



Optimizing Small-Volume Liquid Transfer at Storage Terminals

"MINI" LOADING ARMS FROM OPW ENGINEERED SYSTEMS CAN PROVIDE MANY BENEFITS OVER HOSES WHEN USED IN DRUM- AND IBC-LOADING APPLICATIONS AT LIQUID-STORAGE TERMINALS

By David Jacobson

Introduction

Everyone's common perception of a bulk-liquid storage terminal probably begins with large berths where a steady flow of tanker trucks, railcars or barges are being loaded or unloaded, with the property crisscrossed by a series of pipelines that are used to transport the liquids to their storage destinations. And towering over all of this activity are huge storage tanks with capacities reaching into the thousands of gallons.

While all of this is true, if you take a closer look, there are also liquid-handling activities taking place on a daily basis that are performed on a less-grand scale. Namely, these are the loading of much smaller volumes of raw materials or finished products into 330-gallon intermediate bulk containers (IBCs), 55-gallon drums or, in extreme cases, 1-, 2- or 3-gallon jugs.

While these volumes pale in comparison to the huge amounts that are moved into towering bulk-storage tanks, optimizing their filling activities from a reliability, efficiency and safety aspect are no less important. This article will attempt to illustrate how a dedicated loading-arm system

for IBC and drum-filling applications can outperform standard hoses in achieving optimized reliability, efficiency and safety for the operation.

Don't Get Hosed

For decades, hoses have been the conduit of choice to facilitate the transfer of smaller amounts of storage-terminal liquids into IBCs and drums. And for those years, they have performed the job admirably, if not always at the optimum levels of reliability, efficiency or safety.

While hoses are made to perform the drum- or IBC-filling tasks, they do have some design and operational shortcomings that prevent them from being the ultimate solution. First, in larger terminals that handle a wide array of different liquids, an intimidating number of hoses – many of which must be dedicated for use with a specific raw material or finished commodity – may be required. This means that the terminal operator must have a full inventory of hoses on hand at all times, which raises storage and cost concerns.

Secondly, the drum- and IBC-loading area of the plant may require the use of multiple hoses at one time, with many of them laying on the ground or crossing over each other, creating a scenario that has come to be called a “snake pit.” This setup can not only make it hard to isolate the proper hose for the specific liquid-transfer process, but all of the hoses lying loose on the ground can create a trip-and-fall hazard for those employees working in the area.

Next, since the hoses are oftentimes tasked with handling hazardous materials, they must be constructed of thick materials that will not corrode or leak, lest a catastrophic failure occur that can put employees, the plant itself, and surrounding communities and the environment at risk. This means that the hoses, even when empty, can be heavy and cumbersome to maneuver, which puts ergonomic strain on their handlers.

Also, when the filling processes are completed, the hoses need to be stored. This typically involves the manual rolling up of the hoses, which, again, can be ergonomically inefficient, or the installation of a hose-reel system that takes up space and can be costly. Finally, just by the nature of their use, hoses will wear out quickly, which affects the length of their service life, meaning that they will need to be replaced more frequently, which is another added cost for the terminal operator.

Drum Roll, Please

Taking all of these potential pitfalls of hose usage in drum and IBC filling at liquid-storage terminals into account, OPW Engineered Systems, Hamilton, OH, USA, a product brand of OPW, a Dover® company, has engineered and developed a family of Drum & Tote Loading Arms that have been designed specifically to be used in drum- and IBC-loading activities. The design and operation of these loading arms leverage decades of OPW’s bulk-fluid material-handling innovations and can be customized to meet specific customer requirements.

Available in two series – C32F and GT32F – and with a total of eight models, these “mini” loading arms are ideal for loading all types of drums and IBCs, with the liquids capable of being handled ranging from acids and solvents to glycerin, vegetable oils, automotive fluids and monomers. All models are constructed of stainless steel or carbon steel with swivel-joint seals available in Viton®, fluorocarbon, PFA-encapsulated silicone, TFE-encapsulated



