

CASE STUDY



Make Safety a Top Consideration When Selecting LPG Loading Arms

LEADING SUPPLIER OF LPG TO THE NORTHEAST U.S. TURNS TO
LOADING ARMS AND SWIVELS FROM OPW ENGINEERED SYSTEMS
TO CREATE A SAFE, EFFICIENT AND ERGONOMIC TERMINAL

Any company that plays a role in the “storage, handling, transportation and use of liquefied petroleum gas (LPG)” is familiar with NFPA 58: Liquefied Petroleum Gas Code, which is considered the “Bible” for the industry. This code is administered by the National Fire Protection Association (NFPA) and was most recently updated in 2020.

One supplier of LPG to a customer base of around 20,000 in the Northeastern United States has become so in tune with the demands of NFPA 58 and consistently meeting them that one of its LPG storage and distribution terminals was featured prominently in a recent edition of the codebook. This state-of-the-art terminal facility achieved this exalted position because it was designed with safety as the No. 1 priority, along with providing efficient and user-friendly handling and transfer of LPG from railcar to storage, and from transport truck to bobtail delivery vehicle.



Housed on 40 acres of land, the terminal incorporates a complete network of railcar unloading stations, truck-transport loading and unloading stations, bobtail loading stations and truck scales. The driving force behind the design and construction of the terminal was for it to be recognized as one of the LPG industry's leading facilities when it comes to the safety and efficiency of its operations. That has clearly been the case as annual LPG volumes have grown from 15 million gallons when the terminal opened in 2008 to 25 million gallons today.

Focusing On Unloading Safety

Since safety is the top priority at the terminal, the company took a hands-on approach when it designed the facility and selected the equipment used throughout the terminal. After all, this equipment is used every day, many times a day so it needed to run smoothly from day one and for many years to come.

Part of the company's due diligence process involved visiting other LPG terminals to see what type of equipment and systems they were using. The terminal's executive team interviewed managers and the key people that operated a number of other facilities on a day-to-day basis so they could make the most informed decision when it came to the outfitting of the new terminal.

A pivotal point in any LPG terminal is the railcar-unloading area. Unloading LPG railcars can be a difficult and high-risk job. This means that the loading arms that are selected for the task must be able to deliver a unique combination of safety, ease-of-use and durability. During the research phase of the project, company personnel kept hearing from their colleagues at the most safe and efficient sites they visited the name of the same brand of loading arms – those manufactured by OPW Engineered Systems, Lebanon, OH.

Because of that, at the heart of the loading system that was installed at the new LPG terminal you will find "A" Frame Loading Arms (LPG-32-F models) from OPW Engineered Systems. The "A" Frame is one of the most popular loading-arm configurations offered by OPW due to its flexibility, long reach and easy maneuverability brought about by its light weight.

"A" Frame is A-OK

Specifically, the design of the "A" Frame loading arm allows it to be stored in an upright, near-vertical position away from the railcar for safe clearance, while crossover of any obstructions can be readily achieved, which makes it ideal for rack setups that feature dual unloading lines. During the unloading process, it adjusts to the railcar's elevation or tilt so that a tight connection can be made to the valves in all instances. The arms are available with 2- to 4-inch hoses with the frame constructed of carbon steel, stainless steel or aluminum.



Unloading LPG railcars can be a high-risk operation, so the loading arms tasked for the job must be able to deliver a unique combination of safety, ease-of-use and durability.

The LPG terminal unloads every railcar from the top via an elevated metal catwalk with moveable metal gangways that allow access to each car. Because of this design, the loading arms must be able to easily extend from the rack to the top of the railcar, which enables the technician to safely access the manway. Being able to provide this type of maneuverability makes all of the difference in a railcar-unloading setup, which is what helps set the "A" Frame loading arms apart from the competition.

CHALLENGE

Unloading LPG railcars can be a difficult and high-risk job. This large customer needed to select loading arms and swivels that needed to be able to deliver a unique combination of safety, ease-of-use and durability.



SOLUTIONS

"A" Frame Loading Arms (LPG-32-F models) from OPW Engineered Systems



- Superior flexibility
- Long reach
- Easy maneuverability
- Light weight
- Store in an upright, near-vertical position
- Adjust to railcar's elevation or tilt
- Ergonomically friendly

OPW's Endura™ Dual Split Flange (DSF) swivels



- High load-bearing capability
- Redundant sealing
- Leak detection
- Easy to maintain
- Optional inert gas purge



The “A” Frame arms are also ergonomically friendlier than other loading-arm styles, which puts less physical strain on the technician, especially compared to older loading-arm systems that required a heavy hose to be dragged across the top of the railcar before it was attached with a hammer union. The easy maneuverability of the “A” Frame also pays dividends during the cold, snowy winter months in the Northeast by eliminating slip-and-fall risks that are inherent in the handling of heavy transfer hoses.

Additionally, each “A” Frame loading arm at the facility is supported by OPW’s Endura™ Dual Split Flange (DSF) swivels, which combine the features of high load-bearing capability, redundant sealing and leak detection with easy maintenance. The Endura DSF also features replaceable dual- and single-race bearing modules, with the option to provide an inert gas purge. The “A” Frame loading arms can also be outfitted with OPW’s 790 Series Counterbalance unit. This counterbalance technology allows the user to safely and easily dial in precise spring adjustments that help make maneuvering the loading arm as user-friendly as possible.

Loading arm operation is further optimized when used in conjunction with a reliable swivel, such as the Endura™ Dual Split Flange (DSF) model from OPW Engineered Systems.

Conclusion

When one of the Northeast’s most respected LPG companies was designing its new terminal facility, it decided to go by the book – the NFPA 58 codebook, that is. That resulted in a terminal design that set a new standard in the safe and efficient handling, transport and storage of LPG. Playing a huge role in achieving the goals of the company were “A” Frame Loading Arms and Endura DSF Swivels from OPW Engineered Systems, both of which provide the ease of use and safety that were demanded for this important application. What also contributed to the success of the installation was OPW’s commitment to working hand-in-hand with the customer to identify and develop the best solution. Anyone can buy a loading arm; it’s buying the “right” loading arm that matters. By working closely with the end user, OPW was able to provide the best outcome and establish a relationship that will continue to bear fruit into the future.

OPW Engineered Systems is engineering what’s next through innovations designed to enhance safety, reliability, efficiency and business performance for the hazardous-chemicals industry. OPW Engineered Systems, based in Lebanon, OH, designs and manufactures loading arms, swivel joints, quick and dry disconnects, and other related fluid-transfer equipment. For more information, please visit opw-es.com or call us at **(800) 547-9393**.