

Petrochemicals in the Refinery Network

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Abstract

The reduction of global CO₂ emissions is key to meet the climate change in the future and the present. bp's purpose is reimagining energy. We want to become a net zero company by 2050 or sooner and help the world get to net zero. The company has set short-term (to 2025) and medium-term aims (to 2030).

These targets also include bp's petrochemical operations. In cooperation with other companies, bp is developing solutions to use feedstock from the circular economy and other sustainable products such as bio-based feedstock in the plants of bp's refineries.

Today, bp produces more than 4 mio. tons of petrochemicals per year at its German refineries in Gelsenkirchen and Lingen. Main products are ethylene, propylene, methanol, cumene, cyclohexane and LPG-streams with properties to be of interest for subsequent processing in the chemical industry.

One way to reduce the carbon footprint of refinery products is coprocessing with sustainable biogenic feedstock. Lately, UCO (used cooking oil) has become a promising candidate for this. Various units in the refinery can be used for coprocessing: e.g., hydrocracker, FCC and hydrotreater. To prove and control bio-origin in outcome streams of the units, bp uses C14-test method that was developed in bp laboratory in Bochum.

An alternative way to reduce CO₂, especially for petrochemical products, was investigated using pyrolysis oil from waste plastics at low concentration in a steam cracker. In a second pathway, pyrolysis oil originating from tyres was taken for lab investigation for possible future use in a coker unit.

Summarizing, coprocessing of pyrolysis oil aimed for petrochemical products looks attractive and means a start on circular economy, net zero ambitions and saving of CO₂.