Bioethanol from waste gases facility plan in Europe announced

July 13 2015, by Nancy Owano

Three companies announced they have entered into a letter of intent to build Europe's first commercial-scale production facility to create bioethanol from waste gases produced during the steelmaking process. The announcement said the bioethanol can cut greenhouse gas emissions by over 80 per cent compared with conventional fossil fuels.

This is a 47,000-ton ethanol/annum project, said the news release; it can fuel half a million cars with ethanol blended gasoline.

ArcelorMittal, the steel and mining company, is joining LanzaTech, a carbon recycling company founded in New Zealand, and Primetals Technologies, a service provider to the iron and steel industry. (Primetals Technologies will be responsible for part of the engineering, automation, key equipment and commissioning.)

LanzaTech's technology is to play a key role here. Its technology recycles waste gases and ferments them with a proprietary microbe to produce bioethanol. The company described its process as involving patented microbes that convert carbon rich wastes and residues produced by various industries as well as gases into valuable fuel and chemical products through a process of gas fermentation.

Earlier this year, LanzaTech, according to site notes from the Symposium on Biotechnology for Fuels and Chemicals, spoke about its process involving a proprietary strain of *Clostridium autoethanogenum*.

"Every ton of bioethanol produced, displaces 5.2 barrels of gasoline as well as reducing ArcelorMittal's CO2 emissions by 2.3 tons," said the news release.

Steel is produced through a chemical process that results in high levels of waste gases emitted. The release noted that approximately 50 per cent of the carbon used in the chemistry of steelmaking leaves the process as carbon monoxide. The waste gas stream is flared or used to heat and power the steel mill. "In either case, the carbon monoxide is combusted and the resulting CO2 is emitted."

The initiative can deliver environmental benefits when compared to conventional fossil fuels. One benefit is that the initiative will help keep fossil fuels in the ground, through the production of commodity chemicals and fuels that would otherwise be made from oil.

The construction site is ArcelorMittal's steel plant in Ghent, Belgium, and will get under way this year. The production of ethanol will happen by mid-2017.

The total initial capacity is 16,000 tons. In 2018, with completion of a "phase two," capacity will be at 47,000 tons of ethanol per annum. What is more, "If scaled up to its full potential in Europe," the release said, "the technology could enable the production of around 500,000 tons of bioethanol a year."

ArcelorMittal is the world's leading steel and mining company, according to its company site, with a presence in 60 countries and an industrial footprint in 19 countries.

Jennifer Holmgren, CEO of LanzaTech, said the production facility in Europe comes at a time "when it is abundantly clear that we need all solutions and the commitment of large corporations, cities and countries around the world, to help us stay within our 2 degree carbon budget and keep fossil reserves in the ground."

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