JARVIS CUTTING TOOLS CAPABILITIES

Hidden Savings in Modern Manufacturing

Five lessons from companies that found millions in hidden savings through simple, previously-overlooked changes to their manufacturing process.

Jarvis CUTTING TOOLS

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INTRODUCTION

Are there new ways to save money?

At Jarvis Cutting Tools, we work side-by-side with some of the largest manufacturing companies in the world. Our engineers travel to manufacturing facilities around the world, working with machine operators, managers, and engineering teams. We then create exclusively manufactured taps and cutting tools to meet the unique needs of each of our customers. Our work has taught us a few things about how leading manufacturing firms find savings in their facilities. Often, it comes from small changes by a leader who was willing to experiment with new methods in their facility—someone just like you. In the following pages, we're going to share five of our top insights with you.

The Challenge?

Opportunities to generate new savings in your manufacturing process may be completely hidden to you.

The Opportunity?

Testing small changes in your facility could add millions to your bottom line.

LESS IS MORE.

Spending less can cost far more in the long run.

Securing an engine for deep-space travel.

We recently began working with a company in the aerospace industry. When our engineer visited their facility, a manager showed him the process they were using to tap holes in titanium. The company was using an expensive tap from one of our competitors (Typical cost: $145 per tap). The threads created by this process were critical: they were the primary mechanism holding the engine in place on the rocket they were building.

While our engineer watched, a technician tapped eight holes around the perimeter of the engine compartment. The process took 22 minutes. The technician then removed the tap and tossed it in the "used" pile. After just eight holes, the tap no longer cut holes that met spec. It had to be replaced.

> "The results? Instead of 8 holes, the Jarvis tap produced 50 holes before having to be replaced."

From 8 holes per tap to 50 holes per tap.

Our engineer knew they could do better. The company agreed to test an exclusive designed Jarvis tap, one built just for this application. A few weeks later, Jarvis delivered the new taps, and the company did a small batch of parts in a test run. The results? Instead of 8 holes, the Jarvis tap produced 50 holes before it needed to be replaced.

In addition, the technician found he could run the Jarvis tap continuously. With the previous tap, he'd been forced to stop and start the tapping ("peck-tapping") to prevent the tool from breaking off in the hole. He also found the Jarvis tap could operate at a much higher RPM.

5X THE HOLES
4MINUTE CYCLE

The Results?

They got five times as many holes per tap, and they slashed their cycle time for this process from 22 minutes to just 4 minutes.

HIDDEN SAVINGS BY THE NUMBERS.

Let's assume the exclusive designed Jarvis tap in this example costs $200 per tap. Compared to the off-the-shelf $100 tap, the Jarvis tap appears to be twice as expensive.

That is... until you calculate the cost of each tap per hole:

Cost of each Tap per Hole:

ORIGINAL TAP:
$145 / 8 holes
= $18.13 per hole

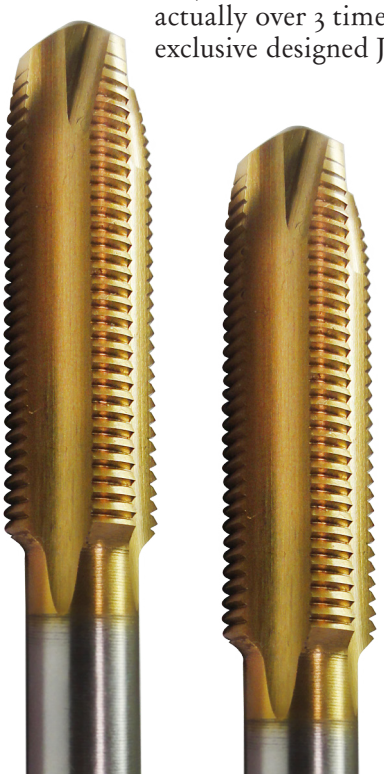
JARVIS TAP:
$220 / 50 holes
= $4.40 per hole

