SPIRE-10-2017

renewable energy from renewable sources. Operating at low temperatures and pressures, the reactions will forecast significant improvements in energy and resource efficiency combined with an enormous reduction of GHG emissions.

Concept:
The CO2EXIDE technology combines a modular nature for the feasibility of a decentralised application, high energy and material efficiency and the substitution of fossil-based production of ethylene oxide. Initially, the electrochemical step pursues the simultaneous conversion of CO2 to ethylene at the cathode and water oxidation to hydrogen peroxide at the anode. A subsequent chemical conversion of both intermediates to ethylene oxide will deliver polyethylene and further derivates, which are basic materials for many industrial processes such as the manufacture of plastic products. All improvements will be quantified using life cycle assessment. The CO2EXIDE approach will link the chemical and energy sector, climate protection to industrial processing: physicists, chemists, engineers, economists and communication experts from universities and research institutions, SMEs and industries, innovatively joining their key technologies to develop and exploit an unprecedented process based on CO2, renewable energy and water. The CO2EXIDE project thus tackles important societal challenges by fostering sustainable supply chains

for the creation of factories of the future.

Start date:
01/01/2018

End date:
31/12/2020