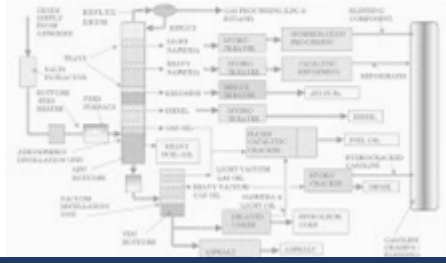
CASE STUDY #464



HEAVY OIL CONVERSION TECHNOLOGY BENCHMARK OUTLOOK STUDY



ABOUT THE CLIENT

Industry	Oil and Gas
Revenues	$200+ billion
Employees	65,000
Location	Middle East
BSI Service or Solution	Technology Outlook

Key Challenges

- Client anticipated an increasing need to process heavier crude, so needed to invest in process technologies for pre-refining and post-refining process routes for Syncrude.
- Project was commissioned to evaluate alternative technologies for further study and potential investment.

Why BSI was Selected

- Expertise in technical and commercial aspects of refining
- Clear communication of findings and conclusions
- Familiarity with client's operations and projects

Project Scope

- Map and forecast the technology landscape for conversion routes for heavy oil, including:
  - Delayed Coking
  - Gasification
  - Hydrocracking (Fixed bed)
  - Catalysts
  - FCC
  - Cross-Flow Coking
  - Ebullated Bed Hydrocracking
  - Slurry Hydrocracking
  - Solvent Refining

Project Approach

- Reviewed technology interests of heavy oil producers, especially in Canada, Venezuela, and Russia
- Identified zero-hydrogen applications in use and being studied
- Detailed process options that had a reduced or zero hydrogen-consumptive, including catalytic and non-catalytic thermal conversion routes
- Identified suppliers of relevant technologies, including academic research institutions, emerging small technology companies, and larger enterprises with innovative technologies

Financial Benefits (Potential)

- Evaluated each technology and application's short-term and long-term potential for capital cost reduction and operating reduction

Operational Benefits (Potential)

- Evaluated each technology and application's short-term and long-term potential for processing performance (yield and quality) and operating reliability.

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