

JM

A streamlined approach for FCC catalyst and additive management and order fulfilment

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Inspiring science, enhancing life



Johnson Matthey (JM) is a global leader in sustainable technologies, and we apply our cutting-edge science to create solutions with our customers that make a real difference to the world around us.

Working with leading-edge operators, one of the problems we have solved is how to significantly improve fluid catalytic cracking (FCC) unit catalyst and additive management. FCC catalyst and additive management are challenging, and poor management causes many problems.

For example, missing FCC environmental compliance and performance targets, while waiting for unplanned catalyst and additive deliveries to arrive.


While it is true catalyst and additive suppliers can be agile and deliver products at short notice, there is a lot of disruption at the refinery and supplier, and additional significant handling charges may apply. Some operators have responded by increasing catalyst and additive stock levels, but this has an adverse impact on refinery working capital, which is difficult for refinery management to accept, especially when facing tough oil refining market conditions.

In summary, poor catalyst and additive management is a leading cause of FCC disruptions, reduced resource efficiency, and missing performance targets.

As the world faces the challenges of climate change and resource scarcity, JM has an even bigger role to play. We have developed a unique solution that employs state-of-the-art catalyst and additive loaders, our best FCC additives, and the novel AIM Technology™ to streamline catalyst and additive management and order fulfilment.

Key features of this technology are:

- A unique industrial internet of things (IIoT) management system that supplies real-time catalyst and additive demand data.
- Supplier and refinery generate additive orders based on mutually agreed objectives, achieving efficient use of natural resources.
- Supplier/vendor managed inventory (VMI) model aligns business objectives and streamlines catalyst replenishment, enabling the refinery to achieve its FCC objectives efficiently.
- Individuals walking around, taking measurements, and gathering data is a thing of the past and this frees up valuable resources. stage FT reactor to be used in a recycle loop to maximise overall CO conversion to >90%.



Did you know poor catalyst and additive management is a leading cause of FCC disruptions, reduced resource efficiency, and missing performance targets?

This unique solution works as follows:

1. Catalyst and additive additions are controlled from either the refinery DCS or the JM loader controller.
2. The loader controller monitors additions and reports inventory to JM's novel Additive Inventory Management (AIM) system.
3. JM and the operator cooperate and use AIM data to develop the product demand forecasts.
4. The forecast is validated by the operator planning department and a purchase order (PO) is generated.
5. The PO is checked by JM's supply and operating plan team, and order fulfilment is planned with the operator, including optimised product packaging. JM offers many packaging types.
6. Throughout, the operator and JM use the same master data to continuously improve performance.
7. Finally, AIM Technology enables JM to check the health of the loader and its controller and plan preventative maintenance.

In conclusion, this unique combination of JM catalyst and additive addition systems, value adding catalysts and additives and AIM Technology is enabling operators all over the world to achieve their FCC objectives. By adopting these technologies, operators are improving their FCC environmental compliance and their FCC profitability, and operators are freeing up valuable resources that can now focus on the most important priorities – safety and the more efficient use of our planet's natural resources.

We have been leaders in our field for more than 200 years, applying unrivalled scientific expertise to enable cleaner air, improved health, and the more efficient use of our planet's natural resources. Everything we do is about creating a world that is cleaner and healthier, today and for future generations.

Separate optimised catalyst and additive additions are driving FCC margin improvements:

- Rapid base loading
- Precise additions
- Flexibility to quickly respond to changing market conditions
- High reliability
- Low maintenance
- Many equipment options
- APC/digitalisation solutions

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