



Our Experiences for the Chemical & Fertilizer Industries



Our Expertise

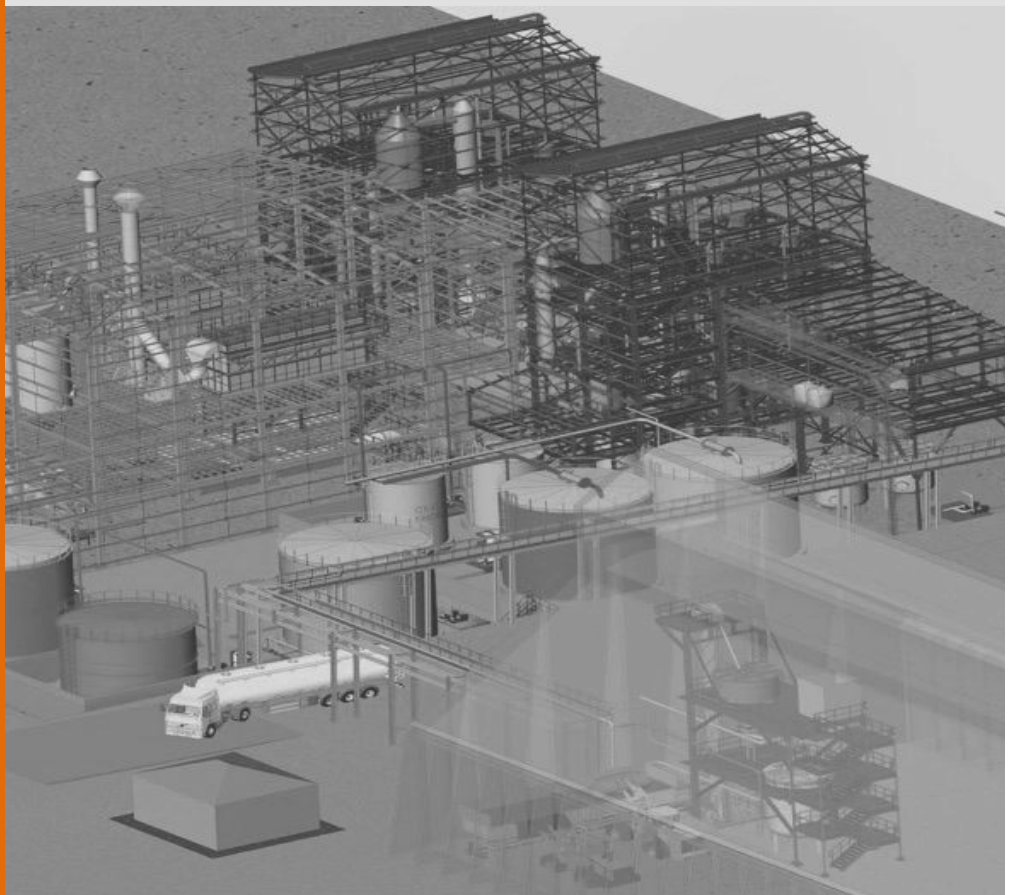


Professional
Engineers in
Chemical Industry



More than 50
Completed
Projects

Simple and reliable production and management of Chemical Industry is only possible through correct process design and control at every stage of production. Since variables of production is highly effective in terms of quality and quantity, process management should be carried out with minimum faults. That is why quality threshold is required to be moved up not only in every stages of production from laboratory studies to equipment manufacturing, but also in assembly and commissioning operations.



The ASOS Process advantage

Proven Downstream Capabilities

With nearly 20 years experience and professionals in chemical and fertilizer, we offer client-focused, end-to-end engineering and construction solutions across upstream, midstream and downstream projects to many of chemical companies. We are recognized for our agile and responsive approach, delivering chemical projects safely, on time and on budget.

Resource and Development Center

ASOS operations required for manufacturing process development, and creation and simulation of flow diagrams are performed by specialist process development engineers at our technical laboratories and pilot plants.

