CORKEN

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STORAGE DECOMMISSIONING COMPRESSION SOLUTIONS

Vapour Recovery and Decommissioning Systems for Liquefied Gas Storage Vessels



Overview

Storage vessels for liquefied gases (such as LPG bullets, Horton spheres, and ammonia tanks) contain massive inventories of hazardous energy. Statutory authorities globally including India (under PESO's SMPV Rules, 2016), Asia-Pacific region and others mandate periodic asset integrity verification, including hydraulic testing (hydrotesting) and Non-Destructive Testing (NDT), typically every 2 to 5 years.

Before executing hydrotests or structural inspections, facilities must safely perform complete gas evacuation. Corken's heavy-duty vapour recovery compressors enable safe, rapid, and virtually leak-free gas evacuation from stationary vessels and pipelines into adjacent storage. By recovering valuable residual vapours that would otherwise be flared or vented, Corken delivers full regulatory compliance, zero product loss, and direct revenue generation.

Meeting Regulatory & Operational Expectations in Storage Decommissioning

Periodic decommissioning and hydrotesting are statutory mandates required to maintain operational licenses, ensure worker safety, and prevent catastrophic failures like BLEVEs (Boiling Liquid Expanding Vapour Explosions). Corken compression technology addresses key industry challenges:



Justifications for Decommissioning:

1. Prevent Catastrophic Vessel Failure: Liquefied gas vessels operate under pressure and are subjected to corrosion, fatigue, weld degradation, thermal cycling, and mechanical stresses throughout their service life. Hydrotesting and associated inspections verify that the vessel can safely withstand its design pressure and continue operating without leakage or rupture. Regulatory requirements like India's SMPV Rules, Static and Mobile Pressure Vessels (Unfired) Rules, 2016, specifically mandate periodic hydraulic testing and thickness assessment to ensure continued integrity.

2. Protect Human Life and Public Safety: LPG and similar liquefied gases can form large vapor clouds if released. An ignition source can lead to fires, flash fires, or BLEVE (Boiling Liquid Expanding Vapor Explosion) events. Because many storage facilities are located near industrial operations, transportation corridors, or populated areas, regulators require periodic testing and integrity verification to minimize the probability of such incidents. OISD standards emphasize safety as a primary objective for petroleum and gas installations.

3. Ensure Regulatory Compliance: Hydrotesting is not merely a best practice; it is a statutory requirement. Vessels generally must be hydraulically tested at intervals not exceeding a certain time, together with internal inspection and residual thickness measurement. Failure to comply can affect the validity of operating licenses and regulatory approvals.

4. Detect Aging and Deterioration Before Failure: Timely hydrotesting is part of a broader asset integrity program. During testing cycles, operators assess Corrosion and wall thinning, Weld defects, Cracking, Mechanical deformation, Remaining useful life. For larger flammable-gas vessels, additional non-destructive testing (NDT) is mandated because hydrotesting alone may not reveal all defects.

5.Reduce Environmental and Financial Risk: A loss of containment can result in environmental contamination, extended plant downtime.

Regulatory Considerations

Regulatory requirements for storage vessel inspection and decommissioning vary across Asia-Pacific. In India, PESO's SMPV Rules, 2016 and OISD-STD-144 mandate hydrotesting at intervals not exceeding five years (two years for corrosive or toxic gases), along with thickness measurements and NDT for vessels exceeding 100 KL. Singapore requires periodic hydrotesting, ultrasonic testing, radiography and approved NDT assessments under MOM regulations. Australia follows WHS legislation and AS 3788, allowing advanced NDT to supplement or replace hydrotesting based on engineering audits. Malaysia, Thailand and Indonesia follow applicable national safety laws, API 510 and ASME Section VIII, with risk-based inspections, evacuation, purging and hydrotesting following extended service or major repairs.

Core System Components and Technology Stack

Precision Containment, Materials & Thermal Capabilities

Corken's D-Style and T-Style oil-free reciprocating compressors are engineered for safe and efficient evacuation of toxic, volatile and flammable gases, offering reliable containment, material compatibility and thermal management.

01 D-Style & T-Style Designs:

D-Style compressors use a single-distance piece with two sets of packing, while T-Style compressors feature a double-distance piece with three sets of packing for enhanced gas containment.

02 Emission Control & Product Recovery:

Purging arrangements help minimise fugitive emissions, while recovered liquid and vapour can be transferred to active storage for reuse, reducing product loss.

03 Materials & Corrosion Resistance:

Customised materials, surface treatments and compatible seals help protect equipment against corrosive gases and impurities.

04 Cooling & Compression Flexibility:

Vertical and horizontal models, air-cooled or water-head-cooled options and single-stage or two-stage configurations support varying operating conditions and evacuation requirements.

05 Low Total Cost of Ownership:

Efficient operation, durable packing and maintenance-friendly construction help reduce energy consumption, servicing costs and downtime.

Integrated Skid Automation & Process Control

Corken compressor skids offer customizable automation packages tailored to local site control philosophies:

Safety Shutdown Interlocks:

Automatic shutoff based on high discharge pressure, high discharge temperature, low oil pressure, or liquid carryover detection.

Control Level Flexibility:

Options ranging from local manual/pneumatic control panels to full PLC/DCS integration with remote start/stop, Modbus communication, and automated evacuation sequencing.

Key Operational Benefits of the Integrated Decommissioning Package

- ***Maximum Product Recovery:***
  Minimises flared gas volumes by efficiently drawing down storage pressure and transferring remaining vapours to operating tanks.
- ***Environmental & Statutory Compliance:***
  Eliminates fugitive VOC emissions and satisfies regional requirements (PESO, OISD, API 510, WHS) for vessel evacuation prior to hydrotesting.
- ***Oil-Free Process Protection:***
  Double-distance piece packing arrangements isolate lubrication oil from the gas stream, ensuring zero oil carryover into recovered gas supplies.
- ***Maintenance-Friendly Design:***
  Straightforward modular construction allows for quick parts replacement, component interchangeability, and extended service intervals.

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