Quality Begins At Home

OPW Engineered Systems maximizes the quality, performance and reliability of its loading arm systems by perfecting an "under one roof" manufacturing philosophy

By Paul Worley

One of the more memorable quotes from the movie Forrest Gump, the 1994 Academy Award winner for Best Picture, is this: "Life is like a box of chocolates. You never know what you're gonna get." Basically, it means that it is impossible to know what life has in store for any of us, and that the surprises or difficult twists you may encounter should be cherished and made the most of.

While none of us can know what life has in store over the next year, day or even hour, there are some components of our lives that we like to be sure of, if for no other reason than to instill peace of mind, or to reliably know that something will be what we hope it is. If, for example, you operate a manufacturing or terminal facility that relies on loading systems to meet a wide variety of bulk loading and unloading operations that peace of mind is enhanced if you are confident that the system's every component is designed, engineered, assembled and, ultimately, delivered by one company. This also raises the loading system's level of safety—for both plant personnel and the environment—and helps mitigate the chances that costly, harmful accidents can occur.

Too often, however, terminal and bulk-plant operators are choosing low-cost loading systems from high-volume vendors that are nothing more than "assemblers" who "job-shop" all of their systems, without proper regard to overall system quality and reliability. In those instances, the customer truly is reaching into that "box of chocolates," never knowing where a loading-arm swivel or counterbalance was manufactured, and just how much attention was put into ensuring that the component was constructed to meet the highest of quality standards.

This white paper will look at how OPW Engineered Systems in Lebanon, OH, USA, has used its decades of experience and expertise, and a commitment to vertical integration in its manufacturing processes—which helps reduce costs, turnaround time and system inefficiencies—to produce highly engineered loading arms and systems all under one roof. These are systems in which every contingency has been considered and every component has subsequently been designed and manufactured to work harmoniously with each other, all with an eye on satisfying the end-user's specific needs and requirements. This commitment has enabled OPW-ES to become the acknowledged leader in producing loading system equipment with a reputation for providing the highest quality in the industry.

The Challenge

Designing and constructing a loading arm system is a complex process. Many different variables need to be accounted for, and no two systems are exactly alike. That means that companies like OPW Engineered Systems must work closely with their clients to create loading systems that meet their unique needs, while also building one that delivers the quality and reliability that the customer demands.

Before a loading system is ever installed, these are just some of the operational considerations that must be taken into account:

- Is it a top-, bottom- or side-loading application?
- What are the ambient weather conditions where the system will be used? Will they encounter extremely cold or hot temperatures? Also, do the products being handled produce extreme temperatures that must be accounted for?
- What type of product(s) will the loading system be used for?
- Will any type of cleaning or purging procedure be employed?
- What materials of construction (metals, elastomers, etc.) are most compatible with the products to be handled?
- How long must the loading arms be? Will railcars or trucks need to be spotted from various distances, requiring more flexibility?
- What type of product flow rates are required?
- Will any specialized welding be needed for the job? More specifically, is it a hygienic or sanitary application that requires a special weld procedure to ensure that there's no buildup of bacteria on the interior of the loading arm?
- What is the design of the support structure, and is it capable of handling heavier, longer loading arms?
- Are there any specialized material-handling requirements that must be accounted for? For example, will the system be handling a chemical "that can explode in the presence of air," which would necessitate entirely leak-free operation?
- Is the loading system ergonomically designed so that it's not only safe for the application, but also minimizes the physical demands on the operator?

While all of these questions are crucial to designing the proper loading-arm system, many operators, oftentimes by necessity, are known as "first cost" equipment buyers, meaning that they look for equipment with a low initial cost, regardless of brand or quality. However, while the initial cost may be low, these operators can expect higher costs on the back end in the form of increased maintenance, service and replacement charges, not to mention the incalculable cost that is incurred when a high-profile accident occurs, such as an equipment failure that results in the leak of a hazardous chemical. Another thing to consider is the potential damage to the environment and the facility's reputation that can occur when failing equipment results in a product leak that can lead to personal injury, air, soil and/or groundwater contamination.

Facility operators who are quick to embrace low initial cost for their loading-system purchases would be wise to first conduct a life-cycle cost analysis (LCA) for their site. This would include not only the "first cost" of the equipment, but cost estimates for any subsequent maintenance, service and replacement instances that can result in loading system downtime or an environmental incident. Those that do complete an LCA will find more often than not that choosing equipment based on quality construction and brand reputation is a much better choice than relying solely on price first.

OPW-ES test standards demand that new swivel joints or counterbalances be tested at a minimum of 100,000 cycle tests at full load before releasing that product. The goal is to produce equipment with a life expectancy of decades, not years/months.

