



Case Study

Client

Private Equity Firm

Project Number

23027

Life Cycle Analysis of Pyrolysis Oil at an Advanced Plastics Recycling Facility

Client Overview

The client was evaluating an advanced plastics recycling investment opportunity at a facility designed to convert waste plastic streams into a sustainable feedstock for recycled plastic production. The target facility in the US plans to commence operations in 2024 and is part of a broader initiative to develop scalable recycling technologies for post-use plastics.

Challenge

Plastic recycling is a complex process, and the client sought to validate the facility's process for producing a drop-in feedstock through a comprehensive life cycle analysis (LCA). The primary objective was to assess the process's environmental impact, particularly greenhouse gas (GHG) emissions, and compare it with conventional fossil fuel-based plastic production.

The client had previously commissioned an LCA but required a more detailed analysis that could provide accurate comparisons with other recycling technologies and traditional plastic production processes.



Case Study

Life Cycle Analysis of Pyrolysis Oil at an Advanced Plastics Recycling Facility

Client

Private Equity Firm

Project Number

23027

Our Approach

An independent LCA of the facility's pyrolysis process was conducted using a model to evaluate environmental impacts. The analysis compared the facility's output with conventional naphtha production, focusing on critical stages:

- ❖ Collection and sorting of post-use plastics
- ❖ Pyrolysis to create the drop-in feedstock
- ❖ Comparison of GHG emissions between the feedstock and its fossil fuel counterpart

Additionally, alternative scenarios for waste plastic management, such as landfill and incineration, were considered to capture avoided emissions and provide a full environmental impact assessment.

Results

The analysis concluded that pyrolysis-based recycling offers a viable and environmentally friendly alternative to conventional plastic production. The client received detailed insights into the facility's emissions savings and overall environmental advantages, supporting their investment in this sustainable technology.