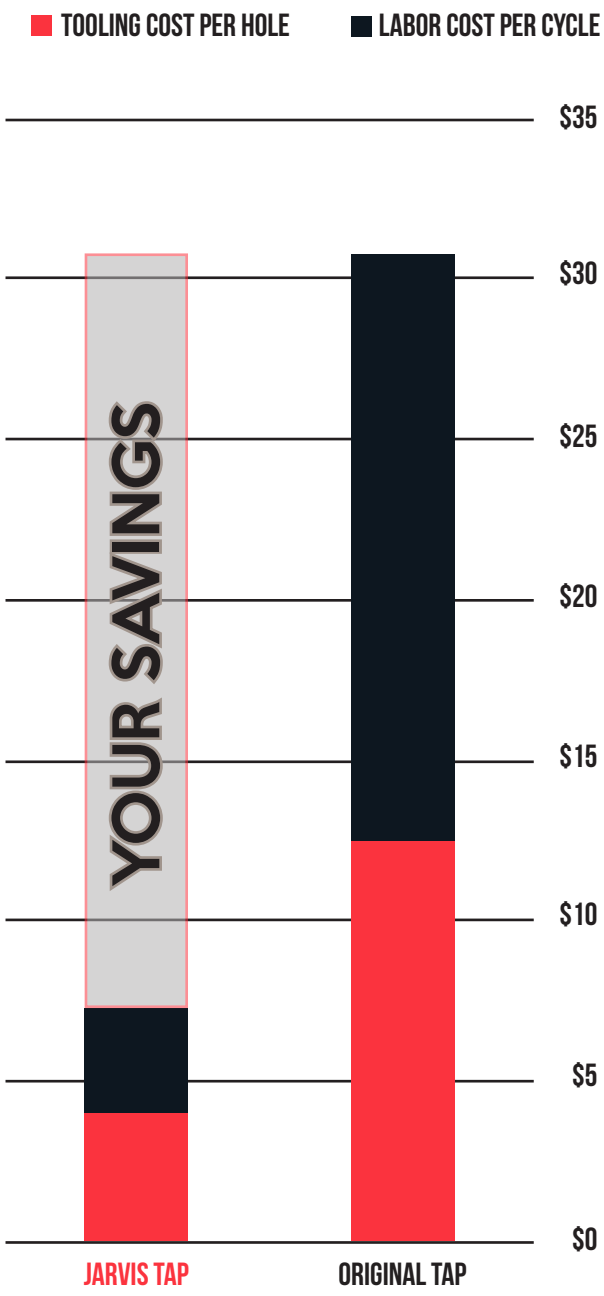
Productivity difference from each tap per cycle:

ORIGINAL TAP:
$50 / hour labor cost x 22 minutes
= $18.33 Labor Cost

JARVIS TAP:
$50 / labor cost x 4 minutes
= $3.33 Labor Cost

As you can see, the off-the-shelf tap is actually over 3 times as expensive as the exclusive designed Jarvis Tap.





The Takeaway.

Testing tooling at different price points can reveal significant savings opportunities in your process.

Cost Per Lug Nut.

Unlocking a Quarter Million Dollars over 5 Years.

This story of hidden savings comes from a company that produces 30 million lug nuts per year in a facility in the U.S. Midwest. The lug nuts are specialized—custom-designed for large over-the-road trucks you might see on U.S. highways. The company runs three shifts—two machines with four spindles running all the time.

As you might expect, the facility goes through a lot of tooling with that volume of lug nuts every year.

The Hidden Opportunity.

Making lug nuts requires a lot of taps. Previously, the company was using an Aisan provider for their taps. They ordered tooling from a catalog—then waited for the tooling to be shipped to the facility. Using this "off the shelf" tooling, the company was getting about 10,000 "cycles" per tap—meaning each tap could thread 10,000 lug nuts before having to be replaced. They were happy with 10,000 cycles per tap. What they didn't realize? A simple change could considerably boost profit for this process.

> "The Jarvis taps were getting 17,000 cycles per tap. That's a 70% increase in tool performance."

The Experiment.

