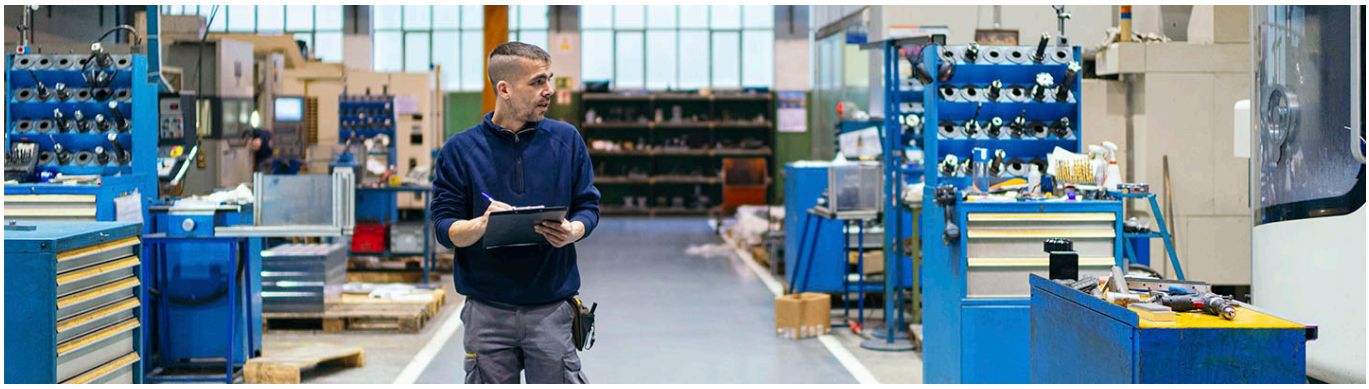

Metalworking

Total Cost of Ownership: Why it Matters More Than Ever in Metalworking and Machining

Kellie Escoto | Jul 29, 2025

You've probably heard the phrase, "buy once, cry once."

The idea is simple: Investing in a high-quality, higher-cost item up front can end up saving you money in the long run because it will perform better, last longer and avoid increased scrap rates, production errors and other implementation challenges that may arise. Conversely, a low-cost solution that causes frequent tool changes, inconsistent quality or excess scrap can quickly erode any initial savings.

That's why smart purchasing in a machine shop goes far beyond the sticker price, especially in light of today's volatile economic environment. Unpredictable material costs, shifting tariffs, labor shortages and ongoing supply chain disruptions make it more important than ever to weigh long-term value over short-term savings.

> **"I encourage companies to zoom out and look at the total cost over a 12-month period."**
> Adam Rice
> Castrol

Manufacturing facilities that evaluate the total cost of ownership of tools and other equipment to understand their long-term value are better positioned to reduce waste, stabilize operations and stay competitive, says Mathew Evans, vice president of workholding at 5th Axis Inc.

"Every purchase decision comes with hidden time and labor costs that you don't always anticipate until you're fully into a project," he says. "Once a new system is implemented and everyone's involved, you realize the impact on the organization is much greater than you initially imagined, which is why it's worth taking a little extra time to consider whether a purchase will help you reach your long-term goals and fit into your overall strategy."

Patrick Sullivan, national account manager at Mitutoyo America Corporation, says total cost of ownership, or TCO, is top of mind when the measurement equipment company is developing new products.

"If we put out poor-quality tools and customers have a bad experience, then they won't come back to

us. We take that responsibility very seriously," he says.

What Does Total Cost of Ownership Mean?

When buying a product, the first thing many business owners pay attention to is the purchase price. However, this is just one aspect of the total cost of ownership of that product.

"It's about zooming out to get a big picture on not just the line-item purchase, but everything that contributes to the cost of an item," says Adam Rice, an industrial application engineer for Castrol. "It's the cost of maintenance, fluids, downtime and more—all of the ancillary pieces that get tied into value."

In short, TCO considers all potential financial aspects of purchasing, owning and operating an asset, including:

- **Acquisition:** The costs associated with purchasing the product, including the initial purchase price, delivery, installation and setup.
- **Operation:** This includes whatever it takes to operate a product or machine, from energy costs to facility overhead.
- **Labor:** From procurement and financial team members to maintenance workers and engineers, every employee who is involved with the purchase, operation and maintenance of a product brings a labor cost, which adds to the true cost.
- **Maintenance:** The cost of maintaining and repairing equipment can significantly increase the TCO. This can include anything from lubricating fluids to replacement parts.
- **Disposal:** Costs are incurred when a machine or tool is decommissioned, removed or discarded. This includes not only the physical act of removing the equipment but also meeting legal, environmental and safety requirements.