Purposes and expectations:

- Analysis and simulation
- Optimization and increased capacity
- Improved equipment and operations
- Customer-oriented process and application development
- Definition of process reliability.

Safety

We work specifically to ensure all safety standards in the industry. Our vision is to deliver a workplace where no one gets hurt and everyone goes home safe.

Process Technology

ASOS own process technology and other technology licensors and working with the client at concept stage to determine the best technology solutions for each project, we have the ability to deliver the most efficient and optimized solution for each project.

High -Value Engineering Center

Proven expertise to deliver multi-disciplinary Engineering Services at the highest quality.

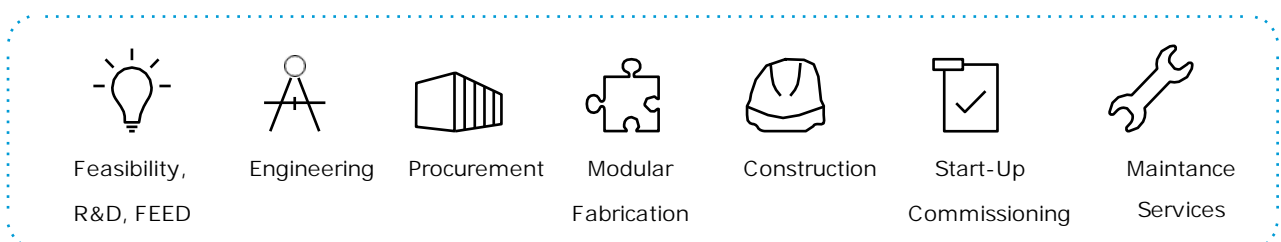
Fast and advanced engineering services with proven design and calculation software all over the world.

After Sales Services

With its specialist technical staff and technological infrastructure, ASOS provides its customers with:

- after sales personnel training (for technical and operational purposes),
- on-site technical and In-call support,
- maintenance and repair services after commissioning in chemical plants,
- spare parts/equipment acquisition for chemical plants,

Resolution to any issues that may arise during the life cycle of plant and process equipment.

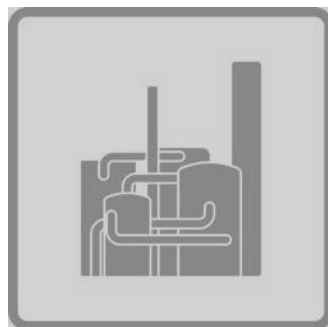


Expertise in Chemical and Fertilizers

ASOS has many years of experience in providing services to many chemical and fertilizer industries.

Our involvement in these projects often begins with a front-end feasibility study (including configuration selection using ASOS process solutions, technology/selection of a licensor if necessary) or the which is further developed during the early project planning phases.

Services continue into the performance of basic&detailed engineering, procurement, manufacturing of the process equipment through to construction or construction management for the erection of the final plant. We have also provided plant start-up, operations and technical services.



50
PROJECTS
OVER THE LAST
20 YEARS

Differentiators

- 1 Laboratory and Test Center
- 2 Strong design programs
- 3 Cohesive and experienced project teams
- 4 Project management from a single source
- 5 Ability to manage complex projects
- 6 Transparent communications

We are one of the few companies that can serve under the same roof with its worldwide expertise in Project Management, Pilot Test Center, Engineering, Manufacturing, Electrical and Automation, Purchasing, Construction, Training and Maintenance.

This is a key differentiator in our industry and a powerful vehicle for delivering outstanding value to our stakeholders.



Chemical & Fertilizer

ASOS providing projects based on a wide range of raw materials, from small process unit renovations to the installation of large plants, for the Chemical and Fertilizer Factory.