The company's revelation began with a test. A Jarvis engineer suggested a risk-free experiment to see if a new tap design could help the company produce more lug nuts per tap. The company wasn't actively looking to change suppliers, but Jarvis offered to manufacture the new taps free of charge for the test, so management agreed. In return, the company agreed to track performance and document the results they saw during the experiment.

The Results.

Jarvis engineers manufactured and delivered two new exclusive designs to the facility within a few weeks, and the company performed the experiment as agreed. The result? The Jarvis taps were getting 17,000 cycles per tap. That's a 70% increase in tool performance over their previous supplier.

HIDDEN SAVINGS BY THE NUMBERS.

70% INCREASE IN TOOL PERFORMACE

A 70% increase in tool performance was great, but it looked even better when Jarvis sat down with the company to go over their cost numbers. Both Jarvis and the "off the shelf" supplier sold their taps at roughly $45/tap.

By the numbers, the experiment showed:

ORIGINAL TAP:
$45 / 10,000 Lug Nuts
= $0.0045 per Lug Nut

JARVIS TAP:
$45 / 17,000 Lug Nuts
= $0.0026 per Lug Nut

ON A YEARLY BASIS, THIS IS WHAT YOU COULD SAVE USING JARVIS TAPS.

ORIGINAL TAP:
$0.0045 x 30 Million Lug Nuts
= $135,000

JARVIS TAP:
$0.0026 x 30 Million Lug Nuts
= $79,412

In total, Jarvis helped this company find:

HIDDEN SAVINGS = $55,500 PER YEAR

That's from switching the tooling on two machines in one corner of a much larger facility. The company's management was thrilled. They and Jarvis are now working to create experiments for other machines in the facility.

The Takeaway.

Over the next five years, we expect this company to add over a quarter million dollars in savings directly to their bottom line. All because it ran a risk-free experiment with exclusively designed taps provided by Jarvis.

FACE TO FACE.

The vaule of in-person support.

Supporint tapping machines in Mexico.

One of our clients operates a major manufacturing plant in Mexico, not far from the U.S. border. Among other things, the facility manufactures millions of fasteners every year. The fasteners are stamped and tapped in custom-built stations. When we started working with them, they told us they were focused on improving the output of the machines.

Like all manufacturers, they wanted a higher quality result with a lower cycle time. They also wanted to minimize the time the line stood idle while operators changed tooling. For that reason, they were looking for tooling that lasted longer and could be run at faster speeds.

Frustrated by a lack of Suppport.

Managers and engineers at the facility had worked with other suppliers, but they were frustrated by the process. Because of the facility's location in Mexico, other companies would ship products for testing, but few visited in-person to help with setup or testing.

They were ecstatic when one of our Jarvis engineers showed up with an interpreter from our office. We evaluated their equipment, recommended a new tap they could use to improve their cycle time, then set up several runs for them.

The Results.

Using a 10-32 size tap, they went from tapping 1,000 holes per tap to 3,000 holes per tap in A-286 sheet metal.

> "We evaluated their equipment, recommended a new tap they could use to improve their cycle time, then set up several runs for them."

HIDDEN SAVINGS BY THE NUMBERS.

This company's old taps cost roughly $10 each. The new Jarvis tap we designed for them cost around $15. Running the numbers, you can see the profit this uncovered for them:

ORIGINAL TAP:
Tap: $10
Holes: 1,000
$10 / 1,000 Holes
= $0.010 Cost Per Hole

JARVIS TAP:
Tap: $15
Holes: 3,000
$15 / 3,000 Holes
= $0.005 Cost Per Hole

If the facility taps 10 million fasteners a year, they'll see a savings of:

ORIGINAL TAP:
10,000,000 x $0.010 per hole
= $100,000

JARVIS TAP:
10,000,000 x $0.005 per hole
= $50,000

HIDDEN SAVINGS = $50,000 PER YEAR

That's fifty percent decrease in cost—from changing their supplier for one tap on one machine type in a much larger facility. It only happened after an engineer made an on-site visit to correctly diagnose the situation.

The Takeaway.

In-Person support can uncover profit opportunities you never would have found on your own.

A CHANGE WOULD DO YOU GOOD.

Vendors send shipments; Partners help you Innovate.

