



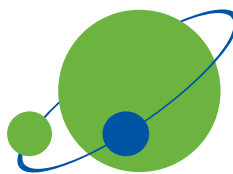
Benchmarking of the Chlor-alkali Industry in China

Tecnon OrbiChem Ltd., with 40 years of experience in the world chlor-alkali industry, and The Lantau Group, a leading advisor on electricity and energy costs in Asia, felt it would be a valuable contribution to understanding the caustic soda and chlorine business to analyse the chlor-alkali producers in China, in order to provide an overview of the factors shaping the cost structure of the industry. We have concentrated on the 55 largest operators in this sector, with capacity of 300,000 tons per year of caustic soda, or larger.

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The chlor-alkali industry is not unique in producing two products in fixed ratio to each other – caustic soda and chlorine – but it is unique in that prices of the two products can swing widely in opposite directions. Indeed prices of chlorine can become negative at times, when caustic soda markets are booming. Chlor-alkali producers therefore use the Electrochemical Unit (ECU), consisting of 1.00 tons of chlorine and 1.10 tons of caustic soda, as the yardstick to monitor costs and profitability of operation.

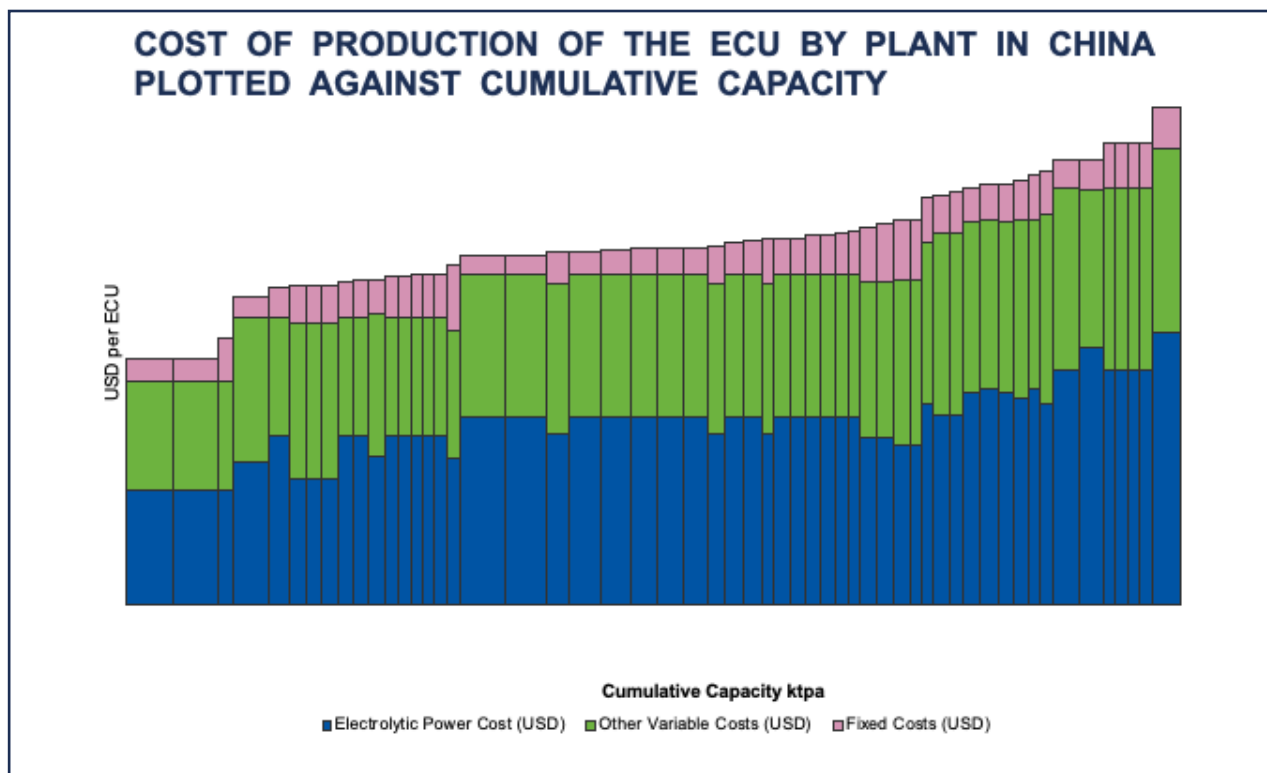
The industry is also almost unique among chemical manufacturing in that its main cost of production is electricity, rather than a raw material. In fact the chlor-alkali industry is one of the heaviest industrial users of electricity, secondly only to aluminium smelters.

China accounts currently for 43% of the world’s production of chlorine and caustic soda and is thus a major consumer of electricity for this end use. Businesses that interact with China, whether for caustic soda or chlorine derivatives, must take account of the local costs of production of chlor-alkali. These costs vary widely depending on the location of the plants,

with those near centres of coal mining generally benefitting from lower coal prices, which translate into lower power costs. Disentangling all the costs dependent on location factors, electricity prices, coal costs, labour and other fixed costs is a daunting exercise.

This industry is not easy to document, with over 300 chlor-alkali units in China (some very small), operated by 237 companies. This makes it difficult for businesspersons outside China, wishing to engage with producers of caustic-soda dependent or chlorine-related products, to judge the relative suitability of potential chlor-alkali partners in China.

