

# Jamesbury® Provides 7 Ways to Lower Your Total Cost of Valve Ownership

Metso North America









# 7 Ways to Lower Your Total Cost of Valve Ownership

The concept of total cost of ownership (TCO) certainly isn't new. Experts have traced its origins back to 1929 when the American Railway Engineering Association introduced the concept in their official manual. It noted that "in the event there is a surplus of power then the total cost of ownership should be multiplied by the ratio of the cost of repairs to the total."

Over the years, the concept has evolved to become a valuable tool to help process industry buyers and purchase influencers make more informed purchase decisions. Rather than just looking at the purchase price of equipment, TCO looks at the complete cost of a product over its entire life cycle. It adds to the initial purchase price all of the other costs expected to be incurred, such as service and spare parts.

Of course, the initial purchase price cannot be ignored when capital procurement budgets are considered, but TCO is a valuable tool when looking at the long-term impacts of purchasing one valve option or valve supplier over another. The cost differences can be dramatic when all cost factors are considered. So then, what are some of the ways you can minimize your total cost of valve ownership? What are the things to look at? Below are seven things we think you should consider:

# 1. Start by specifying the right valve for the application

Perhaps this is an obvious point, but we often come across valves that have been misapplied in one way or another. And the cost impact can be dramatic. For example, we recently installed a digital valve controller on a customer's existing control valve and discovered, through diagnostics, that the valve was consistently 5-10% from full opening. This meant that the specified accuracy of the control valve had been compromised. This led us to recommend installation of a smaller, more precise control valve that ultimately helped the customer avoid wasting .43 tons of chemicals per day. The savings, even factoring the cost of the new valve purchase, totaled \$48,000 per year according to the project engineer. Another example is the specification of highperformance butterfly valves instead of gate valves. Historically, gate valves have been the popular choice but almost always cost much more over time than high-performance butterfly valves that offer lower installation costs, lower maintenance costs, more uptime, and lower costs of automation. The big picture difference can be dramatic.

Specifying the right valve is simply a function of understanding your process parameters and then applying knowledge of valve characteristics. It also makes sense to work with a supplier who has experience with applications like yours. And make sure they have access to expert tools, such as valve sizing and selection software, to help you take the uncertainty out of the selection process.

## 2. Select the right seat material

Valve leakage is a maintenance headache, a waste of money and, in many cases, a safety risk. Selecting the right valve seat material can minimize seal performance issues and instantly lower your overall costs. For example, new valve sealing technologies that rely on advanced materials and complementary seat geometries have been proven to extend the range of standard seat designs into higher temperature ranges while also reducing valve ownership costs. For one particular customer, Metso was able to replace previously specified Peek® seats with its innovative Xtreme® seats. Because of its extended performance range, *Xtreme* seats were able to improve the cycle life of existing valves; allow for the specification of more economical high-performance butterfly valves and ball valves in a wider range of applications; permit the use of smaller, less costly actuators; and help the customer consolidate and reduce his valve seat inventory.

Learn your options and be willing to consider new alternatives.



4000 Series



9000 Series



830L



**COMPARISON TEST:** 1" Jamesbury<sup>®</sup> 4000 Series Valve with *Xtreme* seating material vs. the same valve with filled PTFE seating material

**TEST MEDIA:** 240 psi saturated steam (400°F)

### RESULTS AFTER 11,800 CYCLES

Zero leakage detected with *Xtreme* sea

Leakage detected with filled PTFE seats

RESULTS AFTER 20,605 CYCLES
(240 psi nitrogen test)
0.03 SCFH with *Xtreme* seat
60 SCFH with <u>filled PTFE</u> seat

#### *Xtreme* Cost Savings Example: 52% Savings

APPLICATION: 2" ANSI Class 300 Flanged-End Ball Valves for 350# steam or 500°F heat transfer fluid

Cost for a <i>Jamesbury</i> Series 9000 Valve Utilizing PEEK Seating Material		Cost for a <i>Jamesbury</i> Series 9000 Valve Utilizing <i>Xtreme</i> Seating Material	
Valve model 93001122HBLGG1		Valve model 9300312236XTZ1	
list price:	\$ 1,197	list price:	\$811
Linkage kit (LK 1902) price:	\$ 389	Linkage kit (LK 1593) price:	\$138
Actuator (VPVL600 SR6) price:	\$2,110	Actuator (VPVL400SR6) price:	\$816
Total Cost	\$3,696	Total Cost	\$1,765

### *Xtreme* Cost Savings Example: 61% Savings

APPLICATION: 6" ANSI Class 300 Butterfly Valve for on/off 350# steam service

Cost for a Typical ANSI 300 Lugged Body Metal-Seated Butterfly Valve With Manual		Cost for a <i>Jamesbury</i> Series 830L Valve utilizing <i>Xtreme</i> seating material	
Gear Operator		Valve model 830L	
Valve list price:	\$4,669	11 22HBXZ list price:	\$1,661
Linkage kit price:	\$200	Linkage kit (LK 1722) price:	\$120
Manual gear price:	\$271	Actuator (M7/Q) price:	\$239
Total Cost	\$5,140	Total Cost	\$2,020



# 3. Investigate the real quality of the valves you're buying

We live in a world of global sourcing where valves are often manufactured in faraway places. As a result, the integrity of raw materials and castings has become an increasing problem. What you should know is that just because a manufacturer claims conformance to standards certificates doesn't prove they have an adequate solution for you. The problem with the standards is that they only outline minimum requirements. Tighter limits and more stringent quality control are required in order to optimize performance and keep your costs low. Even simple things such as material chemistry, or how valve bodies are loaded in heat treatment furnaces during the manufacturing process, can impact valve casting quality and ultimately your results.