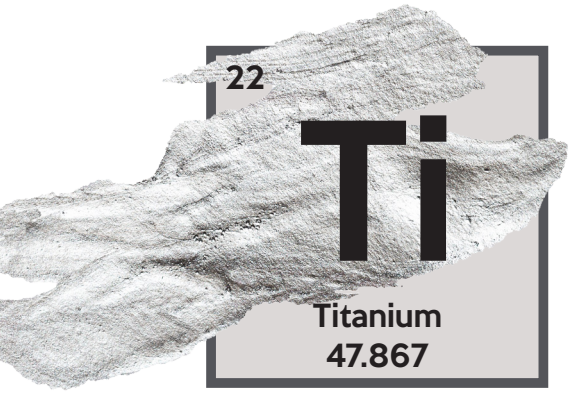
How a Tool Crib Manager got approval to try something new.

One of our California-based clients was working with very strict specifications for one of its manufacturing processes. Since the specifications called for a specific brand tap, the manager in charge of the process was extremely hesitant to try alternative tooling—even alternative tooling that met the exact same requirements as the specified brand of tap.

The tool crib manager—however—was frustrated by the company that produced and delivered the taps. Ordering new taps took 16 weeks. The taps also wore out quickly, and they sometimes broke during the tapping process.

Trying Something New.

One of our engineers talked with the tool crib manager and suggested a test batch with an exclusively manufactured tap from Jarvis. The tool crib manager agreed it would be good to test something new.A month later, our engineer returned with Jarvis taps they could test at their facility. For the next few months—however—the new taps sat on the manager's desk unused. They were busy, and it was easy to simply continue doing what they'd always been doing.



Innovation in a Block of Titanium.

One of our sales reps teamed up with our engineering team to show what a change in tooling could do.

On his next trip to California, our engineer picked up the taps that had been sitting on the tool crib manager's desk. He took them back to our headquarters, then worked with the manufacturing team to acquire a one-inch thick piece of plated titanium—the same material being used in the California plant. We tapped six holes in the titanium in our facility. On his next trip, our engineer brought the tap plus the titanium test piece with the six holes in it.

GAGING RESULTS.

The tool crib manager was surprised and impressed when he saw the test holes, but he also wanted to see if they met his specifications. In front of our engineer, he pulled out his set of gages and measured the holes on the spot. The result? Everything gaged perfectly to their specs. The next day, the company tested the Jarvis taps on their machines in place of the ones called for in their specifications.

Once again, the holes created by the Jarvis taps perfectly met specifications.

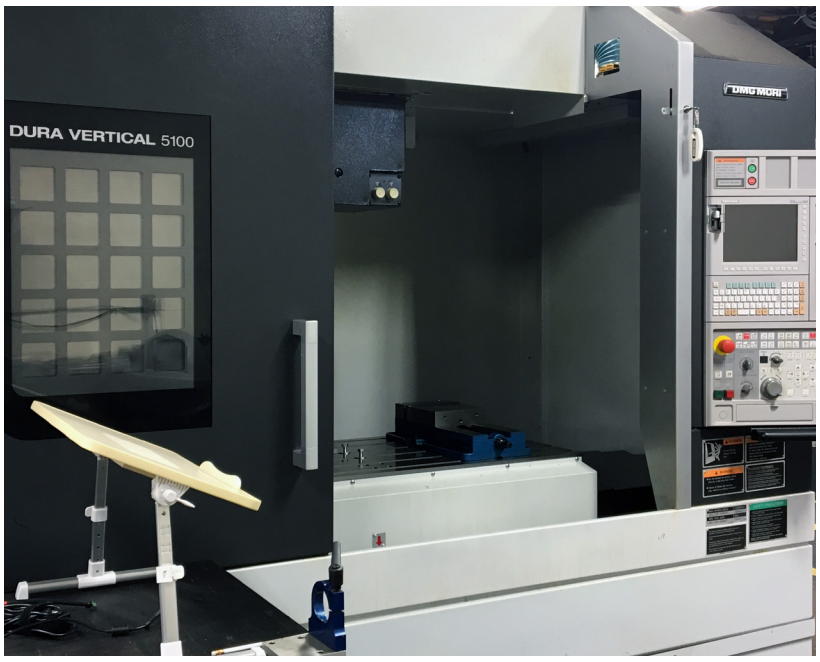
> "The result? Everything gaged perfectly to their specs. The next day, the company tested the Jarvis taps on their machines in place of the ones called for in their specifications."

