



TECH: Hydrogen Peroxide - 2024

Hydrogen peroxide is one in a series of reports published as part of NexantECA's 2024 Technoeconomics – Energy & Chemicals (TECH) program.

Overview

Hydrogen peroxide is one of the most powerful oxidizing agents known and is a primary component for bleaching and disinfectants applications as well as being a key feedstock to produce other chemicals such as propylene oxide. It is considered a green/environmentally friendly chemical due to the decomposition by-products being water and oxygen.

Within the TECH report, NexantECA provides the insights behind recent capacity additions and details a high-level analysis to the business and strategic considerations from the perspective of a company entering or expanding into the hydrogen peroxide market.

- What are the major production technologies for hydrogen peroxide and how do they differ?
- Who are the main technology owners and licensors?
- What are the recent technological innovations for hydrogen peroxide production?
- What are the primary end use markets for hydrogen peroxide?
- Where is the future market growth?
- Where are the main producers?
- What is the business and regulatory environment like for hydrogen peroxide today?
- How does carbon intensity change for the different production routes for hydrogen peroxide?

Commercial Technologies

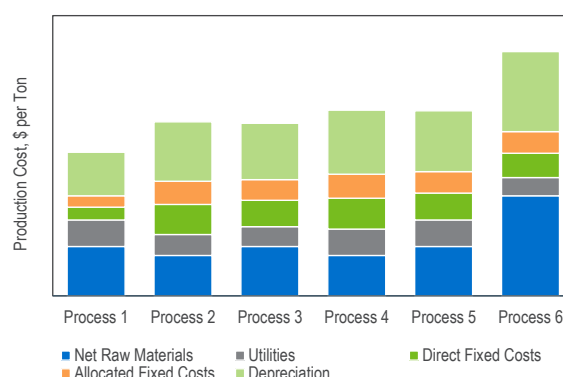
The majority of global capacity is based on the anthraquinone auto-oxidation process which uses hydrogen and air as raw materials and a palladium-based catalyst. The report presents the three major production technologies.

R&D efforts, such as those directed toward developing a direct synthesis route (i.e., without the use of an anthraquinone working compound), are also discussed in the report.

Process Economics

The cost of production for three prominent production routes has been estimated for plants located in the United States, Western Europe, the Middle East, and China for the first quarter of 2024. These regions/countries account for the large majority of global hydrogen peroxide capacity. The analysis breaks down the key factors in determining the unit cost of production.

Comparison of Hydrogen Peroxide Costs



Commercial Overview

The applications for hydrogen peroxide fall into the following broad categories.

- Bleaching (paper, pulp and textile) as it is a strong, non-polluting oxidizing agent.
- Chemical Synthesis (principally HPPO)
- Environmental (particularly wastewater treatment and chemical purification)
- Electronics
- Food
- Mining
- Others such as consumer care, aquaculture, agriculture, pharmaceutical, healthcare, and aerospace applications.

The analysis discusses each end use and explores the future growth aspects.



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Subscribe to TECH

The TECH program (formerly known as PERP) is globally recognized as the industry standard source of process evaluations of existing, new and emerging technologies of interest to the energy and chemical industries.

TECH's comprehensive studies include detailed technology analyses, process economics, as well as commercial overviews and industry trends. Reports typically cover:

- Trends in chemical technology
- Strategic/business overviews
- Process Technology:
- Chemistry
- Process flow diagrams and descriptions of established/conventional, new and emerging processes
- Process economics – comparative costs of production estimates for different technologies across various geographic regions
- Overview of product applications and markets for new as well as established products
- Regional analysis, including capacity tables of plants in each region
- Carbon intensity analysis, and regulatory and environmental issues where relevant

Subscription Options

A subscription to TECH comprises:

- PDF reports including detailed technology analyses, process economics, as well as commercial overviews and industry trends
- Cost of production tables in spreadsheet format
- Consultation time with the project team

An annual subscription to TECH includes twenty reports published in a given program year. Reports can also be purchased on an individual basis, including reports from previous program years.

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Technology@NexantECA.com or www.NexantECA.com



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Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program, the Biorenewable Insights program (BI), and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

NexantECA serves its clients from over 10 offices located throughout the Americas, Europe, the Middle East, Africa, and Asia.

Americas

Tel: +1 914 609 0300
169 Mamaroneck Avenue
2nd Floor, Suite 100
White Plains, NY 10601
USA

Europe, Middle East & Africa

Tel: +44 20 7950 1600
110 Cannon Street
London EC4N 6EU
United Kingdom

Asia Pacific

Tel: +662 793 4600
22nd Floor, Rasa Tower I
555 Phahonyothin Road
Kwaeng Chatuchak
Khet Chatuchak
Bangkok 10900
Thailand