We have summarised our findings in this study, which benchmarks the 55 companies according to the cost of ECU production, analysing the coal costs, electricity prices and other factors shaping the economics, from Xinjiang province in the West to Shanghai in the East. Users of this study will find a unique insight into the relative competitiveness of chlor-alkali producers over the wide extension of territory and huge diversity of operating conditions that China holds out.





Contents:

INTRODUCTION

1. INTRODUCTION TO CAUSTIC SODA AND CHLORINE WORLDWIDE

- 1.1 Chlorine and Caustic Soda as Co-products
 - 1.1.1 Pricing dynamics
 - 1.1.2 Cyclicity of the Chlor-alkali Market
- 1.2 World Trade in Caustic Soda
- 1.3 World Caustic Soda Demand
- 1.4 World Caustic Soda Supply
- 1.5 Chlor-alkali Position of China
- 1.6. Costs of Production
 - 1.6.1 Assignment of Costs to Caustic Soda and Chlorine
 - 1.6.2 Cell Types
 - 1.6.3 Cost Elements
 - 1.6.3.1 Electric Power
 - 1.6.3.2 Salt
- 1.7 Market Return from the ECU versus Cost of the ECU
- 1.8 Comparative Costs of Production of the ECU
- 1.9 Operating Rates & Pricing for Chlor-Alkali
- 1.10 Production Costs of the ECU for Chlor-Alkali Plants in China

2. CHLOR-ALKALI INDUSTRY IN CHINA

- 2.1 Caustic Soda Supply and Demand in China
- 2.2 Leading Chlor-alkali Producers in China
- 2.3 Chlor-alkali Plant Utilisation Rate
- 2.4 Methodology of China Chlor-Alkali ECU Cost Data Collection

3. RESULTS OF THE CHLOR-ALKALI ECU COST INVESTIGATION

4. POWER COST ANALYSIS

- 4.1 The Importance of Coal
- 4.2 Cost comparison among regions
- 4.3 Comparison between self-generated power costs and grid purchased power costs
- 4.4 Relative Cost and Consumption of Self-generated and Grid Power

5. CHLOR-ALKALI POWER COST OUTLOOK

- 5.1 Renewable Portfolio Standard (RPS)
- 5.3 Carbon trading
- 5.4 Environment protection modifications
- 5.5 Cross-subsidies
- 5.6 Power trading and T&D cost

SUMMARY

APPENDIX List of Companies Analysed



Figures Included:

- Figure 1: Cycles in the Chlor-alkali Business in China Pricing on the Eastern Seaboard
- Figure 2: Cycles in the Chlor-alkali Business in the USA
- Figure 3: Cycles in Chlor-alkali Business
- Figure 4: Caustic Soda (Lye + Solid) Regional Net Trade
- Figure 5: Caustic Soda Lye Demand by Region
- Figure 6: Net Expansions in Chlorine Capacity by Region 2019-2025
- Figure 7: US Gulf Export Market Caustic Soda & Chlorine Prices into the EDCU
- Figure 8: Comparison of Different Cell Types: ECU Cost Depending on Energy Costs
- Figure 10: Chinese Caustic Soda & Chlorine Prices on the Eastern Seaboard
- Figure 11: Value of the ECU on the Chinese Eastern Seaboard Rmb Prices and Costs with VAT Removed
- Figure 12: Value of the ECU on the Chinese Eastern Seaboard Rmb Prices and Costs with VAT Removed converted to US\$
- Figure 13: US Gulf: EDCU Export Value Compared with Production Cost of the ECU
- Figure 14: United States: Chlorine Price vs Chlor-alkali Plant Utilisation
- Figure 15: Prices of Chlorine and Caustic Soda in East China
- Figure 16: Caustic Soda and Chlorine Prices in the USA 2011-2020
- Figure 17: Caustic Soda Supply and Demand in China
- Figure 18: China Liquid Caustic Soda Exports
- Figure 19: China Solid Caustic Soda Exports
- Figure 20: New Chlor-alkali and PVC Capacities in China 2020-2022
- Figure 21: ECU Production Cost by Province
- Figure 24: Comparison of the Average Coal Prices by Province with Average Self-Generated Power Costs in each Province
- Figure 25: Comparison of the Average Coal Prices by Province with Average Self-Generated Power Costs in each Province
- Figure 26: ECU Cost Comparison Between Regions (RMB/ECU)
- Figure 27: Self-Generated Power Costs vs Grid Purchased Power Costs
- Figure 28: Renewable Portfolio Standard in 2020
- Figure 29: C-GEC Trading Price

Tables Included:

- Table 1: Chlor-alkali Production Economics
- Table 2: Supply-Demand of Caustic Soda in China
- Table 3: Supply-Demand of Chlorine in China
- Table 4: Chlor-alkali plants investigated
- Table 5: Utilisation Rate of Chlor-alkali Plants by Province
- Table 6: ECU Production Cost by Province
- Table 7: Breakdown of Variable Costs of ECU Production by Province Rmb/ECU
- Table 8: ECU Production Cost by Company in Rmb (2019)
- Table 9: ECU Production Cost by Company in US\$ (2019)
- Table 10: Use of Self-generated v. Purchased Power



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