The Payoff: Improved Costs Plus 60% Better Delivery Time.

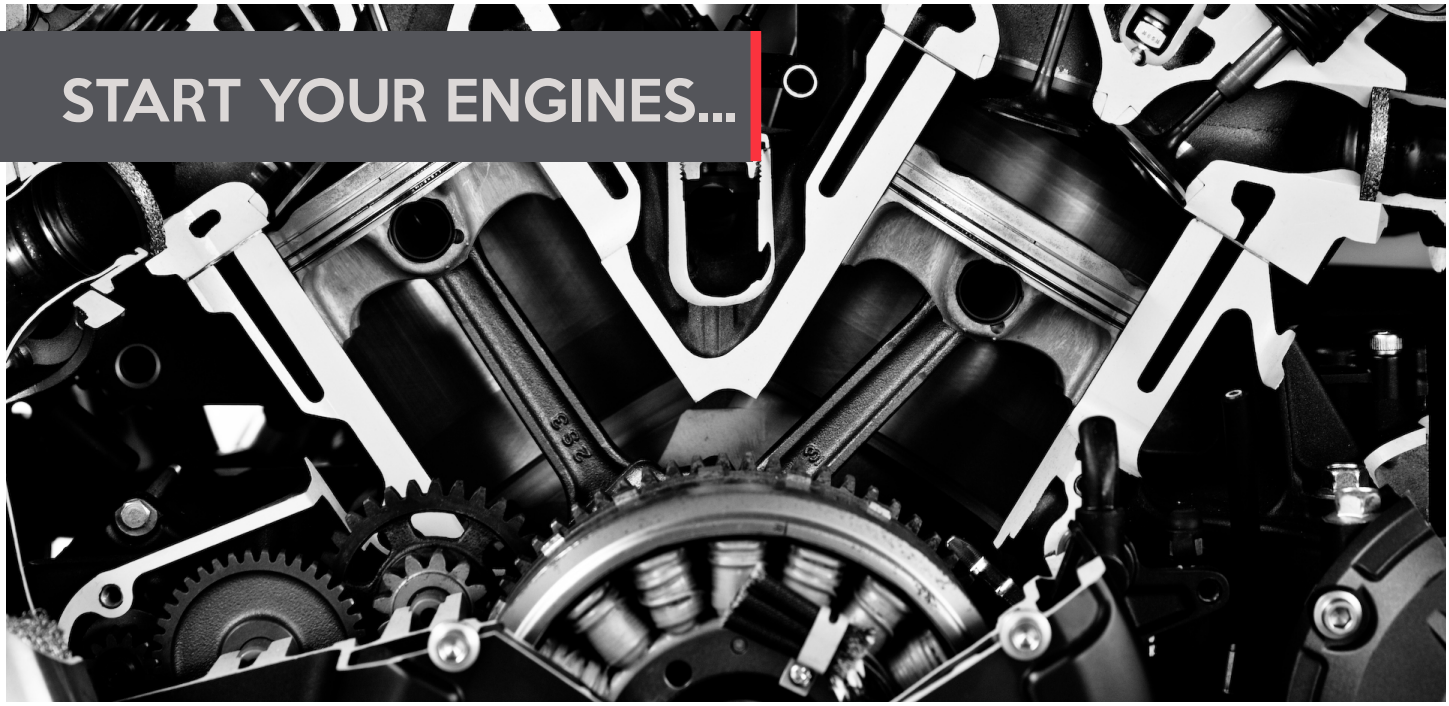
Because of this test piece, we now custom manufacture taps for this company's process. As with many of our clients, the switch has produced better results, with lower overall costs to complete the manufacturing process. In addition, we fulfill tooling orders in six weeks, instead of the 16 weeks it took their previous supplier.

