

FEECO Pipe Reactor



Ammonium Sulfate Granules

## AMMONIUM SULFATE PRODUCTION SYSTEMS

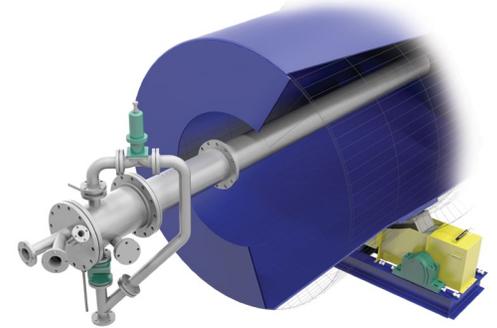
FEECO has been serving the agriculture industry since 1951 through custom processing equipment, process design and feasibility testing, and improved approaches to fertilizer granulation, including the production of ammonium sulfate products. We offer complete process solutions for the production of ammonium sulfate utilizing a pipe reactor.

The pipe reactor method of granulation produces a premium product in the form of a **rounded granule**, offering significantly less dust compared to those produced via compaction granulation. A rounded product also provides improved break down on application, while still being strong enough to withstand handling, transportation, and application.

Pipe reactor granulation offers significant savings in terms of energy, through capturing the heat of the reaction and utilizing it to flash off moisture, reducing the load on the dryer.

FEECO can engineer and supply a complete system, retrofit a pipe reactor into an existing granulation operation, or provide individual pieces of equipment for both new and replacement applications. Equipment we can supply includes:

- Granulation Drums
- Pipe Reactors
- Rotary Dryers
- Rotary Coolers
- Coating Drums
- Screens
- Conveyor Systems, Bucket Elevators, and Complete Material Handling Lines



3D Model of a FEECO Pipe Reactor Integrated into a Granulation Drum

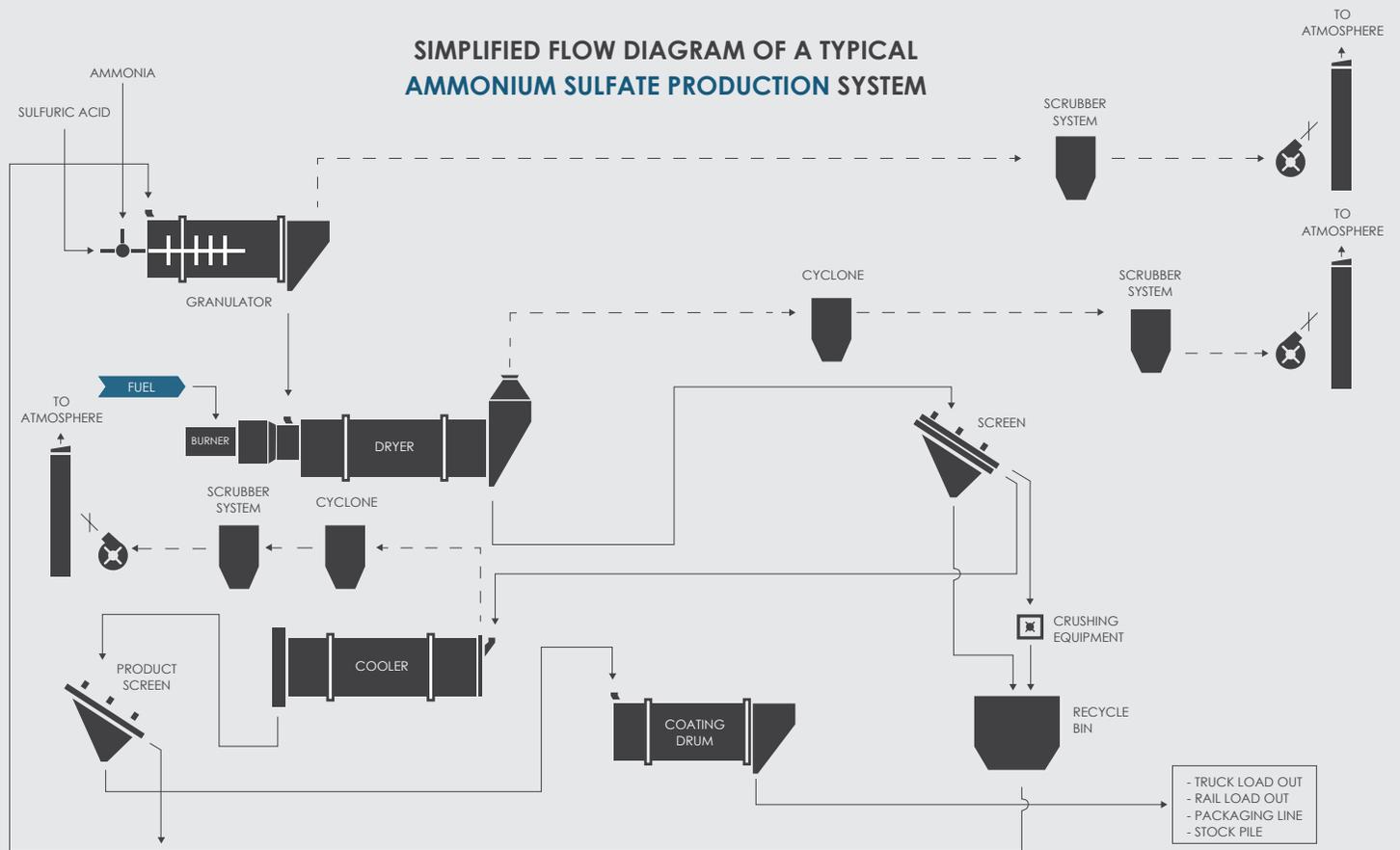
## IMPROVING FERTILIZER PRODUCTION

Pipe reactors can be designed into a new system, or **retrofitted** into an existing one, with the option to replace the pre-neutralizing stage.

## GRANULATION WITH A PIPE REACTOR

The pipe reactor, an acid-base reaction vessel, is integrated into the granulation drum. Sulfuric acid is fed into one side of the reactor, while gaseous or liquid ammonia is fed into the reaction chamber. The result is an ammonium sulfate hot "melt." The superheated product is fed into the granulation drum, where the tumbling action, combined with the captured reaction heat forms and solidifies the rounded pellets.

A rotary dryer is then used to dry the product, while a cooler cools it and stops any ongoing reaction. Under-size product is screened out and combined with crushed over-size to be used as a bed of recycle.



## COMPLETE SYSTEM SUPPLY

One of the many advantages to working with FEECO is that we can provide the complete system shown above and all of the necessary equipment.

Systems can be automated with a PLC-based control system, motor control center, and instrumentation where required.

