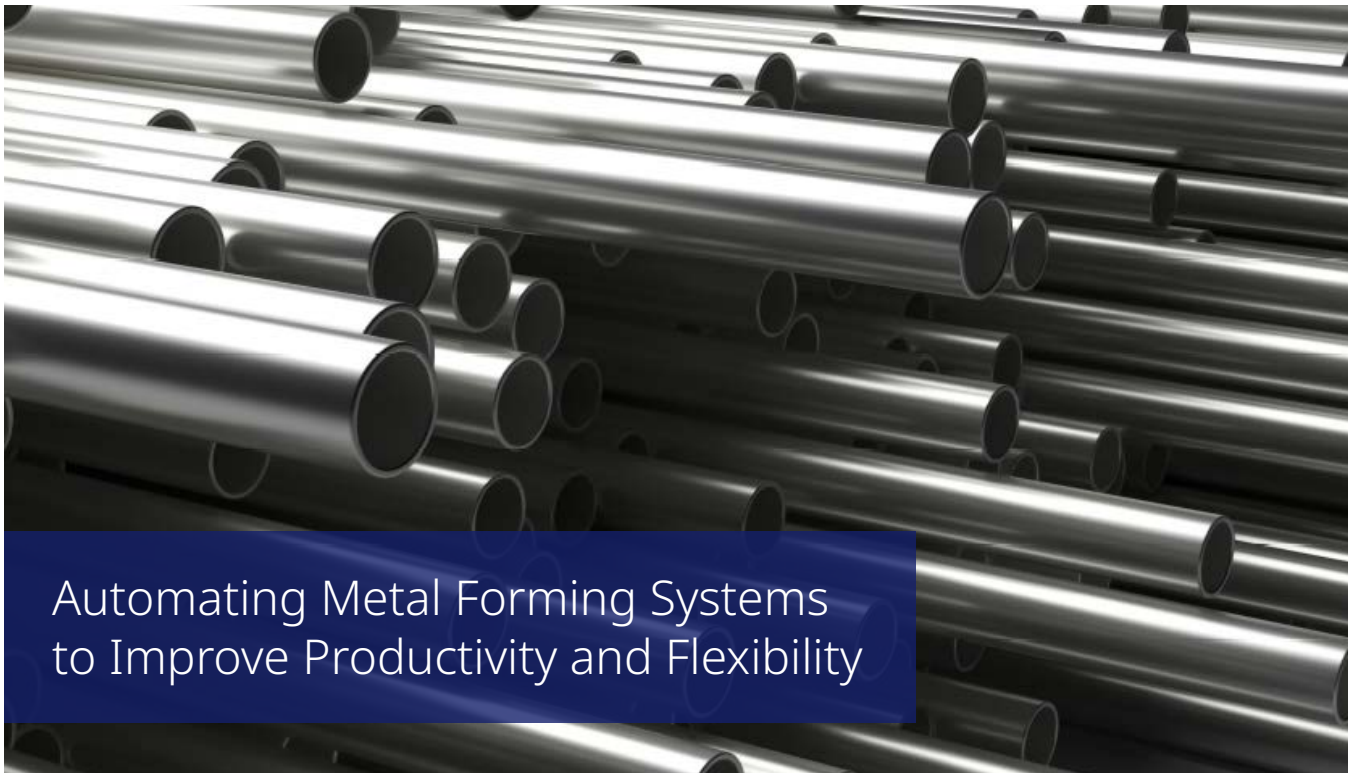
KOLLMORGEN
A REGAL REXNORD BRAND

SUCCESS STORY



Automating Metal Forming Systems to Improve Productivity and Flexibility

A leading machine builder in Italy supports more than 1,500 factories worldwide, providing manufacturing solutions for chimney pipes, air conditioning, automotive, medical and pharmaceutical applications. With growing demand for new pipe shapes and sizes, the company sought to position its machine as the preferred choice for metal-forming flexibility and productivity.

Challenge

The machine builder engaged Kollmorgen to collaborate on its new design, with a particular focus on the mechanism driving the spindle and positioning axes. The goal was to strongly differentiate the machine through enhanced acceleration, precision, productivity and the flexibility to enable highly customized and automated processes.

The original machine's performance was limited by conventional rotary motors, gearboxes and belts that needed frequent adjustments to accommodate the various pipe diameters and lengths. Resonant frequencies associated with the mechanism's belt tension degraded cut quality and required manual intervention, which increased production time and material waste.

The challenge was to eliminate these issues to improve precision and maximize the time the machine was producing parts, while also achieving greater flexibility to address the market demand for expanded pipe-forming capabilities.

> **"Cut quality has improved without the need for manual intervention to adjust spindle speed due to belt tension problems. Optimal cut speeds can be achieved based on material and part size."**
>
> —Angelo Trombetta
> Motion Solutions Consultant
> Kollmorgen Italia

Solution

Kollmorgen engineers suggested a direct drive approach to eliminate productivity and quality limitations due to the use of gears and belts, which cause system compliance issues that prevent quicker moves and reduce cut precision. Further collaborative engineering led to the choice of a KBM Series direct drive motor for incorporation into the machine's spindle. The frameless motor's large thru bore diameter provided a unique innovation opportunity by enabling an automatic centering capability to adjust quickly for tubes of different sizes.

Kollmorgen identified the optimal solution to minimize machine cut time. The design of the new machine makes it more flexible and compact, ensuring stable performance that remains constant over time, with no downgrade even through a high number of cycles. The solution enhances performance and adds design flexibility to accommodate the varied pipe diameters and lengths demanded in the customer's markets.

Results

A collaborative approach between Kollmorgen and the customer transformed the company's machine capabilities to deliver a higher level of performance, precision and accuracy.

- Dramatic improvements in precision, rigidity and acceleration have resulted in productivity increase of 20%.
- Improved cut quality has enabled a reduction in material waste.
- A more flexible machine design accommodates pipe diameters of 60 – 820 mm and lengths up to 1550 mm without time-consuming manual adjustments.
- Quick and reliable setup has minimized changeover time for new pipe sizes and allowed for automated setup using an optional robotic loader.

20%

increase in productivity

100%

reduction in manual adjustments for pipe diameter and range

About Kollmorgen

Kollmorgen, a Regal Rexnord Brand, has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

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