

The Benefits of Remanufacturing or Repairing Railcar Valves

By XXXXXX

Every rail-transport company takes great pains to ensure that their railcar fleets are outfitted with valves – from pressure relief and flow check to vacuum relief and needle – that enable them to transport critical and high-value hazardous and non-hazardous bulk raw materials and finished commodities with the highest levels of safety, reliability and responsibility.

But those shiny new valves that are installed at the factory will undoubtedly suffer many forms of unavoidable abuse as the railcars crisscross the country over many years, and even decades, of service. That leads to a series of questions that must be asked and answered if the valves are to continue performing at their highest levels of efficiency, some of the most obvious of which are:

- How is the performance of the valves being monitored and how are they being cared for once they are out on the “road?”
- How deep is the shipper’s knowledge of each individual valve’s performance history?
- What issues might need to be addressed during mandated requalification periods for rail tank cars and their valves?

Shippers need to aggressively and proactively consider their answers to these questions. Failure to do so may lead to unpleasant consequences, such as a series of Non-Accidental Releases (NARs) that can result in heavy and prohibitive fines, along with a damaging loss of reputation. They must also ensure that those answers meet the regulatory requirements for valve performance aimed at securing rail-transport safety that have been set forth by the Association of American Railroads (AAR) and Federal Railroad Administration (FRA) in the United States, and their Canadian counterpart, Transport Canada.

The Case for Remanufacturing

Though an individual railcar’s various valves may be accessed and actuated on a daily basis, there can be an “out of sight, out of mind” feel to their operation and maintenance. As the railcar moves across the country, it encounters different depots with different technicians. That can make creating a comprehensive “chain of custody” as it relates to performance and maintenance difficult.

Still, there can be telltale signs that a valve is ready to be serviced. When shippers become alerted to a downturn in the performance and reliability of the valves that outfit their railcars there are three remediation options available to them:

- **Replace:** This is the most common option, with the underperforming valve simply replaced with a new model. However, replacing valves at the first sign of performance degradation can be an expensive proposition, especially since there may be many more years of reliable service life left in the old valve were any performance-related issues properly corrected.
- **Repair:** As a counterpoint to replacing the old valve with a new version, the old valve can be removed from the railcar, broken down and cleaned with its soft parts (seals,

gaskets, O-rings, etc.) replaced by new versions. To aid in the repair process, many valve manufacturers offer repair-and-replacement kits that have been designed to allow the railcar owner to perform on-site valve service, which can result in lower downtime and higher cost savings.

- **Remanufacture:** This process can be described as Repair 2.0 as it is a more thorough valve-maintenance activity that can usually only be performed by the valve's manufacturer. As defined by the AAR in its "Manual of Standards and Recommended Practices, Specifications for Tank Cars," the terms "remanufacture" or "remanufacturing" mean:
 - "Performed only by, or with the approval of, the original equipment manufacturer (OEM), that includes the complete disassembly and cleaning of the valve or fitting to verify that all components are within tolerances, and the restoration or replacement of components, including replacement of resilient components, to the specification."

In other words, the remanufacturing process features the same steps as the repair process – but then goes well beyond. It begins with the valve being tested in the condition it was removed from the railcar to generate a baseline of performance before it is broken down and fully cleaned to remove any and all commodity, dirt and rust buildup.

Once the valve is completely cleaned, a thorough inspection of the valve's components is performed and compared to the original OEM specifications for the valve. The reason that remanufacturing is best performed by the OEM is that the OEM possesses detailed CAD drawings, an engineering staff that was involved in the design and production of the valves, assemblers with experience building the valves and complete background knowledge of the tolerances within the valve design. This gives the OEM the ability to re-machine the valve to like-new conditions, which will improve the long-term performance of the valve when compared to that of a valve that has only been repaired. This capability to re-machine the valve to remove those nicks, dings or corrosion from critical sealing areas will also increase the service life of the valve in the long term.

A Program That Produces

Midland Manufacturing, Skokie, IL, a developer and manufacturer of standard-setting valves for the railcar industry since 1951, knows that oftentimes the best, most cost-effective solution for a valve that has succumbed to the ravages of time and harsh working conditions is not replacing it, but remanufacturing it. To that end, Midland has created its Valve Remanufacturing & Repair Program, with facilities dedicated to this program located at its headquarters in Skokie, along with Houston, TX.

First and foremost, the cost of a remanufactured valve versus the purchase of a new one is a very compelling argument for utilizing a remanufacturing program. Just as with performing regular maintenance on your automobile, developing a dedicated maintenance schedule and program utilizing an OEM remanufacturing process will extend the service life of railcar valves. Admittedly, the overall cost of remanufacturing is higher than simply rebuilding a valve with new soft parts; however, by performing better repairs, the remanufacturing facility can identify and correct more small issues – and build a reliable performance history – before they result in irreparable situations

that force the shipper to purchase new equipment. Thus, over the long term, the total cost to maintain the valve will be lower.