- › Storage Tanks
- › Columns
- › Reactors
- › Condenser
- › Crystallization
- › Evaporation
- › Heat Exchanger
- › Granulation
- › Drying
- › Cooling
- › Gas Treatment Unit
- › Filtration
- › Vapor/Gas Recovery
- › Flue Gas Desulfurization
- › Ion Exchange
- › Solvent Extraction
- › Utilities And Offsites
- › Materials Handling
- › Process Automation
- › Instrumentation
- › M.V./L.V. Electrification
- › Upgrading/Revamp

Our experience covers a full range of industries across Chemistry to include specialty and fine Chemicals and Fertilizers.

Experience with a Wide Range of Plant Types

We have worked on a wide range of Fertilizer and Chemical projects, ranging from:

- › Sodium Chloride
- › Ammonium Chloride
- › Boric Acid
- › Copper Sulphate
- › Zinc Sulphate
- › Nickel Sulphate
- › Sodium Sulphate
- › Sodium Metabisulphite
- › Copper Sulphate
- › Silicates
- › Ammonium Nitrate
- › Ammonium Sulfate
- › Magnesium Sulfate
- › Potassium Nitrate
- › Mono Ammonium Phosphate
- › Compound Fertilizer
- › MCP&DCP Phosphate
- › Sulphuric Acid

Expertise in Specialty Process Equipment

Through the execution of these projects, we have gained a deep and intimate knowledge of the design, specification and procurement of specialty process and mechanical equipment, including:

- › Reactors,
- › Evaporators and Crystallizers
- › Heat Exchangers, Process Vessels, Agitators,
- › Filtration Units,
- › Specialty Pumps And Compressors
- › Specialty Dryer Such as Fluid Bed or Sprey
- › Processing Control Systems



Project Development

The competitive structure of today's economy forces manufacturing and infrastructure companies to utilize sustainable production methods which are based on interoperable automation systems as well as are affordable, environment-friendly and highly productive in compliance with international quality standards. Given this, today's manufacturing economy depends on implementation and development of industrial process technologies.

ASOS has maintained this very same vision from the date of its establishment to present day.

Environmental Assessment

ASOS has obtained ISO 9001:2000 Quality Management System, ISO 14001: 2004 Environmental Management System and OHSAS 18001: 2007 Occupational Health and Safety Management Systems certifications in order to register "ASOS" quality, focusing on standardization in pursuit of high quality, continuity, innovative structure and technological progress.

Associated Facilities

We also have a high level of experience with facilities typically associated with process plants including:

- › Material handling equipment for both solids and liquids;
- › Warehousing and tank farms for the storage of raw and finished products
- › Packaging facilities, automated or manual, for pallets, drums, sacks, totes, crates and other containers
- › Loading and unloading equipment for trucks, railcars and barges
- › Utilities and offsites



Expertise at a Glance

Potassium Nitrate (KNO₃) Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Potassium Nitrate Fertilizer (NOP) Plant with a production capacity of 50,000 metric tons per annum in the IGSAS Fertilizer Complex.

Boric Acid (H₃BO₃) Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Boric Acid Plant with a production capacity of 120,000 metric tons per annum in the ETI Mining & Chemical Complex.

Ammonium Nitrate (NH₄NO₃) Plant

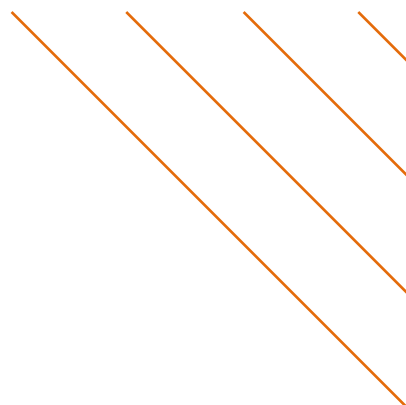


Description: Providing engineering, procurement and construction services to supply Evaporation, Neutralization and CAN/AN Plate Cooler Units to capacity increase the IGSAS Fertilizer Complex current Ammonium Nitrate Plant.

Copper Sulphate (CuSO₄) Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Copper Sulphate Plant with a production capacity of 12,000 metric tons per annum in the CHEMIOLA Chemical Complex.



