



Sustainable power generation at thyssenkrupp Steel's Duisburg site: new micro steam turbine process steam into electricity

- The micro steam turbine is installed on the roof of the heating plant at thyssenkrupp Steel in Hamborn.
- It uses the steelmaking steam to generate electrical power.
- Once it has been taken into operation, the turbine will generate around 1,800 MWh of electricity per year.
- The project represents a further building block for the efficient use of process gases at thyssenkrupp Steel.

Duisburg, October 11, 2023. On the roof of thyssenkrupp Steel's central heating system in Duisburg-Hamborn, a turbine is going to convert process steam into electrical power in future. Today, the micro steam turbine weighing 5 metric tons was lifted into its ultimate position with the help of a truck crane.

The innovative technology uses steam from various sources that are brought together on the roof of the Hamborn central heating system: Here, a steam pressure regulator reduces the mains steam pressure of approx. 13 bar to the required operating pressure of approx. 2.2 bar. The micro steam turbine uses the potential energy of the steam (which would otherwise go unused in conventional steam pressure reduction), to drive a turbine wheel and thus generate electrical power via a generator.

The micro steam turbine was developed by the Turbonik company in cooperation with the Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, and has garnered the Innovation Prize of the German Steel Federation in 2018, among other plaudits.

"The new micro steam turbine will generate around 1,800 MWh of electricity per year in future. This corresponds to the annual consumption of about 420 four-person households," says Stefan Saalberg of thyssenkrupp Steel. "As such, it amounts to another innovative idea that we at thyssenkrupp Steel are using to optimize our processes. Thus, it will also reduce

CO₂ emissions in as many places as possible within the framework of conventional steel production."

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As an integrated iron and steel plant, thyssenkrupp Steel employs various processes in its power plants to generate heat and electricity with the steel mill gases from the coking plant and blast furnace. The micro steam turbine generates electricity cost-effectively and in a way that reduces resource consumption; it thus represents another building block in the efficient use of energy during steel production.

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