

# JM

## Nitro technologies: N<sub>2</sub>O abatement



# N<sub>2</sub>O abatement in a medium pressure nitric acid plant

## Emissions reductions using Yara 58-Y1 N<sub>2</sub>O abatement catalyst in a medium pressure operation

Nitric acid and caprolactam production are amongst the biggest industrial sources of N<sub>2</sub>O, a gas with a greenhouse effect 298 times that of CO<sub>2</sub>. Utilising Yara 58-Y1 abatement catalyst allows for a stable, sustained reduction of N<sub>2</sub>O in the stack in both.

A medium pressure plant in Europe was looking for an abatement system to reduce their emissions. Johnson Matthey (JM) assessed their operating parameters and our Engineering team travelled to the customer site to inspect the condition of the burner basket, with the aim to tailor a secondary abatement solution to the plant's specific requirements.

The Yara 58-Y1 secondary abatement catalyst is the proven N<sub>2</sub>O emissions reduction technology exclusively marketed by JM. Key characteristics of this product are:

- intrinsically capable of achieving 100% N<sub>2</sub>O abatement,
- mechanically and thermally stable, with limited attrition and reduced tendency to doming and bypass
- high geometric surface area and subsequent high activity yet low pressure drop, and
- no impact on oxidation reaction or contamination downstream of the burner.

It was identified that, together with a new containment system, modifications would need to be made to the existing beams for the structure to support the combined weight of the catalyst and containment under the gauzes. JM worked closely with the plant stakeholders to deliver our proprietary containment design and to determine an abatement capacity that was both financially sound and able to meet applicable environmental regulations.

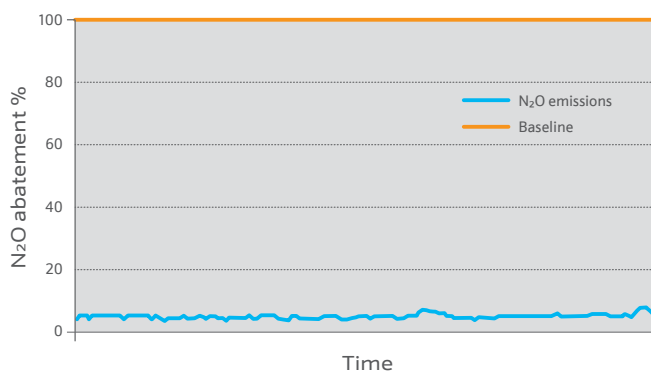


Figure 1: N<sub>2</sub>O emissions abatement in medium pressure plant

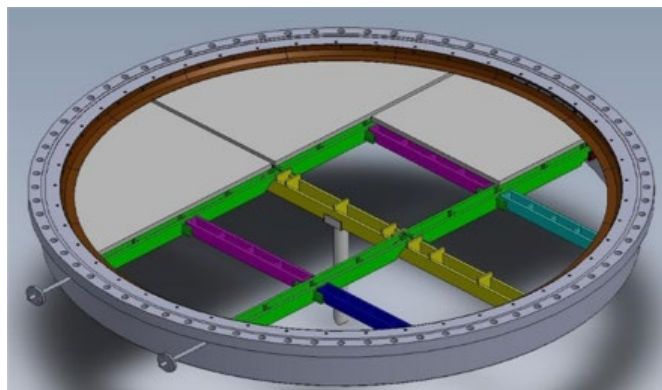


Figure 2: Modifications to the existing containment system were identified

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