Soda Ash (Na_2CO_3) Plant



Description: Providing Engineering and Procurement services to supply process equipments, a Soda Ash Plant with a production capacity of 80,000 metric tons per annum in the SISECAM Chemical Complex.

Mono Ammonium Phosphate (MAP) Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Mono Ammonium Phosphate (MAP) Plant with a production capacity of 50,000 metric tons per annum.

Potassium Nitrate & Ammonium Chloride (KNO_3) Plant

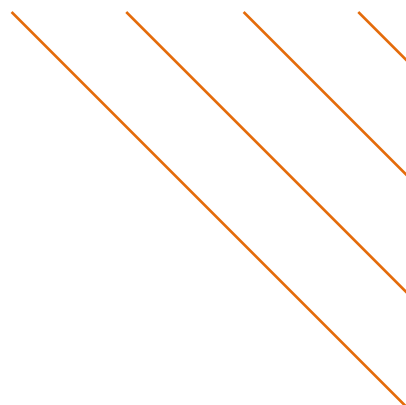


Description: Providing Engineering and Procurement services to Design and Build a Potassium Nitrate Fertilizer (NOP) and Ammonium Chloride Plant with a production capacity of 100,000 metric tons per annum in the Eurochem Chemical Complex.

Humic Acid Plant



Description: Providing Engineering and Procurement services to supply process equipments, a Humic Acid Plant with a production capacity of 80,000 metric tons per annum in the HUMINTECH Chemical Complex.



Sodium Diocoborate ($\text{Na}_2\text{B}_8\text{O}_{13}$) Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Sodium Diocoborate Fertilizer Plant with a production capacity of 10,000 metric tons per annum in the ETI Mining & Chemical Complex.

Sodium Chloride (NaCl) Plant



Description: Providing engineering, procurement and construction services to for capacity increase and high purity salt the MEDMAR Chemical Complex current Sodium Chloride Plant.

Sodium Metabisulfite ($\text{Na}_2\text{S}_2\text{O}_5$) Plant

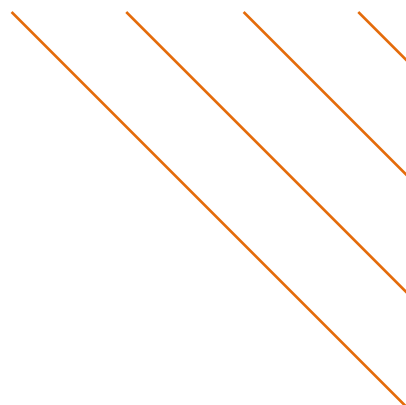


Description: Providing Engineering and Procurement services to supply process equipments, a Sodium Metabisulfite Plant with a production capacity of 40,000 metric tons per annum in the AKKIM Chemical Complex.

Mineral Fertilizer (NPK) Plant



Description: Providing Engineering and Procurement services to supply process equipments, a Mineral Granul Fertilizer Plant with a production capacity of 200,000 metric tons per annum in the HEXAGON Chemical Complex.



Sodium Perborate (NaBO_3) Plant



Description: Providing Engineering, Procurement and Construction services for the Design and Construction of process equipment for the modernization of the plant of Sodium perborate with an annual production capacity of 80,000 mt at ETI Mining and Chemical Complex.

Magnesium Sulphate Anhydrous (MgSO_4) Plant



Description: Providing engineering and procurement services to for Anhydrous Magnesium sulphate salt the EKMEKCIOGLU Chemical Complex.

Zero Liquid Discharge Plant



Description: Providing Engineering and Procurement services to Design and Build a Zero Liquid Discharge Plant with a production capacity of 120,000 metric tons per annum in the T.MO. Chemical Complex.

LITHIUM CARBONATE Plant



Description: Providing Engineering, Procurement and Construction services to Design and Build a Lithium Carbonate Plant with in the ETI Mining Complex.



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