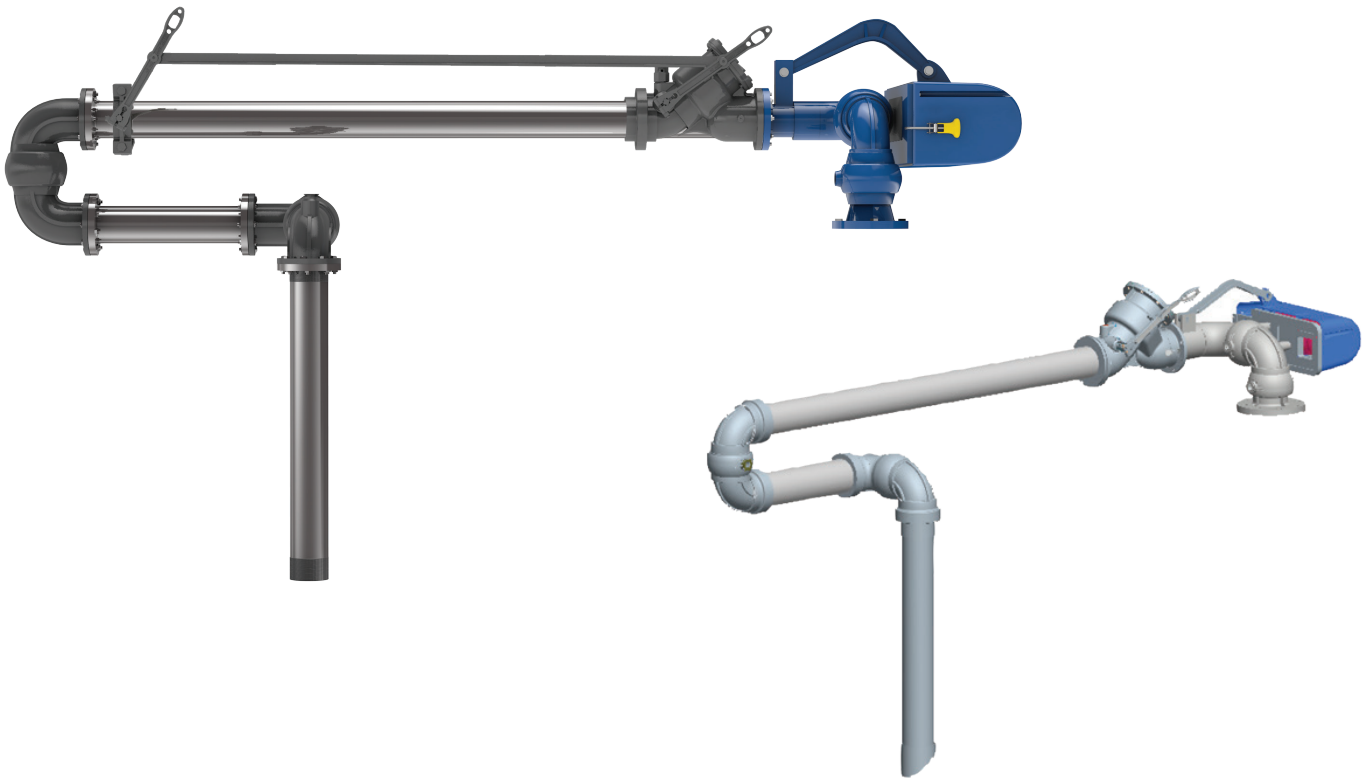
silicone, PTFE and PTFE-encapsulated silicone, depending on the application, with OPW able to design a loading-arm system that can meet the needs of virtually any product-loading setup and budget.

The arms can be configured in either a scissor-style or unsupported-boom-style with drop-tube sizes of 1" and 2". Because of their compact size and lighter weight, the Drum & Tote Loading Arms can also be installed on skids that can be moved to different areas of the storage terminal when they are needed. This is much easier and more ergonomically friendly than lugging around a pile of hoses from loading area to loading area.

Also, with loading arms that are inserted into the drum or IBC’s bung opening, there is no risk that the drop tube will slip out, which can possibly happen with hoses that are left unattended, resulting in a mess on the terminal floor that can create a slip-and-fall risk or even a potential harmful situation if the liquid is deemed to be hazardous. Then, when the loading process is completed, the arms just lift up and out of the way where they remain until called upon for their next loading operation. No need to roll up and store heavy hoses that still may contain some residual liquid that must be drained before they are put away.

Conclusion

While hoses have their place, there is a better option when it comes to loading drums and IBCs in liquid-storage terminals. Because they are much more accurate, offer flexibility in both their movement and the types of liquids that can be transferred, and can be easily incorporated into mobile skids, loading arms make a more reliable, efficient and safe choice. To that end, OPW Engineered Systems offers its C32F and GT32F families of “mini” Drum & Tote Loading Arms, all of which have been designed to optimize the transfer of smaller – but no less significant – volumes at liquid-storage terminals.



About the Author:

David Jacobson is Global Product Manager for OPW Engineered Systems, Hamilton, OH, part of Dover Corporation's OPW division, and can be reached at david.jacobson@opwglobal.com. 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 designs and manufactures loading arms, swivel joints, quick and dry disconnects and other related fluid-transfer equipment. OPW Engineered Systems is part of OPW, a leading equipment manufacturer in the retail-fueling, fluid-handling and vehicle wash industries. OPW has manufacturing operations in North America, Europe, Latin America and Asia Pacific, with sales offices around the world. OPW is part of Dover Corporation. To learn more about how OPW Engineered Systems is engineering what's next in the hazardous-chemicals industry, please visit opw-es.com.