Chlorine Processing

The second phase for drying Cl₂ gas from the cooling system is to contact it with concentrated H₂SO₄. This occurs in a series of columns.

Drying

Cooled Cl₂ gas entering the drying columns has some moisture eliminated by the cooling and chilling process. Additional drying occurs as moisture in the Cl₂ gas is absorbed by 96% H₂SO₄.
APPLICATION REPORT

Drying (Con’t.)

The H₂SO₄ is stored on-site in companion facilities and flows through the columns counter to the Cl₂ gas. As the Cl₂ moves through the drying process, it dries the Cl₂ gas to a level of 50 ppm. At the same time, H₂SO₄ becomes dilute exiting a spent acid at 70% - 80% H₂SO₄. The spent acid contains Cl₂ and is subjected to dechlorination process before reconcentration or disposal.

The dry Cl₂ gas exists in the last column at 50 ppm. Cl₂ at this moisture level is not corrosive to ferrous metals.

Valve Requirements

Sulfuric acid is at ambient conditions and 45 psi (3 bar). The distribution is through 2” – 3” (50 – 80DN) line size with automated and manual valves situated at control points on tanks (2) and manual valves on pump and tank isolation (1). Carbon steel valves with alloy trim are the preferred materials.

Automated valves are equipped with actuators, solenoids, communication terminals and an on-off beacon.

Cl₂ is compressed in the next phase but between the drying column and compression, the Cl₂ is filtered through a demister. There is a 2” (50DN) flanged manual drain valve (3) on the demister and a high-performance butterfly modulating control valve (4) regulating Cl₂ gas to the compression process.

Metso Solution

Modulating control valves include QPX spring return diaphragm actuator with positioner and accessories as specified.