

Using the Correct Torsion Spring

# Small Components Can Make a Big Profitability Difference



It's not always the big, expensive parts that determine the failure or success of a product. It also can be the smallest components that can have an impact on performance and cost. Sometimes you need a change agent inside the company willing to take into consideration a new way of doing things.

That's exactly what happened with an OEM who uses torsion springs in components it supplies to the aerospace and automotive sectors.

An inexpensive design modification led to hundreds of thousands of dollars in future labor savings and improved speed-to-market. Here's how it happened.

## The "Before" Situation

MW Components inherited an existing design which caused individual torsion springs to become intertwined with each other during manufacturing and shipping. A larger-than-desired distance between the spring coils was responsible for the tangling that occurred during multiple stages of the manufacturing and supply chain. This included:

**Before MW's intervention, a total of 1.75 million springs were prone to tangling annually.**

**Zinc plating.** The springs are "barrel/tumble" plated, similarly to what happens to clothes in a dryer. The pitch between the coils caused the springs to intertwine. Working in harmony with the plating company, it was determined that in order to minimize the chance of that happening, smaller lots had to be plated, adding expense to the process.

**Detangling.** When springs are tangled, deformation can occur in the center of the spring cluster. An added step of detangling has to take place at this stage and unusable/damaged product has to be culled.

**Shipping.** Springs have to be boxed in smaller lots to minimize tangling during transport to the plater and the customer. (Vibration occurs as trailers travel over bumpy roads during shipping, causing the parts to become tangled again.) This adds to packaging labor and material expense.

## What are Torsion Springs?

Torsion springs are helical springs used to apply a torque or store rotational energy. The two most common types are single and double-bodied springs. Torsion springs are found in clothes pins, window shades, counterbalance mechanisms, ratchets, door handles, cup holders and various machine components.



## The “Before” Metrics

A total of 1.75 million springs were prone to tangling annually.


For several years, unwilling to consider a design modification to solve the problem, the OEM used a team of 11 workers to manually detangle the springs.

Each worker could detangle 3,000 per hour. With 1.75 million springs utilized per year, 583 labor hours were required annually to fix the problem. Assuming a \$20 per hour labor figure (including benefits, etc.), that results in \$11.6K of added annual expense, on top of the time lost performing this task.

### The “Before” Metrics

Number of springs prone to tangling annually = 1.75 million

 Workers needed to manually detangle the springs = 11

 Springs detangled per hour = 3,000

Annual labor hours: X 583

Labor per hour: \$20

**Added annual expense: \$11.6K**

## The MW Components Solution

Personnel changes meant that new decision makers were now in place. The door was now open for MW Components to come back to the company with its original cost-effective solution to the tangling problem.

If the company was willing to make a small tooling modification to the stamped metal components to which the springs are attached, then a closed-wound torsion spring without pitch could be used. The new spring’s structural attributes meant that they would no longer be susceptible to tangling. The extra process steps

**A \$500 tooling investment improved profitability by hundreds of thousands of dollars over the life of the product.**

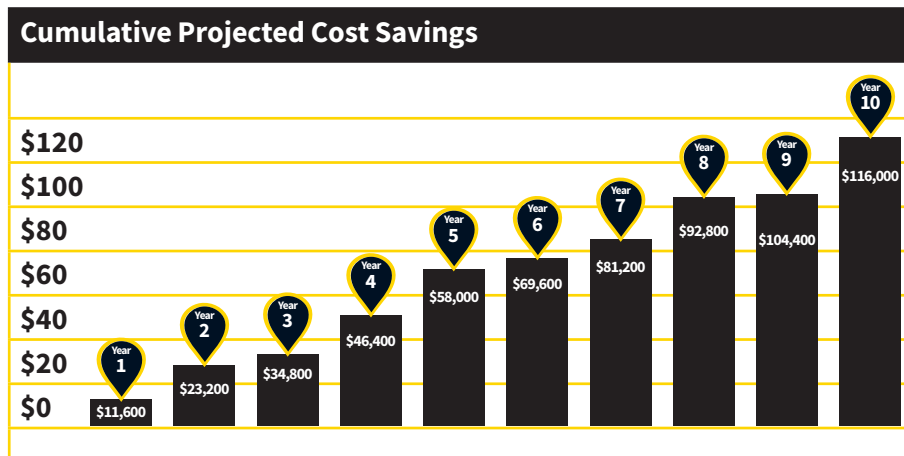
detangling at the plating stage and prior to assembly), plus packing in smaller boxes could be eliminated.



