PRÉMA

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Energy efficient, primary production of manganese ferroalloys through application of novel energy systems in the drying and pre-heating of furnace feed materials

In this issue:

Editorial

Dear Readers,

Welcome to the second issue of the PreMa project newsletter.

The main concept of PreMa is to increase energy flexibility and allow use of sustainable energy sources to reduce the overall energy consumption and CO_2 emission in Mn-alloy production. PreMa is a H2020 project demonstrating an innovative suite of technologies. The aim of the project is to obtain a sustainable production of Mn-alloys and steel.

A higher utilization of industrial off-gases and solar thermal energy will be used to reduce energy consumptions and CO_2 emissions.

In the PreMa consortium you will find producers of Mn-alloys in western Europe and South Africa, innovative technology providers for Mn-processing and use of renewable energy sources, and research and academia organizations with global expertise in Mn ores. The expertise will cover the whole value chain as well as different specific needs for the development in PreMa.

In this edition, you can read about an outlook of the PreMa project pilot and small-scale experiments. We approach the development of the plant using preheating technology for manganese ore preprocessing, presenting actual demonstrations made in an industrial perspective.

To be updated I encourage you to follow PreMa on LinkedIn and Twitter.

Interested? Visit www.prema-project.eu for info on our project.

On behalf of PreMa Team
Eli Ringdalen
PreMa Project Coordinator, SINTEF Industry, Norway

PreMa in brief

The goal:

Develop and demonstrate in large scale innovative technologies for pretreating Mn ores that involve heat recovery, utilisation of waste gas streams and solar technological approaches to decrease the direct and indirect CO_2 emissions from manganese and steel production.

The concept:

Divide the current Mn-alloy production process in submerged arc furnaces (SAF) into a two-step process by adding a feedstock pretreatment unit powered by novel sustainable energy systems for drying and preheating of Mn ores using alternative energy sources to substitute fossil fuels and electricity such as bio-carbon, CO_2 rich off-gas, concentrating solar thermal systems.

Demos:

The technologies will be tested and demonstrated under real environments at five sites offered by R&D centers and Mn industries: Outotec in Finland and Germany, MINTEK and Transalloys in South Arica, DLR experimental solar power plant in Germany and FerroGlobe Mangan AS in Norway.

Anticipated PreMa results:

Integration of the PREMA pretreatment technologies with the current processes will result in:

- overall energy consumption of Mn processing drop down by 20%,
- fossil carbon consumption reduction by 20%
- CO_2 emissions reduction by 15%
- global operational costs cut by at least 10%.

To learn more about PreMa project visit our web site: *www.prema-project.eu*

News from the test and demo sites

Autonomous heliostat fields in small scale CSP plants

Willie Smit, Stellenbosch University, South Africa

The PreMa project aims to demonstrate that CO_2 emissions from Manganese production can be reduced by preheating the ore with sustainable energy sources. The project is considering three sources of sustainable energy (...)

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Successfully performed pilot experiments with pre-treated material in PreMa

Maria Wallin, Norwegian University of Science and Technology, Norway

PreMa aims at evaluating the possibility of reducing CO_2 emissions and energy consumption during the production of ferromanganese (FeMn) alloys by pre-treating manganese ore in a separate unit prior to the addition of the ore into a submerged arc furnace (SAF). (...)

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Air heater prototype a step forward towards demonstration of solar thermal heating

Sifiso Sambo and Lina Hockaday, MINTEK, Republic of South Africa

The demonstration of the preheating of manganese ores with hot air is part of the larger proof of concept for using concentrating solar energy to preheat manganese ores in (...)

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Pre-heating manganese ore in a pilot-scale rotary kiln

Noémie JULIA, ERAMET, France

After laboratory tests at Outotec Germany in order to select potential pretreatment units, rotary kiln and shaft furnace remain in the running for the technology of pretreatment unit that is being developed by PréMa. In order to evaluate the potential of the rotary kiln, and to assess the (...)

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Meetings and events

Summary of the "Renewable Solutions: looking towards 2050" workshop

On 4th November 2020 PreMa with SAIMM cooperation organised "Renewable Solutions: looking towards 2050" (...)

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Save the date: "Building partnerships for Renewable Solutions"

On 28th-29th July 2021, in Randburg, South Africa next PreMa workshop will be held during the hybrid conference "Renewable solutions for an energy intensive industry"

read more...

PreMa project consortium

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PreMa Facts Sheet

Project acronym:	PreMa
Project full title:	Energy efficient, primary production of manganese ferroalloys through the application of novel energy systems in the drying and pre-heating of furnace feed materials
Project start date:	01/10/2018
Project duration:	48 months
Project website:	www.prema-project.eu
Project budget:	10 073 272.50 €

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