A world designed to last

Fertilizers

Covering the entire value chain from mining to fertilizers



TECHNIP ENERGIES

A key industry partner for the future

Technip Energies is putting its long-standing project expertise and experience at the service of an industry focused on a sustainable future.

Over 350
Fertilizer complexes

40
Countries operated in

More than 60
years in the Fertilizer industry

Our clients are increasingly concerned with meeting the highest environmental standards.

We help them improve their processes to comply with the most stringent regulations on effluents, gases, waste disposal and noise levels. At the same time, we are constantly innovating to help them achieve end-to-end project efficiencies and performances.

All of that is only possible thanks to our decades of experience in engineering and delivering large complexes and integrated units worldwide. That has given us extensive knowledge of our clients' marketing and technical expectations in all production conditions.

Technip Energies offers its clients a full range of services from concept to project delivery and beyond. We implement leading proprietary or licensed technologies and provide full range of basic and specialty chemicals processes, including associated effluent treatment.

"Helping our customers meet the highest environmental standards."



A full range of services

Technip Energies has competencies in the entire value chain from technical consulting to complete turnkey facilities and global strategic plans:

EPC

Consulting, feasibility studies, project financing, process and design engineering, technology transfer, worldwide procurement, construction management, and operations assistance.

CONSTRUCTION

Plants can be built in varying geographic and economic conditions, in developed and developing countries.

TECHNOLOGIES

Providing a choice of technologies adapted to local conditions such as existing infrastructures, energy and product specifications, and available staffing and skills.

DEBOTTLENECKING

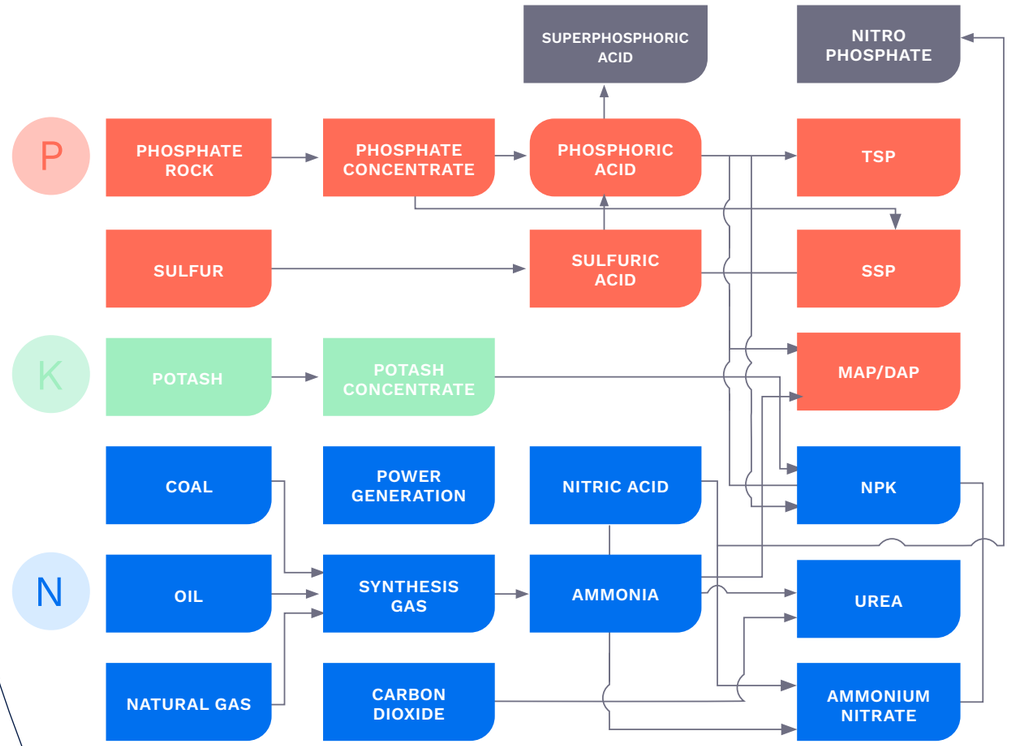
Adding new facilities to existing plants.

PROCESSES

Selection of processes and new process development adapted to a wide variety of raw materials.

A one-stop shop covering the entire value chain

We implement our own proprietary process technologies as well as leading licensed technologies to produce a variety of fertilizing products, including acids, single nutrients and multicomponent fertilizers.



“A focus on sustainable processes and designs.”

Pollution control and emission limitations

Technip Energies strictly follows all environmental regulations with respect to effluents, gases, waste disposal and noise levels.
As a company committed to a sustainable future, we design our plants to meet the highest environmental safeguards. We also focus on improving processes to meet stringent anti-pollution standards.



Proprietary technologies available for licensing

Technip Energies offers a constantly expanding portfolio of proprietary and licensed process technologies.

4
proprietary technologies



UCEGO vacuum table filter

Proprietary technologies

Phosphoric Acid: With over 70 reaction and filtration units installed in 28 different countries, Technip Energies offers 3 technologies for the production of phosphoric acid:

- Single reactor process: The traditional technology based on process, with a single large reactor.
- DIPLO process: Using 2 reactors in series to optimize reaction/ filtration performance, especially for reactive rocks.