Closed-Wound Torsion Spring Solution

The tooling modification ended up costing approximately \$500, but yielded more than \$11.6K in annual cost savings. That figure, multiplied over many years of future production, will provide a benefit to the manufacturer into the hundreds of thousands of dollars. Additionally, by removing multiple steps in the process, speed-to-market also will be improved.

The innovative, value-added design solution provided by MW Components, enabled the customer to benefit from the redeployment of 11 workers and a reduction of overall costs.

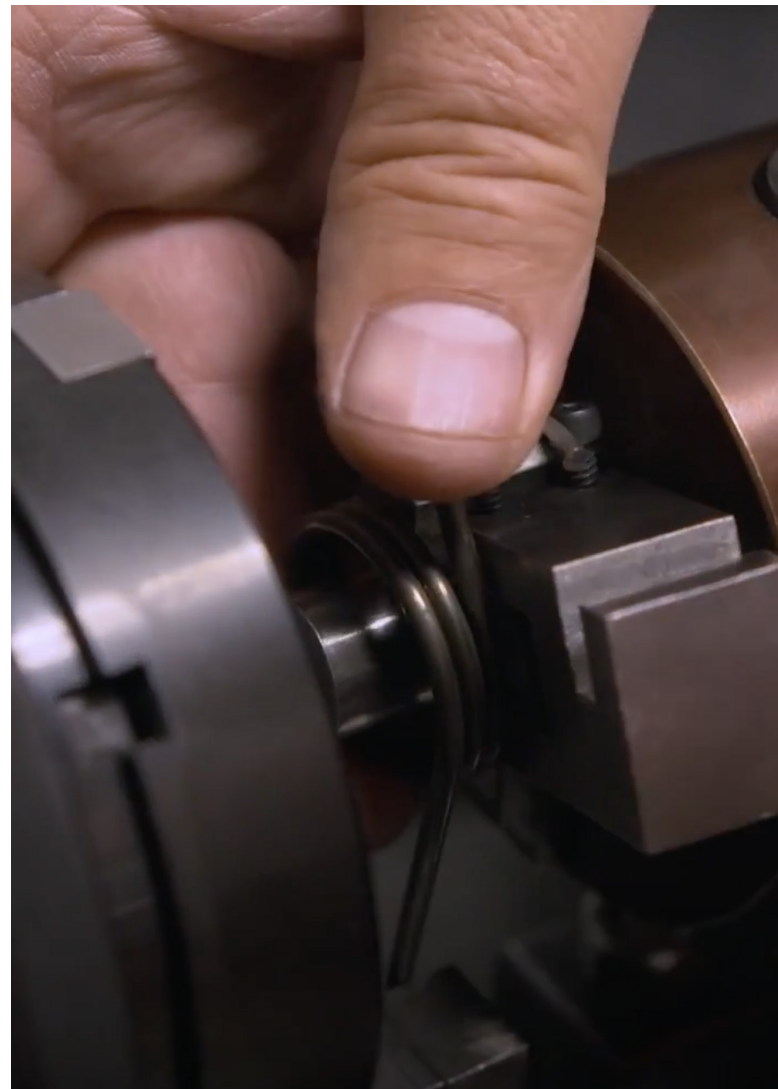


## The MW Components Spring Difference

MW Components has been producing springs for more than 70 years. The company prides itself in having extensive knowledge to help customers find the correct spring solution for their application. It does so via a combination of equipment/technology and expert professionals who have a long track record in providing solutions. It is frequently called upon to help an OEM reduce size, increase strength, provide springs that will help deliver specific product attributes, etc.

**“Although we provide a very low cost part, if the spring fails the whole part fails.”**

MW Components has made significant investment in the manufacturing facilities to give us the tools to bring state-of-the-art solutions to our customers. Equally as important as investment is the positive work environment we provide to our professional team members. A testament to that is our average employee tenure is 18 years. Our people accept challenges with open arms and are driven to deliver solutions that make our customer’s components perform consistently,” said Billy Hunsucker, general manager, MW Components. “Although we provide a very low cost part, if the spring fails the whole part fails. We do everything possible so that doesn’t happen.”



**MW Components**

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