

Abstract for ADVANCED RECYCLING Conference 2026

Linde GmbH, Linde Engineering, Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach, Germany

Dr. Harald Schmaderer, Head of R&D Chemistry & Analytical Services

Plastic Pyrolysis Oil as Feedstock for Steam Crackers: Opportunities and Challenges

This conference contribution explores the use of plastic pyrolysis oils as feedstock for steam crackers, with a focus on opportunities and challenges from an olefin technology licensor point of view. Plastic pyrolysis offers a way to process waste that cannot be recycled mechanically or by recovery of monomers. However, the quality of these pyrolysis oils can vary widely and needs to be considered in detail for application as steam cracker feedstock.

Three main pillars of knowledge are presented: First, the detailed analytics of plastic pyrolysis oils is explored, emphasizing its relevance on contaminants management and yield prediction. Second, the requirement of pilot testing is highlighted, which provides insight regarding cracking performance and related yields of high value chemicals together with different options of pre-treatment. Finally, the presentation shows how design know-how for the furnace, separation section, and purification requirements is utilized to transfer the pyrolysis oil evaluation into a sound overall process concept for commercial application in steam crackers.