Phoenix equipment corporation

Plant # 369

500 STPD Nitric Acid Plant for Sale

Capacity: 500 STPD

Raw Materials: Ammonia, Air, Water

Process Information: This Nitric Acid Plant with capacity of 500 short tons per day, uses the process of oxidizing ammonia to form nitrogen dioxide, then absorbs the NO2 in water and a catalyst to form Nitric Acid HNO3. Purge gas from an ammonia plant or a hydrocarbon fuel such as natural gas is required for catalytic tail gas pollution abatement processes.

Major Equipment

- Inlet Air Filter
- Air Compressor Set with Spare Expander and Turbine
- Steam Separators
- Surface Condenser
- Ammonia Vaporizer and Superheater
- Ammonia Filter and Air Mixer
- Waste Heat Boiler
- Steam Accumulator and Blow Down Drum
- Tail Gas Heater
- Cooler Condenser
- Absorber Tower
- Tail Gas Preheater
- Exhaust Stack
- Platinum Filter and Shell
- Boiler Feedwater and Absorber Feedwater Pumps

BRIEF PLANT DESCRIPTION

New Major Equipment was installed during 1994 – 2013 for this 500 STPD Nitric Acid Plant. Atmospheric air is filtered and compressed in a centrifugal compressor, which is driven by a hot gas expander and steam turbine. Liquid ammonia is vaporized, superheated and filtered and is joined by the compressed air stream in a double mixing operation based on orificing. The combined ammonia-air mixture enters the converter where the ammonia stream ignites and burns very rapidly to form nitric oxide and water vapor. The hot reaction products and excess air leaving the converter pass through a waste heat boiler and heat exchanger to: cool the process gas before entering the cooler condenser; recover heat be the generation of steam; and recover power by heating the tail gas for use in the hot gas expander. Partially cooled process gas enters the cooler condenser where the water formed during ammonia burning is condensed, forming weak nitric acid. The weak acid is separated from the gas and transferred to the top of the absorber, where the weak acid and additional water are fed through the top tray and counter act with the gas moving up the absorber through the bottom. The product acid passes through a bleacher where dissolved oxides of nitrogen are stripped from the acid using a countercurrent flow of air, before flowing into the storage tank.

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