

All set for the green transformation

Dillinger and Saarstahl coke ovens now cooking with hydrogen

DILLINGER 

The Dillinger Group offers its customers the highest quality and best service in the field of heavy plate. This includes both the activities of an integrated steelworks, such as coke and pig iron production through subsidiaries held jointly with Saarstahl AG, and the manufacture of liquid steel and semi-finished products. Heavy plate production is undertaken at two locations: Dillinger Hütte in Dillingen and Dillinger France in Dunkirk.



Heavy plate production at Dillinger Hütte in Dillingen, Germany

The first plant in Germany for hydrogen-based steel production via the blast furnace route went into operation in Dillingen on August 21, 2020. This will enable Dillinger and Saarstahl to further reduce their carbon emissions and create the conditions for using green hydrogen in practice.

The challenge The steel industry in Germany is set to become a pioneer in working with hydrogen. The goal is “green”, CO₂-free steel. The intention is to introduce hydrogen-rich off-gas into the blast furnace. Put simply, this replaces carbon with hydrogen, ultimately resulting in less CO₂ being released into the air. According to the company, this process is a first in Germany in terms of actual practical application. The steel industry is currently under pressure to further reduce carbon emissions, partly in order to comply with EU regulations.

Our solution Thanks to the new coke oven gas injection systems from Paul Wurth, coke oven gas is converted into a metallurgical process gas instead of being used for energy generation with low efficiency. In this new role, coke oven gas will partially replace both pulverized coal and metallurgical coke as a reducing agent in the blast furnace process. This will help reduce carbon intensity in the blast furnace and the carbon footprint of iron production as a whole. As part of Paul Wurth’s strategy to achieve carbon-neutral primary metallurgy, the concept of injecting coke oven gas into the blast mold is one of the immediately available solutions for gradually reducing carbon emissions in existing integrated metallurgical plants. Thanks to the long-standing, cooperative customer relationship between the companies, the plant was equipped with Endress+Hauser measurement technology.

This included Cerabar S pressure sensors, Prowirl flowmeters (employing the vortex principle) and RMC 621 universal flow computers.

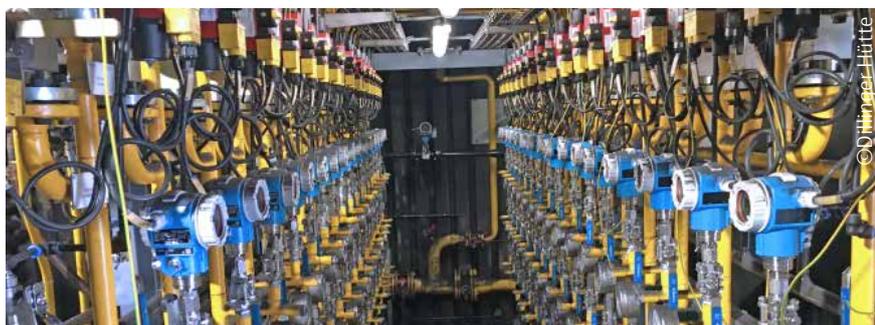
Responsibility for the future

In 2019, Dillinger and Saarstahl adopted a forward-looking strategy under the strapline “proactive, CO₂-free, efficient”. The specific steps for the complete conversion of production to “green steel” were defined. To achieve the next major steps, three reliable political

conditions must be ensured: a fair foreign trade framework, support for the transformation, and sufficient “green” energy at competitive prices. The German government’s ambitious climate targets aim to achieve a 60% reduction in CO₂ by 2030 (compared to 1990), with carbon neutrality being the ultimate aim by as early as 2045. The Federal Ministry of Economics’ action plan for steel was a first step. Now the political framework must be established as quickly as possible.

The solution components

- 200 Cerabar S pressure sensors
- 10 Prowirl flowmeters (vortex principle)
- 6 RMC621 universal flow computers



The new coke oven gas plant is expected to save 120,000 to 150,000 tons of CO₂ per year – instrumentation with Cerabar S pressure measuring instruments



RMC621 universal flow computer for determining the standard flow rate



Hydrogen measurement at the blast furnace with Prowirl vortex flowmeters and Cerabar S pressure measuring instruments

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