

Abstract:

Nordic Blue Crude is about to construct the first commercial production site of high quality, carbon neutral, synthetic fuels and other fossil replacement products, based on water, carbon dioxide and renewable power. With a production capacity of 8000 tonnes per annum, the production site will be able to provide a variety of carbon neutral products such as e-Kerosene for aviation, e-Fuels for road transport and e-Waxes for special refinery and chemicals. As these products are compatible with existing infrastructures, both in refinement, storage and usage, the risk of stranded assets and costly investments in new infrastructure requirements can be circumvented. Sunfire, the technological partner within this project, is the patent holder of this revolutionary process, which is based around a highly efficient electrochemical production of synthesis gas (CO and H₂). This is enabled through the Solid Oxide Electrolyser Cell (SOEC), the most efficient technology for hydrogen production on the market. Its tolerances to carbon further enable the direct reduction of carbon dioxide to carbon monoxide. Subsequently, a Fischer-Tropsch-Synthesis is used to transform CO and H₂ to the hydrocarbons mentioned above. With Sunfire technology, the overall process reaches conversion efficiencies of 60% (electricity to LHV Sunfire technology).