



## Nitric Acid Plant - 450 STPD

**Capacity:** 450 STPD

**Raw Materials:** Ammonia, Air, Water

**Process Information:** Ammonia and air catalytically oxidize in a platinum-equipped converter, forming nitric oxide, which reacts further to yield nitric acid in a sophisticated heat exchange system.

### Major Equipment

- Ammonia Vaporizers (E-109)
- Evaporator Work Tank (T-101)
- NH3 Superheater (E-101)
- NH3 Filter (S-101)
- NH3 Air Mixer (M-110)
- Converter & Superheater (E-102)
- Air Preheater (E-102)
- Waste Heat Boilers (E-103)
- Platinum Filter (S-105)
- Cascade Cooler
- Weak Acid Separator (S-106)
- Absorption Column (A-107)
- Entrainment Separator (S-107)
- Primary & Secondary Combustor
- Expander & Economizer
- Stack, CEMS, Air Filter

### Brief Plant Description

Used 450 STPD Nitric Acid Plant built in 1969. This plant was originally commissioned in 1969 at nameplate capacity of 310 STPD. In 1974, the plant was upgraded to 375 STPD. In recent years, many new equipment items have been installed and the final capacity reached 450 STPD. The process starts with air compression. The compressor train consists of an axial compressor and a centrifugal compressor, and is driven by steam turbine on one end and a hot spent gas expander on the other end. The mixture of ammonia and air flows to the converter where ammonia is catalytically oxidized to nitric oxide (NO). The catalyst used is platinum gauze containing some palladium and rhodium. The process gas leaves the catalyst gauze at about 900 °C, and passes in succession through an exchanger train consisting of spent gas reheater/superheater, air Preheater, 225 psig waste heat boiler and 75 psig waste heat boiler. Steam of 225 psig and 75 psig is generated and exported from this process. The process gas then passes through a platinum filter to recover the valuable particles of platinum. Oxidation air is added and reacts with the NO to form NO<sub>2</sub>, which then reacts with water in the absorption column to form nitric acid. This plant has Delta V automation control system. Complete technical and operational documents are available.

**For more  
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