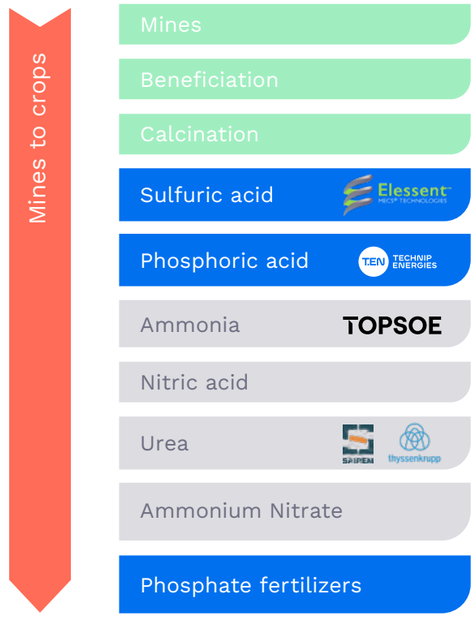
LCFC (Large Capacity Flash Cooled reaction system): Using 2 reactors in series, maturation tank and flash cooler, the process is designed for large capacity units, and offers high operation factor and great flexibility.

Krebs Mixer-Settler technology: Successfully operated in solvents extraction and purification units in the chemical and metallurgical industries.

Dorr-Oliver FluoSolids®: The leading technology for phosphate rock calcination processes. It can be applied in ore beneficiation, and organic and cadmium removal.

UCEGO® filter: Designed to process phosphogypsum slurry for the industrial production of phosphoric acid. This filter is owned, perfected and marketed by Technip Energies and exclusively manufactured by ANDRITZ. With over 90 filters sold in 28 countries, the technology represents over 20% of the world's production of phosphoric acid. The vacuum filter uses a patented rotating table and slurry feedbox to ensure perfect distribution and a uniform cake.

From mines to crops from Masterplan to EPC





Geology and Mining: Comprehensive characterization of resources (evaluation of reserves, accounting for quality variations and optimal recovery).

Beneficiation: Intimate understanding of rock behavior (phosphate rock characterization, laboratory tests up to pilot stage, process definition and plant design) as an interface between mine and process chemistry.

Phosphoric/ Sulfuric Acids and Fertilizers: Our phosphoric proprietary technology has been tested in over 570 different phosphate rocks and analyzed in more than 1,300 pilot test runs.

MECS alliance for sulphuric acid: Since the 1980s with more than 150 plants built in 42 countries.

Ammonia/urea: Technip Energies is an established member of the Ammonia and Urea Clubs of Contractors, with deep know-how and expertise from concept to EPC.

Nitric Acid, Ammonium Nitrate, and Phosphate Fertilizers
We offer comprehensive solutions incorporating third-party technologies upon client request for:

- Nitric Acid
- Ammonium Nitrate:
  - Ammonium Nitrate Solution (ANS)
  - Granulated Ammonium Nitrate (AN, CAN, ASN)
  - Prilled Ammonium Nitrate (HDAN / LDAN)
- Phosphates Fertilizers
- (MAP, DAP, NPK)



Duslo A.S ammonia plant, Slovakia

Serving a variety of plants

With more than 350 projects engineered in the fertilizers industry worldwide, Technip Energies has acquired significant experience, technological competence and strong references.

More than 350
projects engineered worldwide

A wide range of plants

- Geology and Mining
- Beneficiation
- Sulfuric acid plants - Up to 3,600 tpd* capacity
- Phosphoric acid plants - Up to 1,250 tpd capacity
- Phosphate fertilizer plants - Up to 2,670 tpd capacity
- Ammonia/urea plants - Up to 3,300 tpd capacity
- Urea plants - Up to 3,850 tpd capacity
- Nitric acid plants - Up to 1,060 tpd capacity

* tpd: tons per day

Fertilizers products may be produced in a variety of forms, e.g:

- Granular, prilled or compacted
- Powdered Liquid or suspension and
- available in bulk, drums or tank cars

Key projects references



SLOVAKIA

DUSLO A.S.
- Ammonia plant: 1,600 tpd

JORDAN



INDO-JORDAN CHEMICALS CO.
- Sulfuric acid plant: 2,000 tpd
- Phosphoric acid plant: 700 tpd

INDIA



HINDUSTAN URVARAK AND RASAYAN LIMITED (HURL)
- Ammonia plant: 2 x 2,200 tpd
- Urea plant: 2 x 3,850 tpd



VIETNAM

PETROVIETNAM FERTILIZER AND CHEMICALS CORP.
- Ammonia plant: 1,350 tpd (revamped to 1,620 tpd
- Urea plant: 2,200 tpd



BRAZIL

ANGLO AMERICAN COPEBRAS
- Sulfuric acid plant: 1,350 tpd
- Phosphoric acid plant: 370 tpd



BRAZIL

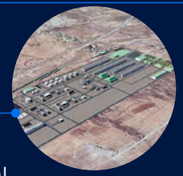
MOSAIC FERTILIZANTES
- Phosphoric acid plant: 1,020 tpd

SENEGAL



INDUSTRIES CHIMIQUES DU SÉNÉGAL
- Phosphoric acid plant: 1,217 tpd
- Sulfuric acid plant: 3,000 tpd

ETHIOPIA



OCP
- Conceptual study for ammonia, urea and granulated fertilizers.

TUNISIA



TIFERT
- Sulfuric acid plant: 3,600 tpd

OMAN



OMAN-INDIAN FERTILIZER CO.
- Ammonia plant: 2 x 1,750 mtpd
- Urea: 2 x 2,350 mtpd

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