



# Biomass Pyrolysis — Technology and Market Assessment

Case Study

# Case study: Business case and solution

## Biomass Pyrolysis

<b>Client</b>	An integrated oil and gas player
<b>Industry</b>	Energy
<b>Products</b>	Biomass pyrolysis

### Context

- As part of its sustainability initiatives, Client was interested in evaluating biomass pyrolysis route for production of transportation fuels or refinery base chemicals; Client wanted to evaluate pyrolysis and its up-gradation technologies to identify different application areas

### Key Business Questions

- What are the most prominent up-gradation technologies available to convert pyrolysis oil to product?
- What are new application areas of pyrolysis oil adopted by competitors?

## Engagement Scope

1

### Technology Assessment

- Identified technologies that can be used to upgrade the existing pyrolysis oil for converting it into useful chemicals and end products
- Identified key parameters such as, production process, effect of feedstock price, and availability, which impact the cost of production
- Identified typical specifications of pyrolysis oil depending on the pyrolysis technology

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### Competitor Assessment

- Probed about the key initiatives taken by competitors in domain of pyrolysis oil application
- Identified competitors patenting and other business activity in this domain to identify their road-map to understand their strategic direction

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### Key Results and Insights

- Identified different up-gradation technologies available for conversion of pyrolysis oil to useful products and highlighted prominent technology by comparative technology benchmarking
- Comparative analysis of Client's offerings/ technologies with those of its competitors to understand the technology gaps
- Highlighted competitor's activity in the domain of biomass pyrolysis

# Case study: Methodology and benefits to client

## Biomass Pyrolysis

### Research Methodology

#### Secondary Research

- Conducted desk research to identify different up-gradation technologies explored at commercial scale or demonstration scale
- Studied both patent and non-patent literature to highlight key application areas and technologies still in research stage

#### Primary Research

- Conducted 10+ telephonic interview with technology developers and industry experts to understand the preferred pyrolysis oil upgradation technologies

### Benefits to Client

- The study helped in achieving visibility about the most prominent application areas for pyrolysis oil utilization
- Comparative assessment of different technologies helped in identifying most cost competitive ones and having greater yield
- Competition assessment helped in chalking out strategies in order to remain ahead in the race

### Sample Analysis

**1 Technology Assessment**

The screenshot shows two report pages. The top page is titled 'Fractionation and catalytic upgrading of bio-oil' and contains text about the current technology of ethanol treatment. The bottom page is titled 'BIOTX from MELNA gasification and developments in PYRINA' and features a process diagram of a PYRINA plant.

**2 Competitor Assessment**

The screenshot displays a competitor assessment report. It includes a flowchart showing the progression from 2009 to 2014, a bar chart of 'No. of Patents' by year, and a pie chart of 'Geographical Distribution' of patents across various regions.

**3 Key Results and Insights**

The screenshot shows an executive summary report. It features a table with columns for 'Technology', 'Cost', 'Yield', 'Feedstock Quality', 'Feedstock Source', 'Feedstock Price', and 'Process Efficiency'. Below the table is another 'Executive Summary' section with detailed text and a small bar chart.

# Thank you

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