One of the most compelling reasons to utilize an OEM remanufacturing program is the collection of data and its use for maintaining a better valve. Midland's program includes the collection of data regarding the valve type, service commodity, inbound performance, general valve condition, specific valve conditions, O-ring condition, stem condition, body condition and other issues found throughout the process. As the database is loaded with more and more information from valves that have been remanufactured, Midland will learn more about the wear characteristics of each valve repaired and will be able to provide its customers with valuable feedback on valve performance. This information can eventually be utilized to build life-cycle tracking patterns for the valves across a variety of services.

The information gathered can also help customers by comparing their valve-usage patterns with that of the overall service history of the valve. This data will be able to be sorted and compared with the service information of valves in multiple ways, including valves in the same service for an individual customer, valves in the same service across all customers, and the overall performance of the valve in service. Comparisons such as these will provide valuable insight as to how specific valve performance compares to industry-wide usage. This should lead to improved performance by allowing the shipper to be educated on the valve's proper techniques and operating practices.

A final advantage for the use of a remanufacturing program is the overall reduction in cost through the improvement of valve design. As the OEM gathers more and more information regarding valve performance, critical areas of that performance will help the OEM make noteworthy improvements in the valve's design, materials of construction, operation, etc. As the database with the individual valve's performance history is updated with new information, wear patterns, material strengths and weaknesses, and potential upgrades to the valve based on commonly seen issues will emerge.

Specifically, Midland's Valve Remanufacturing & Repair Program consists of five stages with a total of 13 process steps:

- **Valve Return**
 - A Return Material Authorization (RMA) is issued by Midland
 - Valve is returned to Midland
- **Inspection & Evaluation**
 - Serial numbers are logged and service time and returned condition are noted
 - Valve is disassembled and cleaned
 - Valve is inspected and evaluated per Midland operation and performance criteria
 - Valve condition is recorded by valve serial number
- **Remanufacturing & General Repair**
 - All soft goods (O-rings, gaskets, seals) are replaced
 - All metal components are cleaned and, if necessary, re-machining is performed until the valve meets Midland OEM standards
- **Reassembly & Test**
 - Valve is reassembled and tested
- **Data Archiving, Warranty Renewal & Shipping**

- Data is added to the valve's historical record
- New repair tags are applied
- New warranty is created
- Remanufactured valve is returned to the owner

During the actual remanufacturing process, an experienced and highly trained Midland technician disassembles the valve piece-by-piece, examining and classifying the work that will be needed to return it to like-new condition. After the valves are restored to their original condition, they are thoroughly tested to ensure that they match or even exceed required performance levels – with the entire remanufacturing process performed and the valve returned to the owner in five days or less. Finally, Midland's Valve Remanufacturing & Repair Program can offer an added level of convenience as shippers can request to have Midland maintain an inventory of their valves to help ensure instant availability of remanufactured product with storage of these inventoried valves at either Midland's facility or the site of the shipper.

Conclusion

So, why is a Valve Remanufacturing & Repair Program such as Midland's worthwhile for railcar owners to use with their fleet? Simply put, the strengths of the program deliver many benefits. Based on the program's extensive nature, the remanufactured valve will be both physically better than a rebuilt valve and help provide valuable operational information that can result in upgraded quality for future valves.

The railcar owner will also benefit from the comparative data analysis in a variety of ways. This can help educate the customer as to the best options going forward for the use of the particular valve with a particular commodity. A comprehensive remanufacturing program, such as Midland's, is also going to provide long-term cost savings for customers by teaching them how to better manage and maintain their railcar valves, improve usage practices and determine the best type of valve for the safe and efficient transfer of their raw materials or finished commodities. All of this is packaged with a one-year remanufacturing warranty that is equivalent in value to one that is provided with a new valve, at a much lower price than a new valve.

For more information on Midland and the benefits its Valve Remanufacturing & Repair Program can provide your railcar fleet, please visit opwglobal.com/midland.

About The Author

[Name] is a [Title] for Midland Manufacturing, Skokie, IL, and can be reached at [Email] or [Phone Number]. Midland is delivering what's next through innovations designed to enhance safety, reliability, efficiency and business performance for the railcar industry. Midland specializes in products used on general purpose and pressure rail tank cars, chemical cargo tanks and ISO containers for the safe handling of toxic materials, chemicals and food products; bottom and top loading/unloading valves, pressure relief valves, level gage devices and monitoring equipment. Midland 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 Midland is delivering what's next in the railcar industry, visit opwglobal.com/midland.