

White Paper

ARE YOUR **LPG LOADING**
OPERATIONS ENGINEERED
TO **TODAY'S STANDARDS?**



Are your LPG Loading Operations engineered to today's standards?

Like any pressurized, highly flammable substance, LPG needs to be stored, transported, and handled correctly in order to avoid safety incidents. While codes such as NFPA 58 can act as a guide to help operators minimize risk and maximize safety, adherence can be ongoing, complex, and costly; but careful planning, equipment, vendor selection can help simplify the process.

Liquefied Petroleum Gas (LPG) is a hydrocarbon gas that is created by either refining crude oil, or by processing natural gas; usually consisting of either propane, butane, or a mix of both gasses. LPG is a relatively clean burning, stable, and high calorie energy source; meaning that it can generate a high level of heat in a short timeframe relative to other fuel sources. As a result, LPG has a wide range of industrial, commercial, and household uses - from heating and power generation, to use as a fuel for vehicles.





Similarly to natural gas, LPG is compressed into its more compact liquid state, and is stored and transported under high pressure. LPG can be transported in a variety of different ways, however with the high cost and complexity of pipelines the majority of operators rely on transferring LPG via tanker. In addition to a lower cost, tank transfer also provides greater accessibility, allowing operators to use either the preferred or best available mode of transport, whether that be via road, rail, ship, or mixed mode.

Tanker transport also provides operators with the flexibility to work with multiple vendors on an as required basis, ensuring adequate availability and supply during peak production periods. Crucially, this flexibility also provides operators to source dedicated blends of LPG that are tailored to an operator's specific needs or fueling requirements, such as reducing emissions, providing improved combustion, or minimizing cost.



Using Standards to Maximize Safety

LPG is a pressurized, highly flammable gas that if handled incorrectly can result in either safety incidents, including fire or explosions; or a range of injuries to operators such as cold burns or respiratory issues. As such it is considered as a dangerous or hazardous good, and is subject to a variety of stringent safety codes, such as the National Fire Protection Association's NFPA 58. Currently considered as the global benchmark for the safe storage, handling, and transportation of LPG, NFPA 58 is designed to mitigate risk and ensure safe installations.

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By focusing on topics relating to both process and equipment, including piping, venting, maintenance, and loading/unloading; NFPA 58 helps operators minimize the potential for issues such as failure, leaks, fires, and explosions. The scope of the code is comprehensive and constantly evolving to keep up with both industry best practices and advancements in technology. In order to maintain compliance, operators need to perform regular audits to ensure that both their equipment and processes are in line with the current version of the code.

Some of the recent updates to NFPA 58 include:

- Mandatory use of ESVs: Emergency Shutoff Valves (ESVs) are required for all vapor and product lines used for loading / unloading liquefied gas.
- Mobile units must be equipped with breakaways: Mobile tank storage units must have a breakaway device installed on the loading arm / hose.
- Use of heavy duty hoses is required: Any hoses used must be heavy duty, stainless steel braided hoses. Light weight or LPG compliant chemical hoses should not be used.



Taking a Long Term View

The thought of constant evaluations and ensuring compliance may seem like a daunting proposition, particularly for smaller operators. However careful planning, equipment choices, and vendor selection can ensure compliance with the latest updates to codes such as NFPA 58, while helping operators maximize the safety and efficiency of their plant operations.

Loading arms, for example, can provide operators with a long term, relatively “hands off” solution for loading / unloading liquefied gasses.

Despite a higher initial cost when compared to hoses, loading arms have a much longer life expectancy, with lower maintenance and inspection requirements than hoses; typically providing well over a decade of service before requiring a major replacement or overhaul.

Selecting the right equipment is just half of the equation. Choosing a vendor with extensive knowledge, a history of experience, and a comprehensive product portfolio can help operators maintain compliance with minimal cost and effort. Emco Wheaton offers a range premium products that are specifically designed and manufactured to be compliant with NFPA 58 (rev. 2017).

Engineered to be used with either rail cars or tanker trucks, Emco Wheaton’s range of specialty LPG loading arms are available in a variety of configurations, including A-Frame, Dual arm and bullhorn. Emco Wheaton’s LPG loading arms are compatible with a wide temperature range (-49oF to 356oF), feature 2” Schedule 80 piping (as per NFPA 58 5.11.1.4), and are compatible with a range of accessories; including our state of the art TODO Breakaways and TODO-GAS™ Couplings.

TODO’s proven Dry-Break™ technology is designed to eliminate spillage and safety incidents that are associated with drive away incidents. Specifically engineered for the loading / unloading of LPG, in both liquid and vapor phases, TODO-GAS™ features two transfer connections and a vapor return line in one unit; and comes standard with Emco Wheaton’s premium D2000 swivel joints at each plane of rotation.

