



Case Study

Client

Plastics Recycling Copmany

Project Number

24055

Scaling Pyrolysis Technology for a Leading Plastics Recycler

Summary of Client and Challenge

A prominent player in the plastics recycling industry sought to scale its pyrolysis technology to transform post-consumer and post-industrial plastics into valuable resources such as oil and syngas. Expanding from pilot operations to full-scale commercial facilities introduced new challenges, particularly in technology scalability, feedstock consistency, and operational efficiency. This client needed a structured approach to:

- ❖ Optimize pyrolysis technology for processing a variety of plastic materials.
- ❖ Manage operational scaling to maintain efficiency and control costs.
- ❖ Ensure a reliable and high-quality feedstock supply through strategic supplier relationships and advanced pretreatment technologies.

LEC Partners was engaged to provide targeted solutions to address these issues and position the company for successful expansion.



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Our Approach to the Solution

LEC Partners employed a structured, data-driven approach to address the scaling challenges, focusing on technology optimization, operational scalability, and feedstock management.

- ❖ **Technology Optimization:** LEC Partners collaborated with the client to refine the pyrolysis system. Key improvements included enhanced reactor design and optimized heat transfer, which increased the conversion rate of plastic waste into valuable byproducts while maintaining operational efficiency.
- ❖ **Scalability Management:** To support scaling, we introduced advanced simulations and modeling tools that helped anticipate potential issues, including heat distribution, energy usage, and product yields. This proactive approach provided insights necessary for a smooth transition from pilot projects to full-scale production.
- ❖ **Feedstock Supply Strategy:** Our team helped the client build a network of reliable suppliers to secure consistent, high-quality feedstock. Investments in pretreatment technologies allowed the company to handle a wider range of plastic materials, including complex and contaminated waste, ensuring operational stability.



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Client Results and Benefits

Through strategic collaboration with LEC Partners, the client successfully scaled its pyrolysis technology, achieving significant improvements in production capacity, feedstock flexibility, and energy efficiency.

- ❖ **Expanded Production Capacity:** The company's processing capacity increased by 40% post-scale-up, positioning them to meet growing demand for recycled materials in the market.
- ❖ **Enhanced Feedstock Flexibility:** By implementing a robust supplier network and advanced pretreatment processes, the company diversified its feedstock sources, reduced costs, and optimized operational efficiency.
- ❖ **Energy Efficiency Gains:** Reactor redesign and energy recovery systems led to a 10% reduction in energy consumption, resulting in a more sustainable and cost-effective operation.

This partnership demonstrates how targeted improvements in technology, supply chain management, and operational scalability can effectively support the expansion of advanced recycling technologies. With LEC Partners' assistance, the client is now well-positioned to lead in the growing plastics recycling sector, equipped to meet rising demand for sustainable, high-efficiency solutions.