TCO also includes unexpected costs such as compatibility issues that may arise over the lifetime of a product or system, according to Evans. "We've seen many cases where companies choose a system based on price or features, only to face issues like incompatibility or lack of support months later, sometimes forcing them to start over from scratch," he says.

Rice says understanding the total cost of ownership is critical to running a cost-efficient and profitable business. "Getting into the details on what it takes to maintain and care for your equipment is important," he says. "Just looking at invoices is a very short-sighted goal; I encourage companies to zoom out and look at the total cost over a 12-month period." That, he says, is how businesses can analyze costs and find ways to spend more effectively.

Energy-efficient machinery, for example, might have a higher up-front price, but the ongoing operational costs are typically lower—machines can output results faster and incur fewer overhead costs.

Ask The Right Questions: 8 Total Cost of Ownership Questions for an MRO Supply Chain Expert

Tooling Costs and TCO

When it comes to purchasing metalworking tools, Evans says that selecting tools that are compatible with other brands offers significant advantages from a TCO perspective. When equipment is designed with open standards and universal compatibility, shops avoid the costly pitfalls of being locked into proprietary systems that may become obsolete or unsupported.

"We've been big proponents of more of an open-source universal system with our fixturing and

workholding," Evans says. This approach not only provides flexibility to mix and match the best solutions for each job, but it also reduces the risk and expense of having to replace entire systems if a single component fails or a vendor changes.

Evans adds that the company is constantly looking for ways to maximize efficiency—whether it's reducing setup times, running multiple parts at once or streamlining workflows—"because every day, costs keep rising."

To help simplify programming and decision-making, 5th Axis provides digital twins of all of their products. "We make them accurate to the product you're actually getting. That way, the same stuff you do with the physical product, you can do digitally," he says.

Learn More: Stop Looking for That 10-Cent Part: Calculate Your True Shop Rate

Smart Fluid Management

Metalworking businesses often realize that a lower-cost coolant *isn't always better for your bottom line,* Rice says. When he helped one machine shop analyze their coolant costs, they found that their inexpensive fluid was actually hurting their bottom line. "They were experiencing a lot of issues with their equipment. They were cleaning out sumps every six months, there was a lot of product carryout, and they had to change parts pretty often," he says.

When the company switched to a high-performing Castrol coolant with a higher cost, the savings were clear. "They only have to clean sumps once a year, they've reduced costs on labor and parts, and the overall cleanliness of the facility has improved," he says. "Even though they pay more for the coolant, they ended up saving $16,000 per year."

Rice offers another example where a high-priced purchase resulted in significant costs savings over time: "Castrol offers fluid monitoring equipment that provides real-time feedback based on pre-set parameters so you're always aware of what's happening in your equipment. The hardware costs $30,000, so it's a high up-front cost. We installed it on a customer's gear oil system and within the first year and a half, it detected seven different water contamination events. We did an analysis with the owner and determined that the cost of each event would have been $100,000 if the equipment hadn't identified the issue early, so they saved $700,000 in repairs. That really came down to the customer trusting in us and the cost savings we could provide."

Evaluating TCO for Measurement Tools

When it comes to measurement equipment, understanding the amount of research and development that goes into the manufacturing of a product is an important aspect of TCO, Sullivan says.

"What's going into the cost of our product is the constant R&D, and we're developing better tools all the time," he says. "We've put a lot into building trust and a reputation for accuracy, because even very small inaccuracies can add up in the manufacturing process."

Sullivan says the company has heard of longevity tests where after five years of making repeated measurements, their tools are still in their factory spec. "That's often not the case with cheaper tools, and when a measurement tool isn't in factory spec, you end up getting bad measurements and bad parts because you're relying on a tool that's not reliable."

Recommended Reading: Measuring the True Cost of Cut-Off Wheels

A TCO Analysis Involves Many Stakeholders

Rice says that step one of a TCO analysis is ensuring that all key stakeholders are involved. “We need to hear from value stream managers, maintenance, engineering, environmental services—each of them adds critical details to the conversation.”

Evans agrees: “When we consider a new purchase, we bring together programming, machining and executive teams to analyze how much time and effort it will save across departments. Doing the math up front helps us make smarter decisions.”

Once you understand total cost of ownership, you can determine opportunities for cost savings. Rice recommends getting suppliers involved in this step. “Ask for case studies and examples of where they’ve added real cost savings for customers,” he says.

Has doing a TCO analysis convinced you that a higher-priced purchase will end up saving you money in the long run? Tell us about it in the comments below.