



DE SMET
AGRO

FERTILIZERS - CAPABILITY STATEMENT

FERTILIZERS

Capability Statement

Engineering Solutions for the Fertilizer Industry

Our fertilizer experience covers the full spectrum of services, for the production of intermediate products to granulated fertilizers and derivative products.

De Smet Agro has completed hundreds of mandates, ranging from studies to full implementation, in fertilizer industry facilities around the world with focus on Phosphoric Acid, AN / CAN granulation plants and Clean air solutions.

We combine the world's best technologies and global know-how to deliver complete customized sustainable solutions and to improve the capacity and efficiency of our clients' existing operations.





Customized solutions

For fertilizer base chemicals to downstream fertilizers production plants

Phosphoric acid

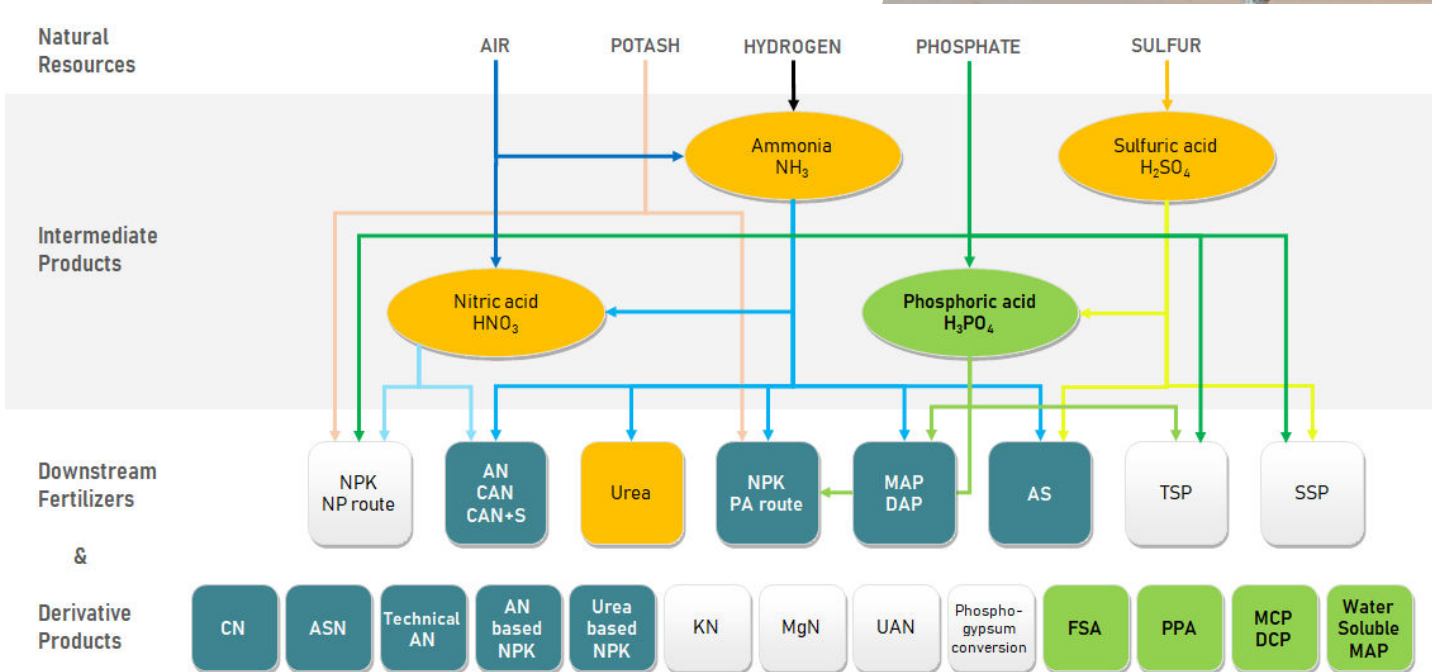
With highly qualified expert teams, we have supported customers worldwide in the design and construction of fertilizer and merchant grade phosphoric acid plants, in upgrading facilities, and in developing optimal solutions for their operations.

- > Phosphate rock (solid/slurry) storage & handling
- > Single and double crystallization processes
- > Fluosilicic acid recovery
- > Gypsum transport, storage & valorization
- > Fluorine gas scrubbing
- > Acidic cooling tower design
- > Phosphoric acid concentration and purification technologies
- > Environmental design with zero liquid effluent

Granulation, prilling and crystallization

Decades of experience designing and building synthesis, evaporation and granulation units, crystallization plants, and prilling towers have contributed to our high-level in-house expertise appreciated by clients worldwide.

