



# 420 MTPD Ammonium Nitrate Plant for Sale



## **OVERVIEW**

Shutdown: May 2018

Capacity: 380 - 420 mt/d, depending on the kind of fertilizer produced.

### **Products Produced:**

-AMS (ammonium nitrate with slate, 27.5% N)

-AMS Mg (27% N, with dolomite) and

-AMS MgS (25% N with kieserite)

*Other fertilizers have also been produced in the past.*



## **PROCESS DESCRIPTION**

In the fertilizer plant (AMS facility, ammonium nitrate) several types of fertilizer are produced in a continuous process. All are based on ammonium nitrate, but contain different additives (shale, lime, dolomite, kieserite, borax, colemanite) and weights of ammonium nitrate. For safety reasons the maximum nitrogen content of the fertilizers produced is 27.5%.

The AMS plant can be subdivided into two sections: the ammonium nitrate production and the dry part.

Ammonia and nitric acid react in the AMS facility in a reactor to form ammonium nitrate. In the reaction anhydrous ammonia and ca. 60% nitric acid are used. The ammonium nitrate generated in the reactor is concentrated to 96% in a vacuum evaporator and temporarily stored in a tank (liquor tank). The exhaust vapors produced during the reaction are used for heating purposes (NH<sub>3</sub> vaporization, HNO<sub>3</sub> preheating, product drying). In the grinding plant the rock delivered by truck or railway wagon is crushed, finely ground and fed to the stirred slurry tank via the buffer silo. In this stirred tank the ammonium nitrate (so-called liquor) is mixed with the rock flour. From here the liquor-rock flour suspension (slurry) flows into the twin-shaft granulator, where with the addition of recycled material it solidifies to a spherical granulate. The wet fertilizer from the granulator undergoes a second granulation process in the rotary drum dryer and is dried in concurrent flow using the air heated by the exhaust vapors. The dust that falls with the exhaust air is separated over several hot cyclones connected in series and returned to the production. The warm air is vented to the atmosphere over the roof. The granular mixture from the drum dryer is separated into four fractions in the screening station: lumps, oversize material, on-size material and fines. The lumps are broken in the lump breaker, the oversized material broken in the smooth roll crusher. The crushed material is returned to the granulator. The hot on-size material is fed to the fluidized bed cooler. Cold air, which is obtained during the vaporization of ammonia, serves as coolant. The cooling air is freed of dust via several cold cyclones and vented over the roof. The cooled granulate falls into the coating drum, where it is sprayed with an anti-caking agent. The finished fertilizer is now transported either via the finished goods silo and trucks to peripheral storage facilities, via a loading system in rail tank wagons or directly into the AMS warehouse.

**Louisiana Chemical Equipment Co, LLC**  
**plants@LCEC.com www.LCEC.com**  
**(225) 923-3602**

## **Main Equipment**

The plant comprises the following main pieces of equipment (predominantly V4A):

- Ammonium nitrate production: ammonia air cooler 210 m<sup>2</sup>, 2 ammonia evaporators 10 m<sup>2</sup>, ammonia re-vaporizer 15 m<sup>2</sup>, nitric acid pre-heater 13 m<sup>2</sup>, loop reactor 30.4 m<sup>3</sup>, ammonium nitrate evaporator 70 m<sup>2</sup>, ammonium nitrate tank 30 m<sup>3</sup>.
- Grinding mill: Filling funnel 16 m<sup>3</sup>, hammer crusher, mill bunker, Loesche mill, rock flour silo 42 m<sup>3</sup>, various ventilators, cyclones, storage silos and conveyor belts / tube chain conveyors.
- Granulation: ammonium nitrate measuring vessel, rock flour weighing scale, stirred slurry tank 4.5 m<sup>3</sup>, double-shaft granulator
- Drying section: drum dryer D = 2.6 m, L = 16 m, sieving machine 150 t/h, fluidized bed cooler 10m<sup>2</sup>, exhaust fan 71000 m<sup>3</sup>/h, application drum D = 1.5 m, L = 4.8 m, various dust separators (cyclones), conveyor belts and bunkers



















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