The Takeaway.

The best business partners don't just ship parts through the mail; they help you innovate.



START YOUR ENGINES...



Expense, Uptime, and Labor.

No more climbing on the Engine.

What's the single biggest expense for almost any manufacturing facility? Labor.

Our final story of hidden savings tells the story of a major productivity boost that happened in manufacturing facility in the U.S. Midwest. The company manufactures large diesel engines—15-90 liters each—used for electrical power generation. The engines are used in locomotives, in tugboats, for backup generators at office centers, and in other industrial settings. The largest models stand 12 to 15 feet high, making them a unique manufacturing challenge.

The Hidden Opportunity.

The company had a nagging engineering problem with its 90-liter engine, one of its biggest models. There are over 50 holes drilled around the top of the engine block. Unfortunately, the drilling process was leaving iron chips in the holes before tapping.

Removing the iron chips had become a major chore for operators working on the engine. The iron chips tended to get wedged in the holes. The company tried several methods to blow the chips out of the holes, including one with a CNC machine, but nothing worked. To pass inspection, operators were being forced to climb to the top of the engine block. They'd either blow out the iron chips with an air hose, or pick the chips them out manually. What they didn't realize? An exclusive designed tap could completely remove the excess chips during the tapping process.

> "Jarvis engineers worked with the company's production team to create an exclusive tap design suitable for the engine block holes."

The Experiment.

Jarvis engineers worked with the company's production team to create an exclusive tap design suitable for the engine block holes. The taps were created with through the spindle coolant and a wide flute to remove the chips left behind by the drilling process. Jarvis designed the taps and provided them at no cost for the test.

HIDDEN SAVINGS BY THE NUMBERS.

The Results.

When the taps were delivered, the company ran the planned experiment on one of its large engine blocks. The chips from the drilling process were left in the holes prior to tapping. The result? The exclusively designed taps threaded the holes and completely removed the excess iron chips in the process.

All that remained were 50+ perfectly-threaded holes circling the top of the engine mount. By using the exclusively designed Jarvis taps, the production team no longer had to climb atop the 15-foot engine mount to manually remove iron chips. The taps removed the chips for them.

By the Numbers.

Financially, the new taps uncovered profit in three distinct ways:

HIDDEN SAVING #1: LOWER TOOLING EXPENSE	HIDDEN SAVING #2: NO SHUTDOWN OF THE LINE	HIDDEN SAVING #3: LOWER LABOR COSTS
You might expect exclusively designed tooling to be more expensive. But in this case, the catalog provider's taps were 25% more expensive than Jarvis' exclusively designed taps. Also, **the Jarvis taps lasted longer**. The competitor's taps lasted an average of 300 minutes. In testing, the exclusively designed **Jarvis taps lasted well over 500 minutes** on this application. **The lower cost and increased efficiency led to an almost 40% reduction in tooling costs** for the production team.	A shutdown of this manufacturing line would have cost the company thousands of dollars a minute. The company's previous tooling supplier required a minimum 16-week lead time. On several occasions, the company almost had to shut down the line because of lack of tooling. With the **new Jarvis taps, shutdown is no longer a major concern.** Jarvis' turnaround time is four weeks, which means the line is now far less likely to experience a shutdown due to lack of tooling.	By eliminating the manual work needed to remove chips from the drilling process, **the company dramatically improved cycle time** on the line. The wide-fluted taps meant the company could machine the engine blocks unattended—including overnight and on the weekends—providing another **dramatic improvement in total labor expense for the project.** In total, the company expects the new tooling will result in **well over a million in additional profit for the company over the next five years**, just on this one process.

The Takeaway.

When using Jarvis taps, you and your company will gain millions in savings, even in just one process. All because it ran a risk-free experiment with exclusively designed taps provided by Jarvis.

5-year projection = $1+ million savings

JARVIS CUTTING TOOLS
100 Jarvis Avenue. Rochester, NH 03868
603-332-9000 | www.jarviscuttingtools.com | info@jarviscuttingtools.com
MADE IN THE USA.