

Indian Farmers Fertiliser Cooperative Ltd. Aonla Unit

Abstract

Ammonia Storage Tanks play a crucial role in ammonia and fertilizer plants due to the highly hazardous nature of their contents. Ensuring the safety and integrity of these tanks is of paramount importance to both the operating company and the surrounding communities.

At IFFCO's Aonla facility, the decommissioning, inspection, and re-commissioning process for the T-2301 Double Wall Ammonia Storage Tank, with a capacity of 10,000 MT, was undertaken. This tank had been in service since 1988, totalling 33 years. It was decommissioned for inspection in 2001-2002 and again from May to Nov 2022.

The decommissioning process began with a Kick-off Meeting and HAZOP study to identify potential hazards and implement necessary safeguards. Liquid Ammonia from the tank was transferred to the Urea Plant, and the tank's temperature was lowered to vaporize the remaining ammonia. Nitrogen was then used to displace the ammonia vapors, rendering the tank inert and safe for inspection and man entry.

Upon opening the inner tank, it was found to contain oil residue and sludge saturated with ammonia. The tank was cleaned, and inspection and non-destructive testing (NDT) were conducted over 67 days. Safety protocols, including confined space measures and personal protective equipment, were diligently followed.

After the inspection, hydro-pneumatic testing was performed to assess the tank's structural integrity. Necessary repairs and welding were completed, and various checks were carried out before re-commissioning the tank.

The re-commissioning process involved purging the tank and piping with nitrogen and ammonia vapors. Liquid ammonia was gradually introduced while carefully controlling the temperature. The tank was eventually brought to a stable state with the bottom temperature at (-) 29 degrees Celsius, and ammonia liquid level build-up was achieved through a transfer from the T-3301 tank, up to 1000 MT.

Throughout the entire process, stringent safety measures were adhered to, including HSE protocols and various safety equipment. The successful completion of decommissioning, inspection, and re-commissioning reaffirms IFFCO's commitment to the safe operation of the ammonia storage tanks, ensuring the protection of personnel and the environment.