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## The Horizon 2020 project PreMa to boost a more competitive, greener production of manganese ferroalloys in Europe

More than 90% of the manganese produced worldwide goes to steel sector where it is used as an alloying element essential for improving the quality of steel. In recent years, global demand for manganese alloys (Mn-alloys) showed an increasing tendency reaching in 2018 the level of about 22 mill tons. At the same time Mn-alloys production is highly energy and carbon intensive resulting in a significant global warming potential mainly due to power generation and fuel combustion. It is estimated that a direct emission (i.e. excluding electricity and off-site emissions) generated by each kilogram of produced Mn alloy is on the level of about 2 kg of CO<sub>2</sub> emission equivalent, although it may vary across different producers. To lower this emission footprint, new technologies are in demand that would enable renewables become a source of energy supply for the process. They will help reduce the direct and indirect CO<sub>2</sub> emissions resulting from Mn alloys production, make it more sustainable and flexible in terms of energy sources used and thus more competitive.

PreMa, a Horizon 2020 co-funded project "Energy efficient, primary production of manganese ferroalloys through the application of novel energy systems in the drying and preheating of furnace feed materials" aims to deliver a suite of new technological solutions to reduce energy consumption and CO<sub>2</sub> emissions from manganese production. PreMa project is targeting optimization of the whole value chain in manganese ferroalloy production through improving the energy efficiency of the process based on sub-merged arc furnace (SAF) technology, which is currently extremely energy intensive.

*"The main concept of PREMA consist in dividing the current Mn-alloy production process in SAF into a two-step process by adding a furnace feedstock pretreatment unit using novel, sustainable energy systems for drying and preheating of Mn ores involving alternative energy sources such as bio-carbon, CO<sub>2</sub> rich off-gas and concentrated solar thermal systems. They will be developed and tested in a large scale demos to substitute the currently used fossil fuels and electricity" - says Eli Ringdalen, the coordinator of PreMa project.*

Life Cycle Analysis (LCA) and Life Cycle Cost Analysis (LCCA) will be implemented from early stages of the technologies

development to ensure the technical, economic and environmental viability of the proposed solutions across the whole Mn-alloys production value chain.

PreMa consortium puts together a total of 11 Mn-alloys production facilities spread over Europe including Transalloys in SA, Eramet in France and Norway, Ferroglobe in Norway and OFZ in Slovakia as well partners from South Africa - the top first country in high quality manganese ores extraction and exports worldwide. It ensures a win-win situation in the market uptake of the developed new technologies in order to strengthen the Mn-alloys and steel value chains in Europe. The innovative character of the project is brought by major players in R&D across Europe and South Africa, with the Norwegian organisation SINTEF as coordinator. PreMa project was initiated in November 2018 and will be implemented for 48 months.

PreMa innovative solutions are expected to deliver concrete results for Mn alloys production in Europe such as energy savings up to 25%, CO<sub>2</sub> emissions reduced by 15%, 20% less fossil carbon consumed and operating costs reduced by 10%.

For more information visit our website: [www.prema-project.eu](http://www.prema-project.eu)

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