

Process Comparison & Cost Tracker

Key Questions

- What is the historical trend and outlook for my feedstock price? How does this impact the production economics of competing processes using different feedstocks in different regions?
- How does feedstock volatility affect profitability of a process and its relative competitiveness vs. other processes?
- How can I confidently make investments in new assets and convert low cost feedstocks to high margin products?
- Which technologies should I select to maximize profits and meet the demand for production?
- Which process technology has the lowest risk to environment impact?
- How do process technologies vary by different cost metrics?
- What is my estimated total project cost?

Feedstock price dynamics have been turbulent in recent years, making it more difficult for companies to make sound, confident investment decisions. These market factors have created urgency for companies to understand new technologies and related production costs, in order to validate the economic feasibility of their investment. Feedstock volatility changes production costs and profitability very rapidly and alters the relative position of competing processes. Leveraging our global market expertise, economic and technical process evaluations and price forecasts, IHS Markit provides an intuitive and user-friendly way to understand how state of the art processes compare and compete, across a variety of real world environments and situations.

The Process Comparison & Cost Tracker (PCCT) models provide the ability to interrogate up to 500,000 economics data points and analyze the data based on: technology, capital and production economics, time, Total Project Cost, geography and environmental impact. This unique combination of deep data and flexible functionality empowers you to make confident strategic decisions. Key features include:

- Detailed production cost structure, broken down by cost components, for commercial and emerging process technologies
- Ability to select and compare different process technologies side-by-side
- Model populated with >15 years of historical data and 5 year IHS Markit base price forecast
- Price basis offered for feedstocks and product on a quarterly and annual basis for 6 key regions
- Ability to enter user-defined metrics up to 2040 for product price, immediate feedstock price, utilities, location factors and capital cost index
- Carbon and water footprints
- Metric and English units provided
- Process descriptions & block flow diagrams
- Technology & market overview

A 12-month subscription provides four model updates, which occur on a quarterly basis, aligned to our proprietary long-term price, cost and margin forecasts. Our integrated approach offers you the opportunity to respond to price volatility, and ensures your strategic decisions utilize the most current and robust data available.

How do our clients use the Process Comparison & Cost Tracker service?

CAPITAL INVESTMENT EVALUATION

- Identify optimum capital investment (technology /feedstock/ timing/ location)
- Calculate investment and operating costs, broken down by cost component
- Assess long term viability & forecast ROI

BUSINESS PROFITABILITY ASSESSMENT

- Understand impact of feedstock price fluctuation
- Conduct scenario analysis
- Analyze the threat of emerging technologies
- Determine realistic targets and budgets

PROCESS ECONOMICS & TECHNOLOGY ANALYSIS

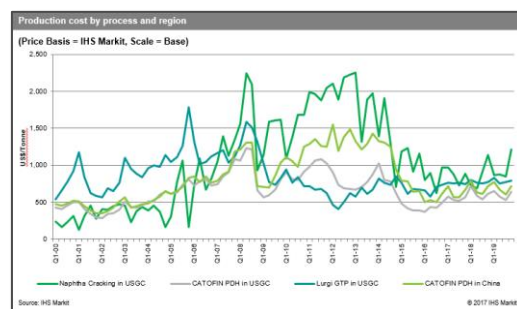
- Compare economics & costs for competing processes
- Understand impact of emerging technologies on resource needs & business continuity
- Evaluate environmental impact of competing processes

By merging proprietary process economics data with flexible functionality, IHS Markit enables you to:

Understand Which Technology to Choose for Capital Investments

Process Comparison & Cost Tracker offers an intuitive interface, enabling you to easily switch between different locations, cost metrics, processes and time-periods to quickly and efficiently understand and compare the economics and production costs of competing processes.

- Review process descriptions to understand technical requirements
- Understand carbon dioxide emissions and water consumption by process
- Compare and contrast technologies side-by-side, and compare regional advantages based on availability of feedstock

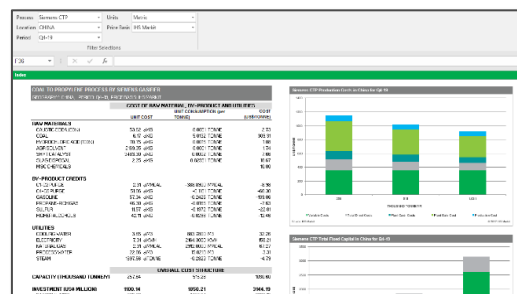


Assess How Feedstock Volatility Affects Production Economics and Profitability

- Monitor historical trend and future outlook of feedstock price
- Track how feedstock volatility affects production economics and profitability of competing processes by evaluating various feedstocks produced in different regions
- Assess competitive position of a process vs. others in a long-term perspective

Calculate Investment and Production Costs, Broken Down by Cost Component

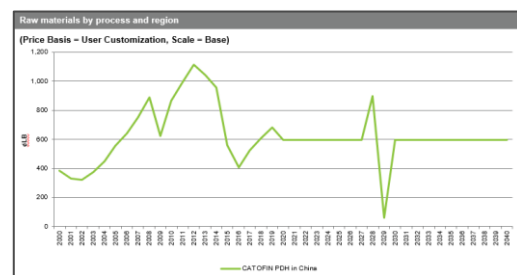
Process Comparison & Cost Tracker provides a full breakdown of the costs of a given process for a specific time-period and location. In addition, users can customize product price, raw materials, byproducts, utilities, as well as miscellaneous items to develop a deep and thorough perspective of all contributing cost elements.



- Calculate full spectrum of costs associated with capital investment project adjusting for varying capacities - including Inside Battery Limits (ISBL) & Outside Battery Limits (OSBL)
- Adjust operating rate and track operating cost by process over time leveraging IHS Markit base case
- Review the detailed breakdown of the production cost by process, formulated based on the unique consumption of raw materials and utility of each process

Assess Long Term Viability

- Input your internal base-case prices and cost over a 20+ year forecast to validate investment case and identify risk
- Understand impact of historical market fluctuations with over 15 years of historical data
- Assess the competitiveness of new emerging technologies to determine potential threats



Available Products – 12 product models**

| | | | |
|---------------|--------------------------------|-----------------|----------------------|
| Acetic Acid | Ethylene | Polypropylene | Polyethylene (HDPE) |
| Acrylonitrile | Methanol | Propylene | Polyethylene (LDPE) |
| Chlor-Alkali | Natural Gas Liquids Separation | Propylene Oxide | Polyethylene (LLDPE) |

** IHS Markit will be increasing the products offered to build a full library of solutions. For products of interest not listed above, please contact us.

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About IHS Markit

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 85 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.