China Acetic Acid Industry during in 12th Five-year Plan Period

Zheng Baoshan

Deputy Section Chief Engineer

China National Petroleum & Chemical Planning
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National Petroleum & Chemical Planning Institute

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The former Chemical Planning Institute of the Ministry of Chemical Industry
Also known as China International Chemical Consulting Corporation
Founded in July 1972
Engaged in making industrial planning research in petroleum and chemical sectors nationwide
Engineering consulting: feasibility study, market research, and site selection
Management consulting: development strategy, business planning, and industrial policy study
Specializes in oil chemicals, coal chemicals, natural gas chemicals, salt chemicals, mineral salts, fertilizers, fine chemicals, bio-chemicals, new chemicals, and synthetic chemicals, etc.
The 12th Five-Year Plan Proposal and China’s Acetic Acid Industry

“...promote structure adjustment of important industries: actively explore the diversity of petrochemical raw materials, focus on the development of high-end petrochemical products, accelerate the adjustment of fertilizer feedstock, and strengthen the upgrading of oil quality.”

Influence on the acetic acid chain:

- Feedstock: Methanol stocks to be shared with methanol-to-olefins (MTO) and methanol-to-propylene (MTP) sectors
- VAM: Diversified feedstock ethylene; new VAM capacities
- EVA: Film coatings of solar cells
…optimize industrial layout: orderly promote the relocation of urban steel, non-ferrous metal, chemical plants for environmental protection purposes; optimize the distribution of oil processing capacities to promote upstream-downstream integration.”

Influence on the acetic acid chain:
- Smaller efficient capacities caused by timed relocation or shutdown of urban plants
- Somewhat released methanol overcapacity due to the shutdown at some ammonia-methanol producers
- Acetic acid demand suppressed by weaker capacity of downstream acetate producers in the short term

“… consolidate technical innovation: implement supportive policies; accelerate the upgrading of traditional industries and improve their competitiveness by adopting new technologies, new materials, new processes and new facilities. Support enterprises in advancing equipment and optimizing production procedures; speed up the elimination of backward technologies and facilities; and improve the efficiency of energy and resources. Encourage enterprises to strengthen the development of new products, improve technical level, increase added value and accelerate the upgrading of products.

Influence on the acetic acid chain:
- Optimization of production processes should be encouraged, such as adjusting catalyst system, reducing energy consumption, and carbon emission, optimizing raw materials, etc.
The 12th Five-Year Plan Proposal and China’s Acetic Acid Industry

 “… promote the diversity and green development of energy: orderly launch research and demonstration of coal-based production of natural gas and liquid fuel, and coal-based poly-generation, so as to steadily promote the industrialization of those processes. Meanwhile, reinforce the exploration of oil and natural gas, stabilize domestic oil production, rapidly increase natural gas production, and promote the exploitation of unconventional oil & gas such as coal-bed gas and shale gas.

Influence on the acetic acid chain:
- Methanol and acetic acid become the key sectors for the optimization of synthetic gas utilization.

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 “… develop modern logistics: Accelerate the establishment of a socialized, professional and informationized service system of modern logistics; develop third-party logistics; prioritize the integration and utilization of existing logistic resources; enhance the construction of and connection among logistic infrastructure, and improve efficiency while cutting cost.”

Influence on the acetic acid chain:
- The delivery of feedstock methanol may cost less, benefiting acetic acid producers who purchase methanol from elsewhere.
- Prompt logistic services will promote the export of acetic acid and its derivatives.
“... promote the rapid development of strategic emerging industries, such as energy-conservation and environment protection, new-generation information technology, biology, high-end equipment manufacturing, new energy, new materials, and new-energy automobiles. In new-energy automobile industry, emphasis should be placed on the development of technologies used for plug-in hybrid power automobiles, pure electricity-driven automobiles and fuel cell automobiles.

Influence on the acetic acid chain:
- Growth of refined oil consumption slows down.
- Increase of methanol gasoline consumption slows down.

The Influence of Key Petrochemical Developments on Acetic Acid Industry during the 12th Five-Year
- Promote the production of certain major items while discouraging that of others; make policies to regulate total capacity.
- Moderately raise the self-sufficiency rate of organic chemicals in short supply in domestic market. (such as VAM).
- Increase domestic supply of synthetic fiber intermediates such as PTA and CPL.
- Control the excessive capacity expansion of the products already in supply/demand balance, and prohibit the construction of backward capacities with high energy consumption and heavy pollution (such as acetic acid).
- Effectively control the total production of traditional chemical products, such as methanol and calcium carbide.
- Control the expansion rate of methanol capacity and encourage the methanol process based on coke-oven gas.
Strikely enforce industrial admittance threshold and eliminate backward capacities.

Further raise the admittance threshold and prevent redundant construction of low-level capacities.

Strictly restrict the construction of small-size refineries, and soda, fertilizer and methanol plants.

Accelerate the elimination of backward capacities that are based on outdated technologies, make poor-quality products and cause heavy pollution.

Try to build a proper industry exit mechanism.

Promote technological advancement and independent innovation, and develop high-end petrochemical products.

Encourage independent innovation, and combine it with introduction and absorption of foreign technologies.

Coal chemical industry: emphasize the development of the technologies with intellectual property rights, such as new coal gasification process, large-scale methanol synthesis, coal liquefaction (direct and indirect), methanol-to-olefin technology (DMTO, FMTP, SMTO), coal-to-gas technology, etc.

Encourage the methanol-based production of olefins and other derivatives in areas with concentrated methanol capacities, so as to “digest” excessive methanol production.
Attach importance to environmental protection and production safety, and standardize the construction of chemical industrial parks.

Follow the principle of “gathering added capacities into the park and gradually digesting existing stocks,” locate hazardous chemical plants in concentration, and accelerate the relocation and transformation of urban-based chemical plants.

Change the scattered distribution of China’s chemical industry through the construction of industrial parks, and encourage the construction of highly-concentrated, integrated modern chemical parks in order to pool expertise, investment, resources and benefits.

Regulate the examination and approval system of chemical parks so as to cap their pell-mell development.
1. In 2010, acetic acid capacity saw unprecedented expansion, and the output exceeded 3 million tons, a historic breakthrough, with an increase of 900 kt over 2009.

Source: National Bureau of Statistics

2. Unbalanced operating rates; idled backward and uncompetitive capacities.
3. 2010 saw a reversed import and export pattern of acetic acid: China became a net exporter of acetic acid, with export accounting for 5.6% of total production.
4. Exporting AA derivatives, particularly acetates and chloroacetic acid, has become an important method of dealing with excessive AA capacities in China.
5. China’s acetic acid industry will see continued oversupply as well as low profitability.

6. Methanol demand is expected to increase rapidly, yet not enough to change the oversupply situation.
7. Outlook of capacity consumption

In November 2010, Celanese announced its intention of investing about 700 million US dollars to build two 400 kt/yr industrial ethanol plants in China. There are two optional processes: the hydrogenation of acetic acid, and synthesis gas-based process.

On January 11, 2011, US Patent and Trademark Office approved Celanese’s patent application to produce ethanol by hydrogenating acetic acid with platinum/tin as the catalyst. The application was filed on July 31, 2008, saying that “it has now been unexpectedly found that ethanol can be made on an industrial scale directly from acetic acid with very high selectivity and yield.”
Any comment and suggestion is welcome!

ZHENG Baoshan
National Petroleum & Chemical Planning Institute
Office: +86-10-64283927
Fax: +86-10-64216254
Cell: +86-13651202342
zhengbaoshan@ciccc.com