Abstract - Conference on CO2-based Fuels and Chemicals 2023

The ArcelorMittal smart carbon strategy towards carbon neutral steel production

Wim Van der Stricht, Manager CO2 and Circular Economy

Technological solutions, to utilize process gases from the iron and steel industry for production of fuels and chemicals, are an attractive sustainable and economic approach for industries today. This innovative approach converts carbon and hydrogen-rich off-gases, such as coke oven gas, blast furnace top gas, converter gas and also direct reduced iron gas into liquid based energy sources through a biological gas fermentation process to produce preferably ethanol or other chemicals. To produce ethanol, an integrated fermentation system with additional downstream installations is required to treat the fermentation product and waste streams. The treatment of the fermentation waste streams results in a number of by-products, usable for internal or external applications. By returning the by-products to an integrated steel plant or recovering the inherent energy, the fermentation system can be operated in circular system, with minimal waste. The first European commercial scale application of this technology will soon be commissioned at the ArcelorMittal steel plant in Ghent with the objective of producing 80 million liters of ethanol per year to be used as renewable transport fuel in a first stage, and as chemical building block on the longer term. We will present the latest developments in the construction of the plant and potential GHG reductions in the steel sector.