

# REVAMPING NITRIC ACID PLANTS

BOOSTING EFFICIENCY AND  
REDUCING EMISSIONS



**NX STAMI™ NITRATES | EVOLVE™**

# UPGRADING YOUR EXISTING NITRIC ACID PLANT

STAMICARBON IS THE WORLD MARKET LEADER IN DESIGNING, LICENSING AND DEVELOPING FERTILIZER PLANTS.

Through our fertilizer business we apply our expertise, knowledge and experience to help you find the right fertilizer production technologies, emission reduction technologies and all technologies for the integration with adjacent processes. Moreover, we are beside you every step of the way: from creating a new plant to optimizing and upgrading existing facilities in light of a sustainable and futureproof production.

We are there to support you throughout your plant's entire life cycle.

Stamicarbon provides the technology and solutions you need to upgrade your plant when new circumstances demand it. This ensures your aging plant remains compliant with amended legislation and stays competitive by adapting to changes in market conditions. To do so, Stamicarbon includes such products

and services as plant assessments, revamp studies, process design and debottlenecking. Thanks to a combination of state-of-the-art technologies and inhouse expertise, we can immensely improve plant performance and/or capacities. There are many reasons for a plant revamping that can generally be classified into three main revamp solutions, each of which can be tailored to your specific needs.



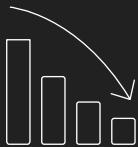
# ELEVATE YOUR PLANT'S PERFORMANCE WITH REVAMP AND DEBOTTLENECKING SOLUTIONS

ANY DECLINE IN PERFORMANCE OR RISE IN EMISSIONS CAN LEAD TO ECONOMIC PENALTIES FOR THE PRODUCER, SLOWDOWN PRODUCTION OR SHUTDOWNS FOR MAINTENANCE AND REPAIRS, IMPACTING OVERALL PRODUCTIVITY AND LEADING TO A CONSEQUENT LOSS OF PROFIT.



## Increase plant capacity

Modernize equipment and optimize processes to enhance plant performance, boost production, and reduce energy consumption? In our assessment, we focus on reducing feedstock and energy consumption while improving operational reliability and increasing effective plant capacity.



## Reduce plant emission

Nitric acid plants are significant sources of nitrous oxide ( $N_2O$ ), a potent greenhouse gas. This has both environmental and regulatory implications. Managing and reducing these emissions is a major challenge. Reduce your emissions in step with local and international standards? Our technologies improve the health, safety and environmental aspects of nitric acid plants. Our abatement system is amongst the most efficient concepts to keep your emissions under control.



## Improve energy efficiency

Renowned for their longevity and low maintenance requirements, Stamicarbon nitric acid plants excel in maximizing high-quality steam export and energy efficiency. However, regardless the technology applied, we can revamp your nitric acid plant to lower energy consumption and construction costs, while raising the efficiency of your production and reducing your emissions. Let's assess your plant?



# TERTIARY ABATEMENT SYSTEM

THE ULTIMATE TOTAL REDUCTION OF  $\text{N}_2\text{O}$  AND  $\text{NO}_x$   
IN A SINGLE VESSEL.

The most efficient and straightforward way to remove  $\text{NO}_x$  and  $\text{N}_2\text{O}$  from tail gas emissions is through Stamicarbon's abatement system. We collaborate with the most experienced catalyst suppliers to ensure optimal performance and to

meet the most stringent requirements. An optimum choice is made for the catalyst type and supplier which are not predetermined by Stamicarbon and can vary depending on the specific situation, also following the client's preference.



## Did you know?

Stamicarbon offers this equipment as a full-service option (one-stop-shop). However, the choice of catalyst type is ultimately agreed with the client. Also, reloading can be directly managed by the client with no risk of additional charges.



## MAIN PECULIARITIES:

- Easy reactor installation
- High  $\text{N}_2\text{O}$  and NOx conversion
- Long catalyst lifetime
- Minimized pressure drop
- No  $\text{NH}_3$  slippage
- Optimal energy balance to achieve the desired tail gas temperature.
- Full life assistance

The installation of tertiary abatement is possible for all type of technologies and process conditions even when the process requires the tail gas temperature to be below 350°C or above 600°C, plant modifications are minimized, as well as the impact on the overall energy balance of your Nitric Acid plant.



