Breakthrough zero-emission technologies for energy transition: APRIA showcase

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In the company APRIA Systems S.L. we are committed to promoting the energy transition of the industrial society and the global economy. The implementation of new systems to produce sustainable fuels and chemicals by the integration of renewable energy sources is one of the major challenges the company is currently dealing with. Particularly, APRIA is working on the transition to technologies that will transform CO_2, H_2O, N_2, and O_2 into fuels and platform chemicals, using sunlight as energy source.

In the frame of HySolChem European project, APRIA is developing an innovative, low-cost reactor for capturing greenhouse gases and producing high-value fuels and chemicals, while contextually removing harmful pollutants from wastewater. It could path the way to make a sustainable alternative to fossil-based energy sources, aiming to directly convert sunlight and CO_2, N_2, H_2O into fuels & chemicals and at the same time decontaminate wastewater containing organic pollutants and microplastics. The development of light-driven technologies represents an alternative way for the conversion and storage of renewable energy. This concept is being validated in municipal wastewater treatment plants but can be potentially installed in distributed water treatment units next to intensive industries (chemicals, refinery, cement, fertilizers…), energy producers (carbon, electricity…) or housing which generate CO_2/N_2 and polluted wastewater.

In the same way, APRIA is developing photo(electro)chemical cells (PEC) based on the combination of highly active electrodes and catalytic with organic solar cells under SOLFuture project. Originality and innovation come from combination of photoelectrochemical H_2 production, CO_2 reduction or N_2 fixation with water and waste biomass oxidation.