

# Media Release

## **Clariant's new ReforMax<sup>®</sup> 330 LDP Plus catalyst increases significantly energy and production efficiency at OCI's ammonia plant**

- **First commercial case proves new catalyst's superiority in reducing pressure drop over the front end of an ammonia plant**
- **OCI Nitrogen's steam reformer is benefiting from 17% lower pressure drop, and a considerable increase in energy and production efficiency resulting in compensation of the catalyst investment during catalyst runtime**
- **Clariant's thermal imaging tools were also applied to accurately monitor and optimize temperature profiles**

Munich, April 7, 2020 – The first commercial reference for Clariant's ReforMax 330 LDP Plus catalyst is a major success. Installed at OCI Nitrogen's ammonia production plant in Geleen, Netherlands, the new steam reforming catalyst has significantly reduced pressure drop, allowing the customer to benefit from a considerable increase in energy and production efficiency leading to savings of more than 300,000€ over the catalyst lifetime.

OCI Nitrogen is one of the European market leaders in mineral fertilizers and the world's largest producer of melamine. As the company synthesizes its ammonia for both of these products, efficiency is of great importance. The company's AFA 2 ammonia plant is a Bechtel design with a capacity of 1550 mtpd and runs a side-fired Foster Wheeler reformer. Before the turnaround in 2018, pressure drop over the front end was a crucial production limitation for OCI at AFA 2. The installation of the new ReforMax 330 LDP Plus catalyst, and optimization of catalyst volumes in other reactors, have removed this limitation, significantly increasing the plant's energy and production efficiency.

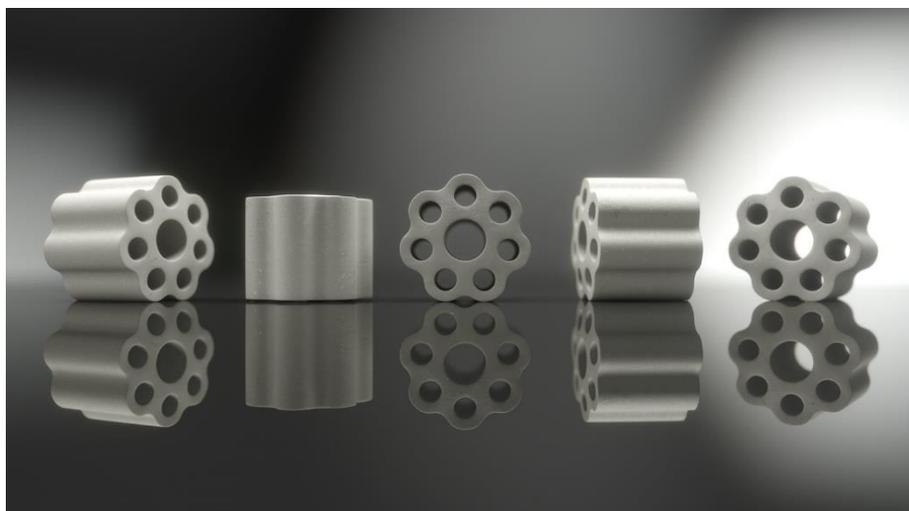
Since its start-up in June 2018, ReforMax 330 LDP Plus has demonstrated very stable operation and provided a significant reduction in pressure drop across the catalyst bed in the reformer tubes. This improvement will avail the plant with savings of more than 300,000 € over the expected catalyst lifetime of 8 years, compensating for the catalyst investment.

Andy Vluggen, Chemical Engineer at OCI Nitrogen, commented on the improvements, saying, "We are extremely pleased with the performance of Clariant's new primary reforming catalyst, which started up in our plant one year ago, and I recommend ReforMax 330 LDP Plus for all plants with similar pressure drop limitations."

Recently launched by Clariant, ReforMax 330 LDP Plus is a novel steam reforming catalyst for ammonia, hydrogen and methanol production. The catalyst owes its pressure drop reduction capacity to an innovative proprietary 8-hole floral LDP Plus shape, which allows higher gas throughput and/or lower pressure drop as well as improved heat transfer. Combined with the catalyst's high activity and selectivity, these factors enable extremely efficient operation with reduced energy consumption.

Besides the supervision of loading and start-up of the new catalyst, Clariant also provided thermal imaging services for accurately monitoring tube wall temperatures to evaluate the catalyst's performance and identify potential problems of the steam reformer to optimize the reforming process. The thermal imaging evaluation at OCI Nitrogen's ammonia plant demonstrated optimal heat distribution throughout the furnace, as well as excellent catalytic activity.

Stefan Heuser, Senior Vice President & General Manager at Clariant Catalysts, expressed his satisfaction with the results, stating "OCI Nitrogen's ammonia plant is the first commercial reference for ReforMax 330 LDP Plus. We are grateful for the close cooperation with the OCI team and delighted that our novel steam reforming catalyst delivered the solution they sought and the advantages we promised. The catalyst's innovative 8-hole design and exceptional capacity to reduce pressure drop are outstanding in the industry."



ReforMax 330 LDP Plus, Clariant's next-generation catalyst for steam reforming and autothermal reforming. (Photo: Clariant)

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Clariant is a focused and innovative specialty chemical company based in Muttenz, near Basel/Switzerland. On 31 December 2019, the company employed a total workforce of 17 223. In the financial year 2019, Clariant recorded sales of CHF 4.399 billion for its continuing businesses. The company reports in three business areas: Care Chemicals, Catalysis and Natural Resources. Clariant's corporate strategy is based on five pillars: focus on innovation and R&D, add value with sustainability, reposition portfolio, intensify growth, and increase profitability.

[www.clariant.com/catalysts](http://www.clariant.com/catalysts)

Clariant's Catalysts business unit is a leading global developer and producer of catalysts for industrial processes. It has been part of the Catalysis business area of the Clariant Group since the acquisition of Süd-Chemie in 2011. Clariant Catalysts is headquartered in Munich, Germany, and has a total of 16 production sites (incl Joint Ventures), 7 sales offices, and 11 R&D and technical centers around the world. Approximately 2 061 employees serve customers across all regional markets. Aimed at delivering sustainable value to customers, Clariant's catalysts and adsorbents are designed to increase production throughput, lower energy consumption, and reduce hazardous emissions from industrial processes. The broad portfolio also includes products that enable the use of alternative feedstock for chemical and fuel production.