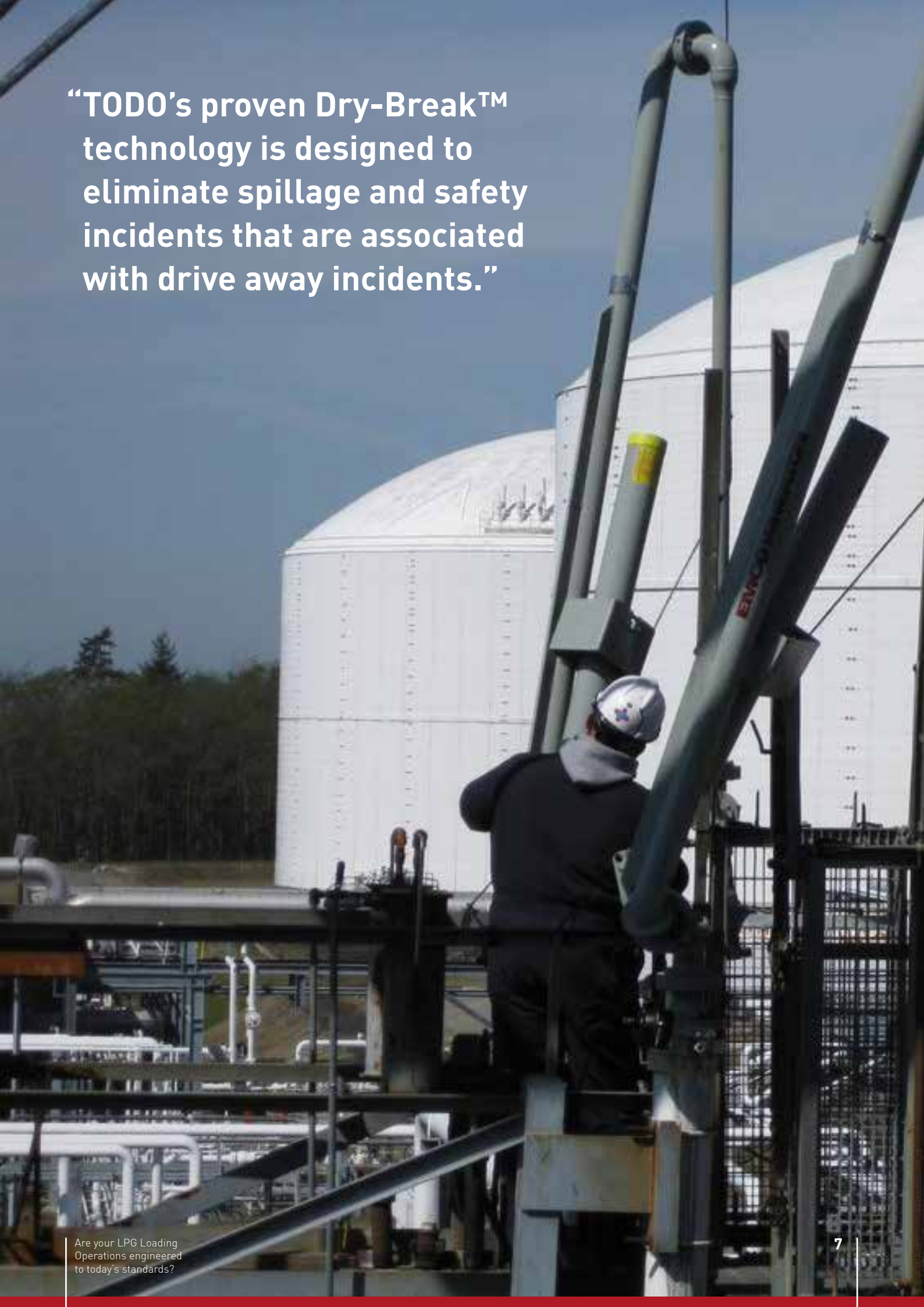
Effective Planning and Expertise is Key

NFPA 58 is constantly evolving to take into account advances in technology and industry trends. As such, operators can have difficulty maintaining compliance. However, careful planning combined with investment in equipment and strategic vendor selection can help operators simplify the task of achieving and maintaining compliance with complex safety codes, such as NFPA 58.

Energy markets will continue to change, standards will continue to evolve, and the use of liquefied gasses will become more and more prevalent. As a market leading provider of safe and efficient loading solutions, Emco Wheaton will continue to drive value for customers by remaining diligent in meeting the requirements defined by codes such as NFPA 58.

Contact your local sales representative today for more information on our range of premium products tailored for LPG loading and unloading applications.

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