19 June 2023

Variable Margin Methodology: Methanol North America

ICIS
Independent Commodity Intelligence Services

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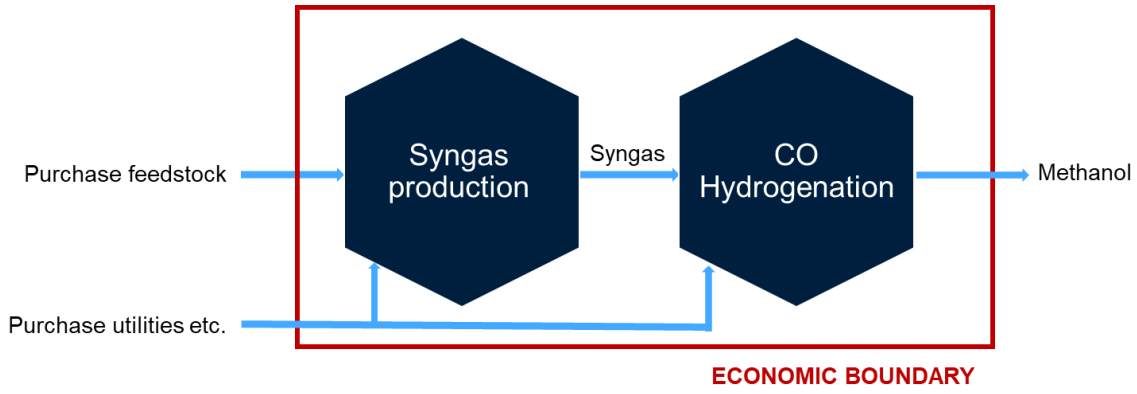
THE BUSINESS MODEL

Methanol in North America is produced from natural gas.

For producers using natural gas, the feedstock is reformed using steam to produce syngas. This is a mixture of carbon monoxide and hydrogen. This is then further reacted to methanol, with the carbon monoxide being hydrogenated.



THE MARGIN CALCULATION

- The margin measure provides an assessment of the ex-works cash margin obtained for the product over raw material costs, credit for selling co-products and key variable manufacturing costs, including power and steam, chemicals and catalysts. This measure can also be termed as a variable margin, contribution or benefit.

- This margin measure provides simple signals on the direction of business margins as dictated by the environment, thus informing market positioning by sellers, buyers and traders.

- ICIS does not model beyond raw material costs, credit for selling co-products and key variable manufacturing costs. Further analysis would cease to be generic to the industry and would be highly specific to individual business operations, their site structure, location, ownership and financial structures. Such detail would not fairly reflect or be applicable in a wider industry context. It may also be more subjective, open to fair challenges and not feasible to reference in commercial discussions.

- ICIS models plant operations for a series of ‘representative’ plants around the world. These representative plants have no flexibility with respect to feedstock or process configuration and ICIS assumes the plants to be purchasing inputs and selling outputs at constant prices.

- As the process model is generic and not based on any individual operation, the contribution measure is indicative. Instead of absolute value terms, it is most valuable as an index and in step-change terms.

- ICIS plant manufacturing and feedstock yield assumptions incorporate data from Intratec (www.intratec.us), an independent provider of chemical production cost reports.
- In US Gulf and Trinidad, ICIS models only natural gas-based methanol production.
- Ex-works product price assessments are linked to ICIS pricing quotations for large volume commodity products with netbacks assessed using typical logistic cost assessments.
- To estimate representative transport costs, the ICIS logistics model considers a network with nodes at individual production sites connected by streets and ports linking each continent. The logistics model incorporates shipping data from Xeneta (www.xeneta.com), and duties data from SimplyDuty (www.simplyduty.com).

The calculation below shows how ICIS derives the methanol margin (feedstock natural gas) for the US Gulf. The example is based on contract sales prices, is denominated in US dollars per tonne, and uses average prices for the year 2017.