The Solution

Knowing the pitfalls that can plague loading systems that are constructed in a slap-dash manner, with different components from different suppliers who have widely different definitions of product quality, OPW Engineered Systems has embraced a holistic approach to the design, development, engineering and manufacturing of its loading-arm equipment and systems. Many of its competitors contract with outside sources for system components, from swivels to counterbalances, meaning that they can get their components from one place one week and then from a different location the next week, sometimes based mainly on component price or availability. OPW Engineered Systems, on the other hand, conducts all of a system's design, engineering and manufacturing activities under one roof at its Lebanon, OH, headquarters, just outside of Cincinnati.

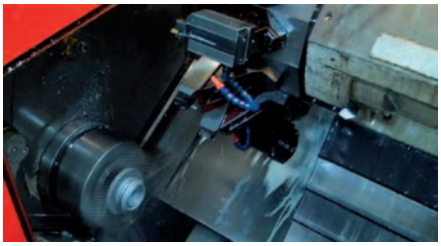
The "all in one" approach espoused by OPW-ES—with many in-house quality checkpoints built into the manufacturing process—results in a loading system that is guaranteed to meet industry standards and specifications for quality. By producing all of the system's components with a trained, centralized, experienced team there is complete confidence that they will meet every quality standard that is in place. OPW-ES's manufacturing facility is also ISO 9001-certified, meaning that a known quality system is in place, one that is audited yearly in order to ensure that the highest quality standards are identified and strictly adhered to.

OPW-ES knows for a fact what the capabilities are for each and every component, as far as design parameters and allowable loads are concerned. Also known is exactly when and where the components are produced and their true capabilities in the field. Having all of the components manufactured in-house also means that special machining can be done on them in order to meet the customer's specific application requirements. This also creates more production flexibility and increases the ability to meet unique loading-system requirements.

The OPW-ES engineering team designs loading equipment that helps improve the speed and safety necessary for terminal operators to get the most out of their daily production.

Having all of the design, engineering and manufacturing work done under one roof by a dedicated team of professionals also lowers the time needed to build the loading system. Speed-to-market is a crucial consideration for terminal operators who are well aware that the old adage "time is money" is undoubtedly true when a facility handles thousands of barrels of product throughput a day, and delays of any kind cannot be tolerated.

Quality is OPW-ES' number one priority. At every stage of production, all components are thoroughly inspected to ensure the highest level of quality.



Additionally, OPW-ES uses as a baseline standard for the engineering and manufacturing of its load-rack systems the American Society of Mechanical Engineers' (ASME) Boiler and Pressure Vessel Code (BPVC), specifically Code B31.3 for Process Piping Design. The BPVC standard provides rules for the design, fabrication and inspection of boilers and pressure vessels so that they will have a long service life that also ensures the protection of human life and property. Within the BPVC, B31.3 provides a clear understanding of how piping systems can fail and what designers, engineers and manufacturers can do to prevent such failures. There are some applications that do not require compliance with the BPVC or Code B31.3, but OPW-ES will still design the loading system with that standard in mind in order to further ensure its reliable and safe operation.

Conclusion

While the process for identifying, selecting and installing the proper loading system is a complex one, it is also one that can't tolerate shortcuts or sub-standard equipment. The commodities that enter, leave or are produced at storage terminals and manufacturing facilities are not only expensive and critical to the facility's operation, but they can also be hazardous and potentially harmful to the environment and site personnel if spills or leaks of hazardous materials occur. So why cut corners when selecting your loading-system equipment?

Too often, however, concessions—oftentimes due to budgetary concerns—are made to the quality of the loading system that is installed. In these "first cost" scenarios, the initial expense can appear to be bottom-line friendly, but future costs for maintenance, repair, replacement or product cleanup can turn out to be much more prohibitive. That's why OPW Engineered Systems has committed to a design, engineering and manufacturing process that sees all of the components of its loading systems developed in-house, rather than being commoditized and job-shopped.

Staying true to its "Safer. Cleaner. Faster." mantra, OPW Engineered Systems makes the quality of its loading equipment the No. 1 priority. This is accomplished through a manufacturing process that keeps the construction of all system components within the purview of OPW-ES professionals, ensuring a system that is the safest, cleanest and fastest in the industry, without any of the uncertainty that comes with that proverbial "box of chocolates."

Paul Worley is Engineering Manager for OPW Engineered Systems. He can be reached at (513) 696-1519 or pworley@opw-es.com. *OPW Engineered Systems is a leading manufacturer of systems for the safe and efficient loading and unloading of hazardous materials. OPW Engineered Systems is part of OPW Fluid Transfer Group. Organized in 1998, OPW Fluid Transfer Group is comprised of two business units: OPWFTG Global Transportation Business Unit and OPWFTG Global Chemical & Industrial Business Unit. The company's market-leading brands include: OPW Engineered Systems, Hiltap, Midland Manufacturing, Civacon, Knappco and Sure Seal. The company has manufacturing plants in North America, Europe, China, Brazil and India, and sales offices in Singapore, Beijing, Shanghai and Mumbai. For more information, please visit www.opw-es.com or www.opwftg.com.*