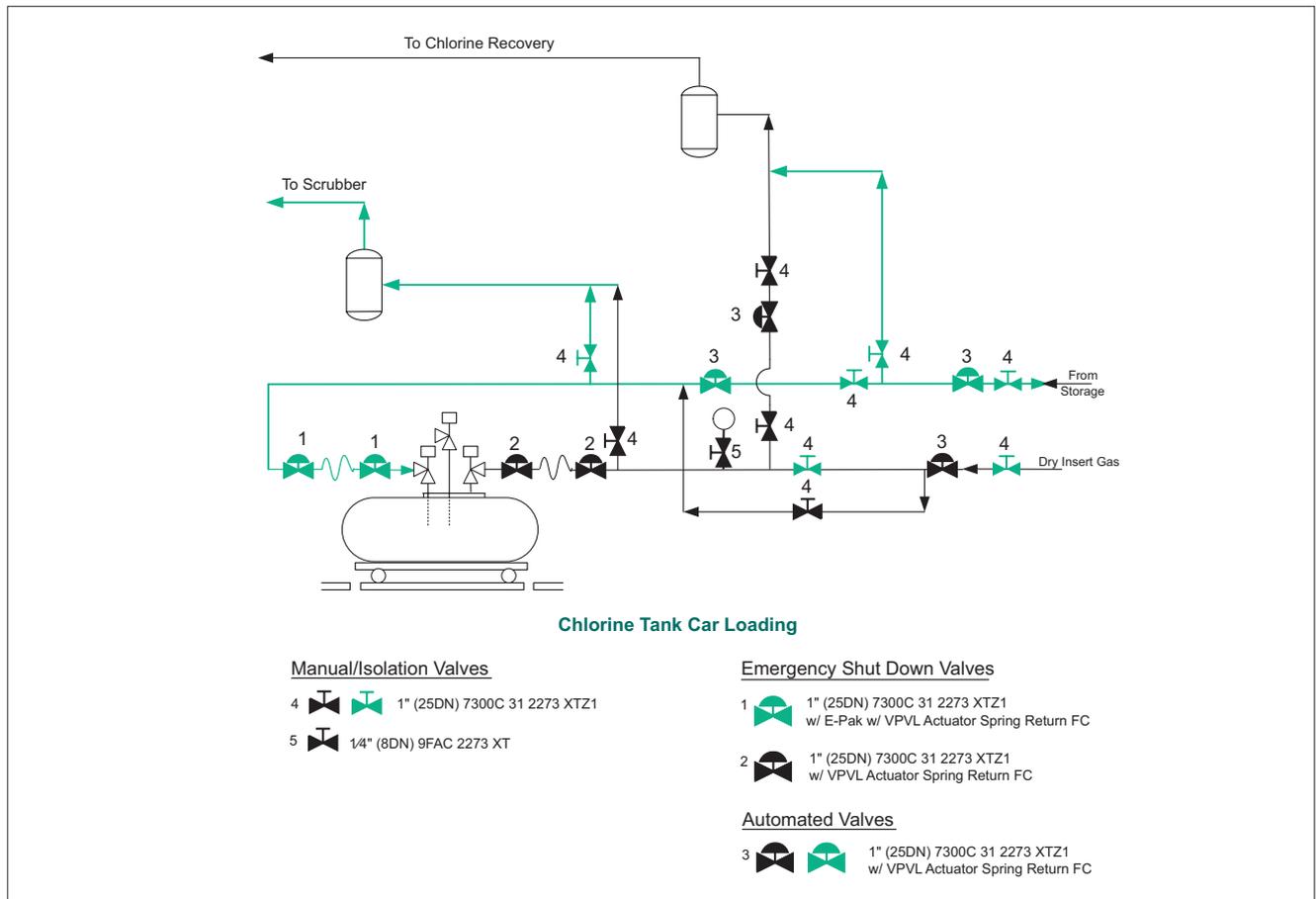


Chlorine Tank Car Loading



Chlorine Processing

Most chlorine bulk shipments are made with tank cars. The system that delivers the Cl_2 from storage to tank car and the system that vents gas or delivers padding gas is a unique arrangement of manual and automated valves. During loading, several sets of automated valves are key to the operation. Two sets of automated valves are situated at each end of a flexible transfer connection and another set of valves isolates the source of purging N_2 and Cl_2 . Another set of automated valves directs the flow of Cl_2 to the tank car, and its companion valve controls the flow of vent gas from tank car to recovery.

There are numerous manual valves that isolate gages and automate valves, and manually control Cl_2 and vent gas to recovery or N_2 for purging purposes.

Emergency Shut Down

The automated valves located at each end of the flexible transfer connection are emergency shut down valves. The package fails closed if there is excessive movement of the tank car, loss of line pressure, loss of power, or through activation of an emergency shut-off button in the control panel or at strategic locations in the process. The package may be instrumented to set off alarms or signal an emergency response team.

Neles Solution

Most valves in the system are 1 ANSI Class 300 flanged valves. At a minimum, the liquid Cl₂ emergency shut down valves (1 ) should have Hastelloy® C ball and stem. In addition, valves in this service tend to ice during loading in warm, moist environments. In conjunction with the valve, Emission-Pak® assemblies are recommended to elevate the live load packing and prevent the sealing mechanism from packing with ice.

Companion emergency shut down valves (2 ) on vent gas or purge gas lines should include Hastelloy C ball & stem because, like the liquid Cl₂ valves, these valves will be exposed to atmospheric moisture. Emission-Pak assemblies, however, are not required since these assemblies will not be subjected to the icing condition the liquid Cl₂ emergency shut down valves are exposed to.

Automated assemblies isolated the liquid Cl₂ storage tanks (3 ) and the source of N₂ padding gas (3 ). At a minimum, these valves should have Monel® ball and stem. Because atmospheric moisture does migrate into these systems, Hastelloy C is strongly recommended.

There are two more automated valves: one in liquid Cl₂ (3 ) and one located in the vent Cl₂ recovery system (3 ). These automated valves are usually used in conjunction with each other in the recovery of liquid Cl₂.

Many manual valves are positioned to isolate automated valves (4 ) and gauges (5 ) and to facilitate the venting, purging and Cl₂ recovery processes.

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