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Primetals Technologies to supply two new Meros off-gas cleaning systems and upgrade previously ordered one at Kardemir

- **Each Meros plant will treat 400.000 Nm³/h of sinter off-gas**
- **Designed for DeSO_x greater 90%**
- **Sodium bicarbonate will be used as desulphurization agent**
- **Extremely low dust emissions**
- **Air quality will be significantly improved**

Turkish steel producer Karabük Demir Celik Sanayi ve Ticaret A.S. (Kardemir) has placed an order with Primetals Technologies to supply two new Meros off-gas cleaning plants for Kardemir's sinter plants No. 1 and No. 2, and to upgrade a previously ordered Meros plant at sinter plant No. 3. Each Meros plant is able to treat 400.000 Nm³/h of sinter off-gas, reducing SO_x by more than 90% as well as delivering extremely low dust emissions. The two new Meros plants are designed to use sodium bicarbonate as desulphurization agent, while the existing system installed at sinter plant No. 3 will be upgraded to employ sodium bicarbonate instead of lime in the future. Start-up of the Meros plants is expected by the end of 2018. With this investment, air quality in the valley of Karabük will be improved considerably.

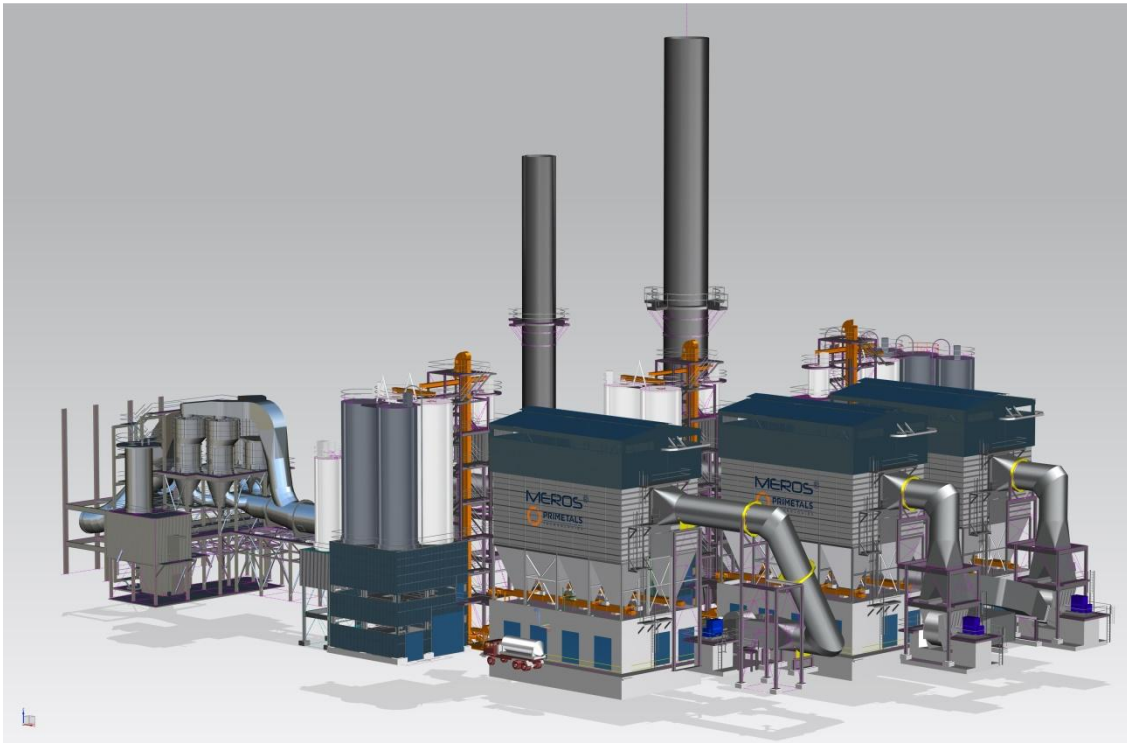
Kardemir operates an integrated iron and steel works in Karabük, in the northern part of Turkey. The production site is located in a narrow valley, close to the city of Safranbolu. Three sinter plants are operated by Kardemir. In 2013, Primetals Technologies had been awarded with the installation of the Meros system for sinter plant No. 3. Due to stricter environmental regulations for sinter plants by the Turkish authorities, the concept for this Meros system will be changed to desulphurization with sodium bicarbonate instead of lime. The newly to be installed Meros systems for sinter plants No. 1 and No. 2, will be also be based on sodium bicarbonate for desulphurization. Kardemir's Meros plants will represent

the third implementation of sodium bicarbonate desulphurization, following voestalpine Stahl in Austria and JFE in Japan.

Primetals Technologies will be responsible for the engineering, supply of key equipment like sodium bicarbonate dosing and milling, filter heads, bags, cages, electrics and automation as well as for advisory services for cold and hot commissioning.

In general , Meros process involves several modules for injecting and finely distributing adsorption and desulfurizing agents, such as activated carbon and sodium bicarbonate, into the off-gas flow. This efficiently binds and removes heavy metals, harmful and hazardous organic components, as well as sulfur dioxide and other acidic gases. The use of sodium bicarbonate to reduce the amount of sulfur dioxide also eliminates the need for a conditioning reactor. The dust particles are deposited in a specially developed, energy-efficient bag filter. The greater part of the dust removed by the precipitator is recycled back into the flow of off-gas to further optimize the efficiency and cost-effectiveness of the gas purification process. Any remaining unutilized additives are then once more in contact with the off-gas, so that they are finally almost completely utilized. There is also considerably less discharged residue when sodium bicarbonate is used instead of slaked lime. The process automation system ensures stable operation, even when there are considerable fluctuations in the volume and composition of the off-gas. Emission limits can therefore be observed at all times. Thanks to the modular design of the Meros system, a tailor-made solution based on the environmental restriction can be provided, with possible upgrades of the system by subsequent installation of required modules.

MEROS is a registered trade mark of Primetals Technologies in certain countries.



Computer-animated image of the Meros plants from Primetals Technologies to be installed at Karabük Demir Celik Sanayi ve Ticaret A.S. (Kardemir) in Turkey.

This press release and a **press picture** is available at

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Contact for journalists:

Dr. Rainer Schulze: rainer.schulze@primetals.com

Tel: +49 9131 9886-417

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Primetals Technologies, Limited, headquartered in Frimley, Camberley, United Kingdom, is a worldwide leading engineering, plant-building and lifecycle partner for the metals industry. The company offers a complete technology, product and service portfolio that includes the integrated electrics, automation and environmental solutions. This covers every step of the iron and steel production chain that extends from the raw materials to the finished product – in addition to the latest rolling solutions for the nonferrous metals sector. Primetals Technologies is a joint venture of Mitsubishi Heavy Industries (MHI) and Siemens. Mitsubishi-Hitachi Metals Machinery (MHMM) - an MHI consolidated group company with equity participation by Hitachi, Ltd. and IHI Corporation - holds a 51% stake and Siemens a 49% stake in the company. The company employs around 7,000 employees worldwide. Further information is available on the Internet at www.primetals.com.

Primetals Technologies, Limited
A joint venture of Siemens, Mitsubishi Heavy Industries and Partners
Communications
Head: Gerlinde Djumlija

Chiswick Park, Building 11, 566 Chiswick High Road
W4 5YS London
United Kingdom