# EQUIPMENT REPLACEMENT

In Stamicarbon technology, the process conditions are optimized to prevent corrosion, eliminating the need for specific materials. As a result, the equipment can last for many years without requiring replacement.

In different other technologies High and Low-pressure condensers can face several issues, primarily due to the harsh operating conditions. Here are some common problems:

**Corrosion:** The condensers are highly susceptible to corrosion. This can lead to frequent maintenance and ultimately to replacement.

**Leakage:** Cooler condenser tubes can develop leaks. This can be due to material degradation or operational stresses.

**Performance issues:** Poor performance can result from structural problems within the burner, leading to ammonia bypassing the catalyst. This can cause a drop in conversion efficiency and an increase in  $\text{N}_2\text{O}$  emissions.

**Material degradation:** The materials used in the construction of condensers can degrade over time due to the high temperatures and corrosive environment, necessitating regular inspections and replacements.

Stamicarbon offers full life cycle support for nitric acid plants. Our capabilities go beyond designing new plants - we can provide mechanical support, troubleshooting and additional services like:

- Plant optimization services
- Plant/Equipment inspections
- Equipment replacement
- Feasibility studies
- High-fidelity Operator Training Simulator



Stamicarbon is beside you every step of the way: from creating a new plant to optimizing and upgrading existing facilities in light of a sustainable and futureproof production.



# CONCLUSION

Our solutions are built on 75 years of high-quality research and in-depth industry knowhow. We work closely with the entire value chain to improve and innovate our technologies. As the world's leading fertilizer authority, we show our commitment to driving the long-term success of the industry by sharing our insights, solutions and knowledge.

## Get more insights

Brochures, papers and other information published over many decades are available at [www.stamicarbon.com](http://www.stamicarbon.com).

We also share our knowledge at various conferences to keep you up to speed on the latest developments in fertilizer.

## Contact us

Interested in advancing your plant? We look forward to discussing your requirements and putting together a personalized proposal.

## STAMICARBON

### **NX STAMI™ UREA**

Technology design  
Equipment supply  
UAN & UAS technology  
Services & Solutions

### **NX STAMI™ AMMONIA**

Technology design  
Equipment supply  
Services & Solutions

### **NX STAMI™ NITRATES**

Mono- & Dual-pressure Nitric Acid Technology  
 $\text{NO}_x$  &  $\text{N}_2\text{O}$  abatement  
Equipment supply  
Services & Solutions

### **NX STAMI™ SPECIALTIES**

$\text{NO}_x$  reduction (DEF)  
Controlled-release fertilizer  
Coatings & additives

### **NX STAMI™ DIGITAL**

Monitor Simulator



# WE ARE STAMICARBON

## WHAT CAN WE DO FOR YOU?

Stamicarbon, the nitrogen technology licensor of NEXTCHEM (MAIRE Group), designs and licenses fertilizer plant technologies, specializing in urea, green ammonia, and nitric acid. As part of NEXTCHEM, Stamicarbon leverages the capabilities and expertise of a world-leading engineering group. In total, Stamicarbon has licensed more than 260 urea plants and realized more than 100 revamping and optimization projects. Applying more than 75 years of

knowledge and experience, Stamicarbon offers customers tailored solutions and services to maintain, improve and optimize plants in every stage of their life cycle, with a focus on sustainable fertilizer production. As pioneers with a higher purpose, Stamicarbon has a vision to help enable the world to feed itself and improve the quality of life. Stamicarbon is headquartered in Sittard, The Netherlands, and operates worldwide.

Questions?

Like to know how we can help you make the switch to sustainable, futureproof fertilizer production? We are here for you. Contact our experts at [www.stamicarbon.com](http://www.stamicarbon.com).



### Stamicarbon

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MAIRE Sustainable Technology Solutions