For example, valves with porosity problems can often escape detection. But porosity is a problem that can be prevented through the implementation of specific, strict QC and manufacturing practices. Lack of such procedures can lead to valves that theoretically meet standards, but cause significant problems later in your process. To protect yourself, ask your valve supplier to detail the steps they take to eliminate casting quality issues.

# 4. Consider a single resource for your valve package purchases

You may have already limited your valve purchasing to a small number of vendors. But are they providing you with fully-integrated package solutions from a single valve manufacturer? Certainly, dealing with a single source of supply is important for convenience and cost savings, but buying your valve packages utilizing components from a single valve manufacturer can also result in savings.

Valve packages often perform more reliably because their components are designed and engineered to work together. Parts and materials have also been manufactured to the same stringent quality standards using best practices and the latest technologies. This can help mitigate your risk and cut down significantly on your initial investment, which, of course, is one of the keys to minimizing total cost of ownership and maximizing ROI.



# 5. Keep up with required maintenance

Valve ownership cost reduction doesn't begin and end with hardware. Also important is your understanding of specific application demands and what it takes to minimize, predict and, better yet, prevent downtime. First, it's important to create routines for checking the performance of specific valves based on their known life cycles – and then keep track of data in historical databases in order to analyze trends and performance behaviors. Much of this can be automated. Valve networking solutions allow for systematic, remote monitoring of on/off valves, while digital valve controllers enable advanced diagnostics and predictive maintenance for control valves.

Pre-shutdown valve audits can also help identify where problems are likely to occur and what contingencies are required to address them. These strategies can also help you extend maintenance intervals. We find that valve owners sometimes schedule shutdowns earlier than they really have to. With the right data, you can pinpoint the exact timing for maintenance and possibly extend runtime. The key is to utilize all of the tools you have at your disposal to pinpoint potential problems before they happen.

## 6. Optimize spare part inventories

Ask your supplier to help you perform a "criticality analysis" of your valve inventories. Based on equipment ratings, they can help you develop an inventory strategy aimed at reducing redundant or unnecessary inventories while optimizing the impact of the remaining stock. This will ensure that the most critical components are readily available when you need them. Critical assets (new or refurbished replacement valve assemblies) should be made ready so that downtime resulting from failure or damage will be minimized through quick replacement. For less critical spare parts, you can request that your valve supplier maintain inventories at their local service center for purchase when you need them. This will lower your required inventory investment.

## 7. Pick the right partner

The right valve OEM partner can help you make choices that will optimize your process performance and continuously drive down costs. Metso can be that partner.

**Check out the real life examples below:** Over \$484,000 in documented savings over 2 years by one customer. Savings were realized as a result of:

### Replacement of competitive valve products

### Service solutions

- Metso resized and replaced several mis-specified competitive products.
- Metso replaced a high-cost competitive valve with a better-performing, lower-cost solution.
- Metso replaced a competitive valve that had required repairs every three months with a Metso valve that hasn't required a repair in over 12 months.
- Metso installed a control valve that reduced process variability and provided better process control.
- Metso replaced competitive analog valve positioners with new intelligent valve positioners.
- Metso replaced several other
   low-performing competitive valves.

- Metso implemented a service agreement that allowed for significantly faster valve repair than normal.
- Metso diagnostic services identified a potential issue before it caused an unscheduled process shutdown.
- Metso uncovered additional savings in valve maintenance costs.
- Metso audits helped eliminate dead stock inventory items.

### Project pricing advantages

Metso project pricing helped reduce acquisition costs.



### Over \$455,000 in documented annual savings by another customer.

Savings were realized from reduced materials and labor repair costs for 22 valves compared with a competitor's solutions. The competitor's valves had to be repaired every 4 years while the Metso valves were operating maintenance-free for 7 years.

Naturally, we believe Metso offers you the

best combination of products and support to meet your process requirements and low cost demands. Our *Jamesbury* valve solutions have been proven in thousands of applications worldwide and are readily available from our network of expert distributors located across North America.

	Metso	Competitor's Valve
Total number of 14" valves	6	6
Years before repairs are required	7	4
Total annual cost	\$44,776	\$138,757
Total number of 24" valves	8	8
Years before repairs are required	7	4
Total annual cost	\$86,776	\$246,571
Total number of 30" valves	8	8
Years before repairs are required	7	4
Total annual cost	\$131,102	\$332,857
Total annual costs	\$262,654	\$718,185

Total Metso savings: \$455,531

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