



## Nitric Acid Plant - 550 STPD

**Capacity:** 550 STPD

**Raw Material:** Ammonia, air

**Process Information:** UHDE Medium Pressure Process with 84 psi combustion pressure and 80 psi absorption. Using BASF NOx abatement process, reduces NOx content in tailgas.

### Major Equipment

- Ammonia Evaporator I & II (E-101, E-102)
- Ammonia Stripper and Preheater (E-103, E-104)
- Ammonia Gas Filter (F-101)
- Air Compressor and Compressor Motor (C-101 & MC-101)
- Tailgas Turbine and Heater I (Y-101, E-108)
- Mixed Gas Filter (F-103)
- Ammonia Burner and Catalyst Basket (R-101, R-102)
- Ammonia Tailgas Reactor (R-103)
- Process Gas Cooler (E-105)
- Feed Water/Deaerator (D-102)
- Tailgas Heater II & III, Economizer (E-109, E-110, E-106)
- Steam Drum & Chilled Water Head Tank (D-101, D-108)
- Cooler Condenser (E-107)
- Feedwater Preheaters A & B (E-111A & B)
- Bleacher and Absorption Towers ((T-102, T-101A & B)
- Lube Oil System (D-111)
- Separator for Tailgas (D-113)
- Overhead Oil Storage Tank (D-114)
- Cooling Water Strainer (F-105)
- Steam Drum Circulating Pumps (P-103A & B)
- Feed Water Pumps (P-104A & B)

### Brief Plant Description

Used 550 STPD Nitric Acid Plant built in 1987. The process is consisting of four main stages: oxidation of ammonia, oxidation of nitrous oxide, absorption of nitrous gas and catalytic tailgas treatment. Liquid ammonia is vaporized, and remaining ammonia is stripped in a batch operation. Gaseous ammonia is then mixed with compressed air, and the mixture undergoes ammonia oxidation in the ammonia burner. The NOx gas from the burner is cooled, oxidized to NO<sub>2</sub>, and further condensed. The cooled NOx partly condenses in feedwater preheaters, forming acid condensate pumped to the south absorption tower. Uncondensed NOx and secondary air enter the south absorption tower, where oxidation and absorption occur. The north absorption tower further oxidizes and absorbs NOx. Cooling is achieved using cooling water and chilled water. Demineralized water is pumped to the north absorption tower, producing acid transferred to the south absorption tower. Acid from the south absorption tower is pumped to the bleaching tower, where raw acid is contacted with secondary air. The final acid at 61% concentration is transferred to storage. The tailgas leaving the north absorption column contains unabsorbed NO and NO<sub>2</sub>.

The tailgas is heated and treated in a catalytic tailgas reactor with ammonia vapor, reducing NOx content to less than 170 ppm. The treated tailgas passes through a turbine, generating energy for the air compressor, with additional energy supplied by an electric motor. The treated tailgas is discharged into the atmosphere through a stack. The plant was shutdown in 2016.

**For more  
information contact**

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