.



Waste Management

Needs-based separation and market-driven utilization of our metallurgical by-products are an important facet of our sustainability policy.

Stahlwerk Thüringen GmbH operates the modern landfill „Industriehalde SWT" on the historic heap body of the former „Maxhütte" which is divided into three landfill areas, from class 0 to 2, and provided with the appropriate sealing systems. With the available landfill volumes, these landfills ensure our company's long-term disposal security, which is vital due to the ever-increasing recycling volumes. They are subject to strict operational and officially supervised environmental monitoring and to control inspections according to the landfill law as well. In addition, the new types of regulatory IED inspections to be carried out every two years are supplementing this monitoring.

By-products

Optimised recycling management

We generate metallurgical by-products in our metallurgical production processes that, even after ejection from the production process, are processed, recycled and optimally prepared, by further processing, for subsequent utilization methods. By using these by-products and secondary materials we close global material cycles in the long run, thus making our contribution to reduce the global consumption of natural resources.

Electric arc furnace slag

Currently, the electric arc furnace slag, our most important metallurgical by-product, is mainly used as anti-frost layer in Thuringia's road and industrial area construction. The recycling rate is > 95 %.

Ladle furnace slag

Since 2018, our ladle furnace slag is been mostly used to produce large-format concrete blocks.

Yesterday still a by-product ...

Research projects of the Bauhaus University in Weimar, the University of Applied Sciences in Nordhausen and of affiliated institutes are currently studying further possible applications of processed EAF and ladle furnace slags and residues from wagon handling and how they can be used as aggregates in concrete or stone production. The focus is set on field of application such as structural and civil engineering as well as road construction.

„By continuous research we succeed to improve the quality of our by-products and secondary raw material and to close material cycles."

Marcel Michele-Naussed
Head of Environmental Department

Other by-products are generated besides slags:

Tundish skulls and separation iron
obtained by magnetic separation from slag, are crushed and fed into the steel production process

Mill scale
use as iron oxide carrier in the cement and automobile industries

Filter dust
recovery of zinc

Furnace lining
is recycled and made into new bricks

... tomorrow raw material!

When it comes to research issues, we are also focusing on the possible future use of biological waste as carbon carrier material from which high-quality „coal" can be produced via dry pyrolysis processes, then being a possible substitute for fossil carbon carriers in our steel production process.

Landfill Management

A unique project for the future

Stahlwerk Thüringen GmbH has been operating an approved landfill of the landfill class DK II within its company premises since 2003 for dumping residues processed arising from wagon handling from scrap deliveries.

New, improved methods in processing and recycling technology allow reusable and recyclable components to be separated and recovered from the already dumped material, such as stainless steel, non-ferrous metals, scrap, wood, plastics etc. In cooperation with STORK Umweltdienste GmbH, this operation is carried out directly on site at the mono-landfill by means of a mobile processing plant.

The volume of the existing landfill of 95,000 t **is reduced by approximately 46 %**. As a result, SWT's usage of the authorized landfill capacity can be significantly extended to approximately 24 years.

The reprocessing of the mono landfill effectively reduces the volume of the landfill body. At the same time, valuable raw materials are recovered from the landfill, fed into an improved recycling process and returned to the circular economy.

SWT thus makes an innovative and important contribution to direct and indirect resource conservation and to secure the future of our company.

„New landfill space is scarce. That is why we are committed to dispose our by-products in an environmentally friendly, professional and safe manner in the future as well."

Maike Pyrdok
Water Protection and Immission Control Officer

Health & Safety

Safety – a concern of utmost priority

The human resources working with and for us are our greatest asset, we implement numerous measures for a comprehensive health protection and highest safety at the workplace.

All activities are based on our occupational safety and health management system. Our high standards apply to our business partners, such as suppliers, service providers and customers. After entering the company premises, the safety rules applicable at Stahlwerk Thüringen have to be strictly observed.

We are proud of our health and safety certificate: DIN ISO 45001

We are prepared for emergencies:
There are regular trainings for our first aiders and paramedical staff. Furthermore, Stahlwerk Thüringen GmbH has its company fire brigade with internal fire prevention officers, who are in close contact with the voluntary fire brigades of the municipality Unterwellenborn. Relevant fire drills are continuously carried out and expanded.

Integrated occupational health and safety management

The guiding principle „One minute for safety – for that we got to take the time" is our catalyst to organize activities that we incorporate into all company processes. Since 2002 we have been working with an integrated management system – certified by the „Deutsche Gesellschaft für Qualitätssicherung (DQS GmbH)".

Regular training and communication

We continuously carry out stress analysis and risk assessments. Furthermore, our employees regularly attend seminars and training courses to refresh learned rules of conduct. In this way, we raise awareness of potential risks in the workplace. Moreover, we make every employee aware of all aspects of occupational safety.

Our objective: :
0 lost-time accidents!

The annual Action Day for Safety and Health promotes the prevention of occupational accidents. This action deals with different topics and specialist fields and promotes, strengthens and expands awareness of safety conscious work as well as the health awareness of our staff.

Human Resources

Vocational training and personnel development

Ever since our company was founded, we have made it our mission to enable young people a solid vocational training. After the successful completion of their apprenticeship, the young skilled workers are hired and offered a wide range of career opportunities within our company.

We are convinced this is an important investment in our future and a guarantor for a consistently high level of performance.

The four pillars of our personnel development:

- Own vocational training
- Internal advanced further training
- External study sponsorship scheme
- Full-time direct studies / scholarship

Qualified and motivated employees, who identify with our company and act responsibly, are the key to our success. We therefore offer our staff various perspectives for professional development.

By offering further trainings, we support our employees to develop at different workplaces and to grow with new challenges. This contributes significantly to our flexibility and performance. We are particularly proud of our low staff fluctuation, a sign of the satisfaction and loyalty of our employees.

Social Commitment

Social responsibility results from rootedness

As Stahlwerk Thüringen ranks among the largest industrial companies of the district, sustainable commitment to society, especially to the people around our production site in Unterwellenborn, is a matter of course for us. With this conviction in mind, we support many cultural, sporting, religious, scientific and non-profit institutions. Among others, we support the hospice „Am Saalebogen“ and the „Elterninitiative für krebskranke Kinder Jena e.V.“ (Parents‘ Initiative for Children with Cancer) with donations. We are the main sponsor of the traditional sports club „SV Stahl Unterwellenborn e.V.“ and also support other regional sports clubs.

The art collection „Kunstsammlung Maxhütte” is one of the few integrated collections of a nationally-owned enterprise of the former GDR. This collection comprises about 280 works of art by 51 artists from the field of painting and graphic art. Since 1995, it has been owned by the Free State of Thuringia. We preserve, enlarge and round out this unique collection through the acquisition of new artworks, some of which are exhibited in our office buildings.

„An everyday story“
Oil painting by Christoph Wetzel, 1988

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SWT
STAHLWERK THÜRINGEN
GREEN STEEL

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