CASE STUDY: PRECISION METAL FAB IMPROVES THROUGHPUT AND REPEATABILITY

Cobot welding system paired with a custom Flextur fixture solution increased welding throughput by 180%, while reducing labor requirements by 50%, resulting in a 460% improvement in labor productivity.

OVERVIEW

Precision Metal Fab is focused on improving efficiency and consistency in its welding operations. As the company worked to scale production on a large, complex assembly, it needed a more repeatable and streamlined approach to its welding process.

Although each application is unique and results may vary, this scenario demonstrates the productivity gains possible when customers leverage precise fixturing in conjunction with a cobot.

BACKGROUND

Precision Metal Fab was looking to improve throughput and repeatability on a complex part requiring more than 300 individual 1-inch welds. The weld count created repeatability challenges, consumed significant labor, and made it difficult to scale production.

Before the new solution was implemented, two welders manually completed an average of five finished units per day. Precision Metal Fab needed a fixture that could create a more repeatable process, support automation, and help the team get more value from its welding operation.

THE CHALLENGE

The existing manual process created three major problems:

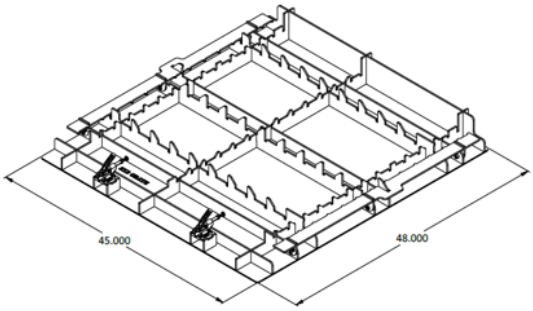
1. Low output: an average of five widgets per day from two skilled welders.
2. High Labor Dependency: Two welders fully dedicated.
3. Complexity and repeatability issues: The large number of welds required constant repositioning.

OBJECTIVE

Precision Metal Fab wanted to improve throughput while maintaining consistent quality and freeing skilled welders for other projects.

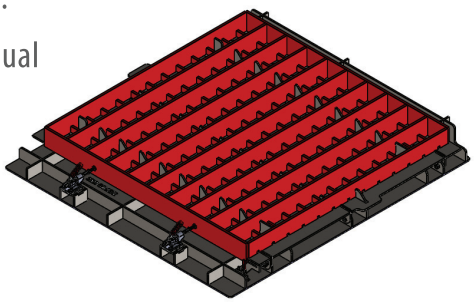
THE SOLUTION

Flextur engineered a custom fixture designed specifically to address the widgets complexity and Precision Metal Fab's process challenges.



Fixture highlights:

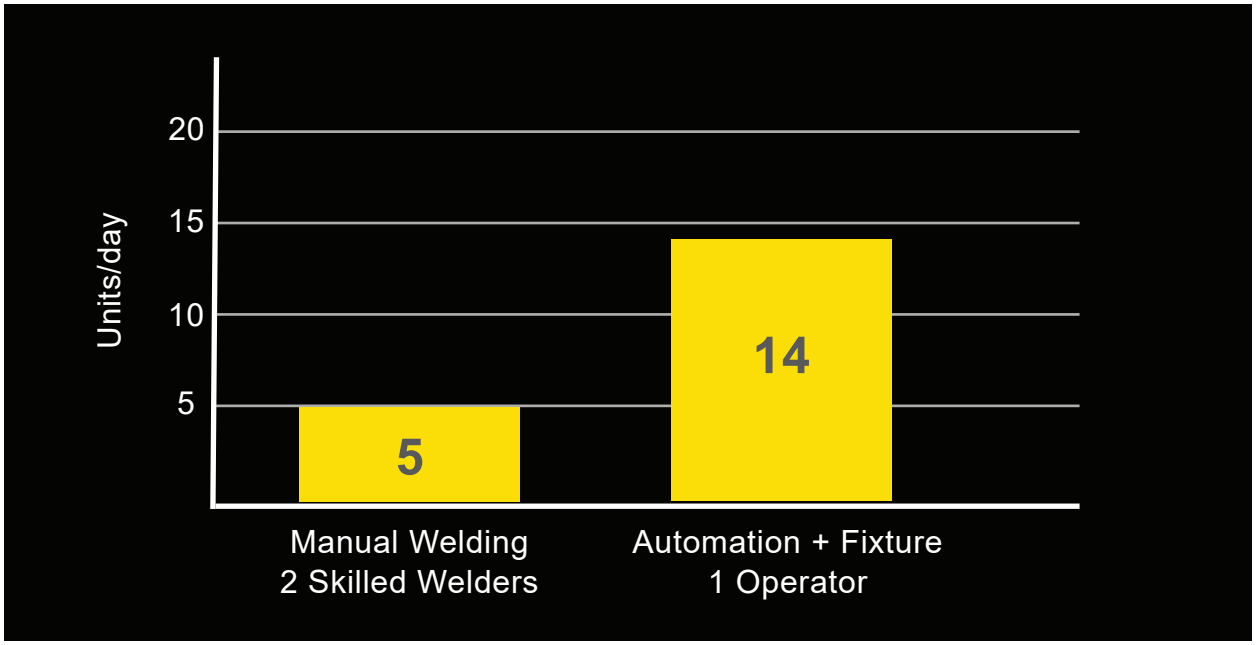
- Mid-sized, 4'x4' footprint designed for optimal use with a cobot.
- Multiple toggle clamps to secure parts in precise, repeatable locations.
- Fixture designed specifically to allow the cobot to access 300+ individual weld points without repositioning.
- A stable platform ensuring consistent angles and clear paths for programming.



The Flextur fixture made it possible for the cobot to weld a high number of small welds that would otherwise consumer significant manual labor.

THE RESULTS

The introduction of the fixture delivered dramatic production improvement.



Key Wins:

- Increased welding throughput by 180%, while reducing labor requirements by 50%, resulting in a 460% improvement in labor productivity
- Freed a highly skilled welder to focus on other critical jobs.
- Massive reduction in part handling thanks to the fixture.
- Consistent weld quality across a very high weld count.
- Created a scalable foundation for future automation and process improvements.

CONCLUSION

This project demonstrates how Flextur helped Precision Metal Fab improve productivity with a fixture designed around the realities of the application. By creating a stable, repeatable setup that reduced handling and supported consistent welding, Flextur helped the customer increase output, improve labor efficiency, and build a stronger foundation for future growth.