

Carbon recycling technology (CRT)

Ahilan Raman

University of Madras, India

Carbon recycling technology is a patented technology by an Australian company, Clean Energy and Water Technologies (CEWT). Ahilan Raman has recently filed a provisional patent application with IP Australia to generate a synthetic fuel known as RSMG (renewable synthetic methane gas) directly from the seawater. RSMG will be used as a fuel in a gas turbine to generate a base load power (24x7) and the emitted CO₂ is captured and converted back into RSMG using a renewable energy source such as solar and wind etc. so that the plant can achieve ZERO EMISSIONS while generating continuous electricity. Ocean is the largest sink for direct CO₂ absorption from the atmosphere and it is prudent and economical to derive CO₂ from sea rather than from air where CO₂ concentration is only 415 ppm. The concentration of CO₂ in seawater is more than 100 times than that of the air. Currently CEWT is in the process of demonstration CRT in India. The demonstration plant is installed in an existing and operating PV solar farm of 100 Mw capacities. A small gas turbine of capacity 1.20 Mw is installed in the same solar farm using LNG as a start-up fuel. The CO₂ emitted in the gas turbine is further heated to 900°C along with steam and subject to high temperature electrolysis using a Solid Oxide Electrolyser Cell (SOEC) to generate syngas (mixture of CO and Hydrogen). The Syngas is further methanated using Renewable Hydrogen (RH) in a reactor using a proprietary catalyst to generate SRMG along with steam. The RSMG is recycled as a fuel to fire the gas turbine to supply base load power to the grid. The renewable power imported from the grid is exported back into the grid using gas turbine so that a PV solar farm which generates an intermittent Renewable energy is converted into a stable base load power continuously exported to the grid. This technology allows leveraging a renewable energy source into a base load power without using any storage devices like battery. It also achieves ZERO CARBON EMISSION. It will be the first of its kind technology in the world.

Biography

Ahilan Raman, a versatile Chemical engineer with over 37 years of experience mainly in R&D, Innovation and Commercialisation. He has successfully commercialised various process technologies in the past. He holds national and international patent on seawater desalination known as CAPZ desalination technology. He has recently filed a provisional patent application with IP Australia to generate a synthetic fuel known as RSMG (renewable synthetic methane gas) directly from the seawater.

Received: June 07, 2022; **Accepted:** June 09, 2022; **Published:** July 18, 2022
