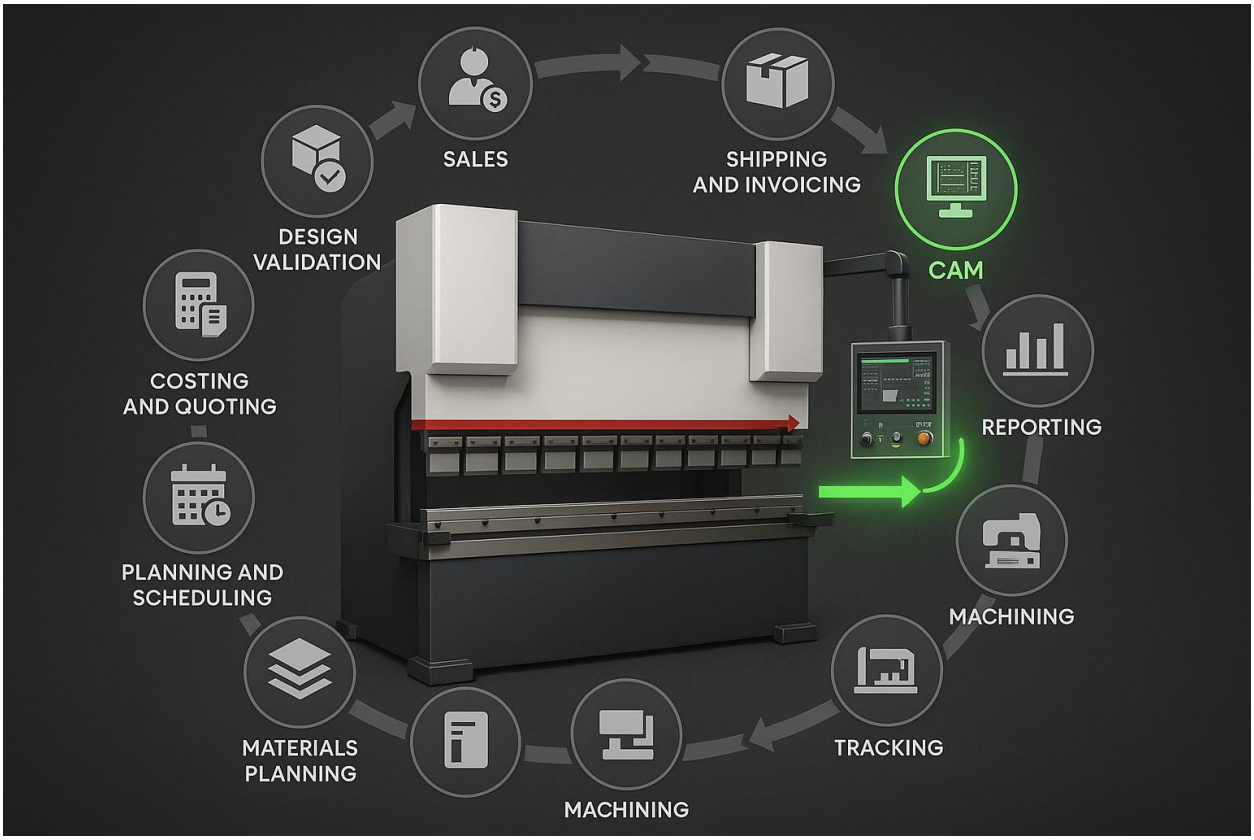
How One Aerospace Supplier Cut Setup Time by 80% Using AI-Driven CAM in Profile Bending

Faster Than Flight Prep: When AI Hits the Bending Floor

Setup time often goes unnoticed, but it affects daily productivity, especially when part designs change frequently. A Tier-2 aerospace supplier experienced this first-hand. Their team spent hours resetting machines with every new batch. After installing an advanced CAM solution, they reduced bending setup time significantly and gained better process control.

The Challenge: Complex Profiles, Tight Tolerances, Constant Changeovers



High Stakes in High-Precision Work

The company produced lightweight aluminum parts for aircraft interiors. Their orders came with a high variety of part geometries. Each job meant:

- Working with different profile sizes and cross-sections
- Switching materials often, like 6082-T6 and 7075-T6
- Manually adjusting bend parameters for each order
- Running multiple test bends before getting usable results

Setup delays and high scrap volumes affected output and delivery timelines.

Enter AI-Driven CAM: From Reactive to Predictive

Letting Software Learn From Every Bend

To reduce manual input and trial bending, the supplier turned to a CAM system that suggested bend parameters based on earlier jobs. This wasn't artificial intelligence in the broad sense. Instead, it used stored job history and alloy behavior to provide smarter defaults for the next run.

The software offered:

- Suggested bend sequences matched to previous part types
- Settings for common alloys and wall thicknesses
- Estimated springback values based on material and geometry
- Reduced reliance on manual calculation through pre-built toolpaths

Springback data came from stored records, not from sensors on the machine. Operators still reviewed and adjusted settings as needed.

What Changed on the Shop Floor

Setup Time Down. Productivity Up. Operators Happier.

Once the new system was in place, the team saw measurable improvements:

- Setup time dropped by 80% in this facility, from two hours to under thirty minutes
- Scrap volume fell by 60% in the first month
- Part consistency improved across shifts and operators
- Operators spent more time running parts, and less time adjusting settings
- Engineers shifted focus to refining programs instead of troubleshooting issues

Instead of replacing the team's experience, the system supported their work and helped standardize results across different jobs.

Behind the Technology: How AI in CAM Works

Smarter Toolpaths, Every Time

The system didn't "learn" on its own. Instead, engineers built up a useful database of job profiles and process settings. Over time, this helped them complete new jobs with fewer setup trials.

The software could:

- Suggest springback values for standard aluminum grades
- Recommend bend sequences that reduced distortion or twist
- Connect directly with CNC controls to transfer toolpaths
- Allow easy adjustment by engineers for custom profiles

This approach led to better first-pass results, even with changes in material type or wall thickness.

Lessons Learned and Key Takeaways

Not Just Plug-and-Play—But Close

The system worked well, but not instantly. It required accurate material specs, clean tool calibration data, and good recordkeeping. Training also mattered. Operators had to learn how to interpret software suggestions and make informed changes.

Payback was quick. Based on the reduction in setup time alone, the company recovered its costs in less than four months.

The Bigger Picture: Scaling Smart Bending Across the Supply Chain

AI That Grows With You

After the team saw the benefits on one line, they applied the same workflow to:

- Additional product families involving precision aluminum bending
- Vendors within the same supply chain facing similar changeover challenges
- New quoting processes, where CAM data helped estimate bend times more accurately

This broader approach gave them more control across different operations, helping them prepare jobs faster and respond to customer requests more quickly.

Conclusion

From Setup Bottlenecks to Smart Speed

Setup delays affect more than just one machine. They slow down production, increase waste, and make it harder to meet delivery goals. In this example, the aerospace supplier didn't automate everything. Instead, they added a tool that helped them work faster, with more confidence and fewer adjustments.

The biggest change came from using their own data to guide future work. With better bend sequences and fewer test runs, the team was able to meet quality targets more easily and finish jobs sooner.

[CTA: Inductaflex supports this kind of improvement with machines designed for quick changeovers, repeatable bending, and consistent output across batches.]