



# 50 MTPD Concentrated (98%) Nitric Acid Plant for Sale



## OVERVIEW

Shutdown: February 2018

Capacity: 50 MTPD of 100% HNO<sub>3</sub>

## PROCESS DESCRIPTION

The concentration of 60% nitric acid is carried out using the well-known process of extractive distillation of nitric acid using concentrated sulfuric acid. The plant was designed by Schott Engineering and the main pieces of equipment are made of corrosion-proof glass.

The plant comprises the following elements:

- Nitric acid concentration (NA)
- Sulfuric acid concentration (SA)
- Tank farm



## Nitric Acid Concentration

The preheated diluted nitric acid (ca. 60%) is fed into the concentration column (NA column.) The sulfuric acid necessary to absorb the water is fed into the top of the column. In counter-flow to the liquid steam is introduced at the bottom of the column. Through the heat released by the mixing and the heat supplied by the heater the nitric acid is evaporated. The steam also serves to strip the volatile components from the running off dilute sulfuric acid. The vapors leaving the top of the column are condensed and the distillate is then stripped in the bleaching column using air. The product is discharged by means of free drainage into storage tank. The exhaust gas is extracted and sent to a NO<sub>x</sub> absorber.

## Sulfuric Acid Concentration

The concentration of the sulfuric acid is carried out by means of vacuum evaporation in a forced circulation evaporator. Thereby the sulfuric acid is circulated through the heater using a centrifugal pump and heated to a temperature that is a few degrees above the boiling point. Due to the static pressure of the liquid the evaporation does not take place in the heater, but only when it enters the expansion vessel.

The vapors are condensed and the distillate is discharged at atmospheric pressure. The working pressure (50 mbar, 0.725 PSI) is generated by a water-ring vacuum pump. The concentrated acid is removed from the circulation system at the overflow after the separator and discharged after cooling at atmospheric pressure. It is sufficiently concentrated and can be fed back to the nitric acid concentration.

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 glass):

Nitric acid concentration: concentrating column L = 16.8 m with 5m<sup>2</sup> column heater, bleaching column L = 7.3 m, various heat exchangers 1.5 to 25m<sup>2</sup>.

Sulfuric acid concentration: circulation evaporator with 5m<sup>3</sup> tank, magnetic drive pump 160 m<sup>3</sup>/h, 16m<sup>2</sup> heat exchanger, 2 6.3m<sup>3</sup> tanks, vacuum pump.

Tank farm: several product tanks made of aluminum and a V4A holding tank for sulfuric acid







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