Press release

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Efficiency boost: thyssenkrupp launches innovative SIP blast furnace technology

- Blast furnace in Duisburg uses new oxygen technology SIP
- Process increases furnace efficiency and reduces costs
- Technology to be marketed worldwide

thyssenkrupp has equipped the "Schwelgern 1" blast furnace in Duisburg with a new technology: The so-called SIP process ("sequence pulse process with induced shock waves") helps increase efficiency in the furnace – both within the company and worldwide by marketing the technology. This is an innovative oxygen injection process specially tailored to the blast furnace process. Lead partners in the development of the technology, which is unique worldwide, were thyssenkrupp AT.PRO tec GmbH, a company of thyssenkrupp Materials Services, and thyssenkrupp Steel Europe.

New process increases the efficiency of the furnace
The SIP process, which is now being used at the Duisburg blast furnace "Schwelgern 1", is focused on a "deep action" of the oxygen. For technical implementation, an additional lance through which the oxygen is injected is inserted into each of the 40 tuyeres of blast furnace 1. Each of the 40 lances is also supplied by its own injection unit, the so-called SIP box. Additional oxygen is subsequently brought into the furnace by means of pulses, which react deeper in the furnace. This improves the gas and liquid flows of the blast furnace and increases efficiency.

"The SIP process is an in-house development and our furnace is the first in the world to go into operation. The carbon-based metallurgy of the blast furnace route will perspectively give way to hydrogen-based technologies. Innovations such as the SIP process allow the necessary efficiency improvements and CO_2 savings in the existing infrastructure until the technology change is fully implemented," explains Dr. Rainer Klock, Manager Furnace Metallurgy of the Schwelgern blast furnace operation of thyssenkrupp Steel Europe.

thyssenkrupp expects to reduce costs and also CO_2 emissions. "By optimizing the consumption of the reducing agents coke and coal dust, we will probably save millions of euros in costs at Schwelgern 1 alone – and this is just the beginning," says Jörg Glebe, Managing Director of thyssenkrupp AT.PRO tec GmbH. "In the long term we want to bring the technology to market worldwide and are already in talks with major plant engineering companies."

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About thyssenkrupp

thyssenkrupp is an international group of companies comprising largely independent industrial and technology businesses. Across 78 countries the group generated sales of €42.0 billion in fiscal 2018/2019. Under a strong umbrella brand our products and services make an important contribution to creating a better and sustainable future. The skills and commitment of our over 106,000 employees are the basis of our success. With our technologies and innovations, we work with our customers to develop cost-efficient and resource-friendly solutions to future challenges. We combine performance orientation with corporate and social responsibility.

Images can be downloaded via the following link (Source: thyssenkrupp):
https://transfer.thyssenkrupp.com/public/l111108u_aba7118e859cb6c36f62c3/

Image captions:

Oxygen supply: The oxygen supply is being regulated in a room just next to the blast furnace.

Casting platform: The 40 SIP boxes are located just above the casting platform, where the blast furnace is being tapped.

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