Natural gas-based margin ($/tonne)

Methanol contract price	409
Logistics costs/netbacks	0
Methanol product value	**409**
Co product sales	**0**
Total income	**409**
Purchase feedstock (naphtha)	81
Utilities	47
Variable costs	**128**
Methanol margin	**409 - 128 = 281**

MODEL YIELD PATTERN AND CALCULATION

Plant manufacturing data relates to the variable cost components of cracker operations. Yield pattern data relates to the overall material balance of the methanol units. For example, for one tonne of methanol produced, a unit will use approximately 27 MmBTU of natural gas or around 1.5 tonnes of coal as feedstock. ICIS calculations also take into consideration additional chemicals and catalysts required for the synthesis of Methanol.

- Natural gas is the dominant feedstocks in North America, and is the process modelled for both US Gulf and Trinidad.

- This analysis demonstrates the volatility of the business and the influence of price floors (as an uneconomic margin generally forces supply reductions).
- The US Gulf is modelled on a DEL US Gulf basis.
- Trinidad is modelled on an Ex-works Trinidad basis.

ASSESSMENT INPUTS

The following pricing inputs are used to generate the full content of the ICIS Methanol North America margins:

US GULF

- NYMEX Henry Hub Natural Gas forward month (ICIS energy, weekly average) ($/MMBtu converted to $/tonne)
- Methanol, Spot FOB US Gulf (US cts/gal, WEEKLY)
- Methanol, Contract Price Assessment, Month, Contract Survey, Monthly FOB US (USD/gal, MONTHLY)

TRINIDAD

- Trinidad methanol prices are based on US prices, with a freight consideration.
- Gas prices are calculated in part using henry hub prices.

The methodology associated with each ICIS pricing individual pricing quotation referenced above can be found on the ICIS Compliance and Methodology website.

In addition to the listed ICIS pricing inputs, the model also takes into account logistic costs (calculated through the ICIS logistics model), and utilities costs.

A key objective of the calculation process is to provide a weekly summary that strongly aligns to the reported market price positions on the date of release.

Where inputs are unavailable for individual weeks, e.g. due to public holidays, prior-week data is carried forward to the current week. This is for the specific purpose of populating the model and preventing model inconsistency. This form of data interpolation infers some limited data points that may not be market derived, and customers should be aware of this assumption.

As the majority of petrochemical trades are in US dollars, all data used in the ICIS Margin – Methanol North America model are denominated in USD unless specifically stated otherwise.

METHANOL NORTH AMERICA WEBPAGE

Filter data on the website using the following criteria.

- **Area**: Select from US Gulf and Trinidad.
- **Process type**: Natural Gas Methanol Generic
- **Price terms**: Variable margins are generated for contract and spot price terms in the US Gulf and spot only for Trinidad.
- **Frequency**: Viewable with weekly, monthly, quarterly, or yearly granularity.
- **Currency**: Allows prices to be displayed in either EUR or USD.
- **Unit**: Allows conversion from displayed unit to unit of choice in data download only.

Variable margins data are available online from January 2014 onwards. Six months trailing data shows as default.

The website deploys the following data, all per tonne of methanol:

- **Main product value, ex-works**: the estimated methanol netback value for the producer, taking into account the ICIS assessed price, shipping costs, handling costs and applicable duties.
- **Co-product credits**: the revenues from the other products generated in a process, also ex-works. This data is also available broken down into co-product types.
- **Feedstock and utility costs**: or total variable input costs for a process. This data is also available broken down into the component feedstock costs and utility costs.

Calculated outputs are:

- **Variable cost** = [Feedstock and utility costs] – [Co-product credits]
- **Variable margin** = [Main product value] + [Co-product credits] – [Feedstock and utility costs]

A selected variable margin (i.e. a margin for a specific location, process and price term) is comparable with margins of different process technologies in the same region, and with margins using the same technology in different regions. Subscribers can review margin performance by week, month, quarterly and per annum. Subscribers can view the flows of different products, in terms of their volume and value, into and out of the representative production unit used to calculate methanol variable margin.

PUBLICATION FREQUENCY

The ICIS Weekly Margin – Methanol North America model is based on the latest data at the close of business in Europe on Friday and released to customers on the following Monday, along with written commentaries, subject to schedule planning. When the Monday is a public holiday in the UK, commentaries will be made available the following day. Updates are not published on some public holidays. Holiday dates and days of publication may be subject to revision.