- > Ammonium nitrate and derivatives (AN)
- > Calcium ammonium nitrate (CAN)
- > Technical ammonium nitrate (TAN)
- > Calcium nitrate (CN)
- > MAP / DAP / NPK
- > Ammonium sulfate (AS)
- > Ammonium sulfo-nitrate (ASN)



IN-HOUSE TECHNOLOGIES FOR: AN | CAN | CN | AS | ASN | NPK | MAP | DAP

MOST EXPERIENCED LICENSEE OF LEADING TECHNOLOGY PROVIDER FOR PHOSPHORIC ACID: PRAYON TECHNOLOGIES

FULL ACCESS TO ALL LEADING TECHNOLOGY PROVIDERS FOR: AMMONIA, UREA, NITRIC ACID, SULFURIC ACID

AN Ammonium Nitrate	CN Calcium Nitrate	MAP Monoammonium Phosphate	PPA Purified phosphoric acid
AS Ammonium Sulfate	DAP Diammonium Phosphate	MCP Monocalcium Phosphate	SSP Single super Phosphate
ASN Ammonium Sulfo-Nitrate	DCP Dicalcium Phosphate	MgN Magnesium Nitrate	TSP Triple super Phosphate
CAN Calcium Ammonium Nitrate	FSA Fluosilicic acid	NP Nitrophosphate	UAN Urea Ammonium Nitrate
CAN+S CAN with sulfur	KN Potassium Nitrate	PA Phosphoric acid	



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Fertilizer industry

We have a long-standing history in the design and management of urea and nitrogen based fertilizers production facilities. We also work extensively in the gaseous effluents treatment where we have been involved in numerous projects.

- > Prilling towers gaseous effluents cleaning
- > Flue gas scrubbing applied to fertilizer industry
- > Ammonia
- > Urea
- > Nitric acid
- > Sulfuric acid

ACTIVE FOR OVER

60



YEARS IN THE

FERTILIZER INDUSTRY



Services to Clients

With a **Process-oriented** multi-disciplinary engineering team, De Smet Agro cover various activities:

- > Technical audits
- > Pre-feasibility / feasibility studies
- > CAPEX estimate + financial study
- > Basic engineering / FEED
- > Detail engineering
- > Procurement services
- > Construction management
- > Operator training
- > Commissioning and start-up activities

For all types of projects:

New plant

- > Greenfield plant
- > Brownfield plant
- > On-site and off-site facilities

Existing plant

- > Modernization
- > Revamping
- > Capacity increase



CONTACT DETAILS

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Selected References

Phosphoric Acid production plant revamping

Client: OCP group

Location: Jorf Lasfar, Morocco

Services: EPCM

Highlights

- > Adaptation of existing phosphoric acid lines to process phosphate slurry instead of dry phosphate rock
- > 4 phosphoric acid lines based on Nissan technology were revamped into 4 phosphoric acid units on DH Prayon's technology with capacity increase up to 1350 MTPD P_2O_5

Sulfuric and Phosphoric Acid production plants

Client: JIFCO

Location: Eshidiya, Jordan

Services: EPCM

Highlights

- > Greenfield 1-train double absorption sulphur burning sulfuric acid plant producing 4500 MTPD (100% H_2SO_4 basis) and phosphoric acid plant with 4 concentration lines producing 1500 MTPD P_2O_5
- > Storage tanks, utilities, and on-site / off-site infrastructure
- > Efficient workshare brought the best of our sulphuric and phosphoric expertise to the client and a one-stop-shop solution for the complex, from raw material handling to truck loading of final product

Calcium Ammonium Nitrate granulation plant

Client: Sasol Nitro

Location: Secunda, South Africa

Services: Technology + EPCM

Highlights

- > Greenfield evaporation and granulation plant to produce 1333 MTPD of Calcium Ammonium Nitrate (CAN)
- > Supply of De Smet Agro's in-house Fluidized Drum Granulation (FDG) technology which affords high granulation efficiency and enables easy adjustment of granule size
- > Supply of proprietary and critical equipment.

Phosphoric Acid production plant and balance of plant

Client: ETI Bakir (Cengiz holding)

Location: Mazidagi, Turkey

Services: Basic & Detail Engineering

Highlights

- > Greenfield 700 MTPD P_2O_5 plant based on DH Prayon technology including 2 concentration lines
- > Design of master plot plan, utilities production, storage units and all interconnections between SAP, PAP, NH_3 and DAP plants

Purified Phosphoric Acid production plant

Client: Emaphos

Location: Jorf Lasfar, Morocco

Services: EPCM

Highlights

- > Greenfield 450 MTPD P_2O_5 plant based on Prayon technology, including desulfation, desarseniation, decantation, solvent extraction & concentration
- > Design of raw materials storage, additives storage and all utilities

Calcium Nitrate granulation plant

Client: Acron

Location: Veliki Novgorod, Russia

Services: Technology + Basic engineering

Highlights

- > Greenfield concentration and granulation plant to produce 300 MTPD of Calcium Nitrate (CN)
- > Supply of De Smet Agro's in-house Fluidized Drum Granulation (FDG) technology
- > Supply of proprietary equipment.



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