



CASE STUDY
SEATS INC.

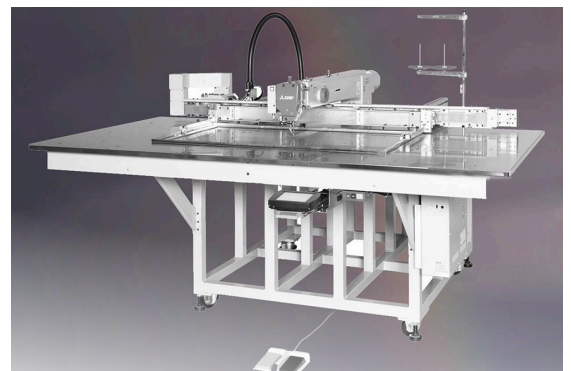
Increasing Sewing Quality and Performance Time and Time Again

It's hard to find highly-skilled operators to sew seat upholstery. It takes a year to get a good sewer. It takes many years to get a great one. It takes the best operators to get consistent pleating.

In the 1990s, pleating drove the need for Seats Inc. to get into electronic, programmable industrial sewing machines. They design and manufacture seating for long haul trucks, earth moving equipment, industrial, military and emergency vehicles. Seats not only assembles finished seating products, but fabricates nearly all of the seat components as well.

Manual setup for pleats is a time-consuming hand operation. The operator has to place a pattern over the material and chalk the pattern, which is a complicated process—even for the best operators. Errors really stand out. With manual pleating, Seats started experiencing skipped stitches and thread breakage because of the material thickness. Consistency is vital in the industry. It was getting hard for Seats to guarantee consistency with the manual sewing process. Also, at 400 stitches per minute, manual sewing had reached its upper limit in terms of throughput.

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The Mitsubishi Electric PLK-G10050 Programmable Sewing Machine uses USB memory for pattern storage and more than doubles the throughput of the PLK-A Series.

A Radical Reinvention Guarantees Sewing Consistency

Working with Mitsubishi Electric Automation, Inc., Seats helped pioneer programmable CNC industrial sewing machines for high-back, truck-style seats. They were one of the first in the industry to utilize this equipment, which required a custom pallet clamp system.

“It was a radical reinvention of a previously manual manufacturing process,” says John Studnicka, Director of Operations, Seats Inc. “The interchangeable clamp system with adjustable rotary cylinders was a real game-changer. We took a lot of pride in that machine because we knew it was one of the first in our market.”

A programmable CNC industrial sewing machine that could handle the large 40” x 20” sewing area required for seating upholstery transformed operations for Seats. Previously, Seats pulled pallet blades rather than changing the pallet.

Mitsubishi Electric created a pallet that popped in and out. Take out a low-back panel, put in a high-back panel and lock it right back down. Changes could be done in minutes. John says, “Once we started, the clamping design concept morphed into every product line—seat backs, seat cushions and seat bolsters.” Clamping also allowed for more sophisticated sewing patterns.

Seats selected Mitsubishi Electric over other equipment suppliers because the others could not match the performance and innovation. The custom pallet clamp system was designed and built by Mitsubishi Electric. “Only Mitsubishi Electric had the expertise to provide the turnkey solution,” which is still in use today. John says, “It’s definitely passed the test of time.”

That Was Then

The first machine, which was based on the Mitsubishi Electric PLK A Series industrial sewing machines, handled two processes: hemming fabric to foam and pleating. Automating these processes made it possible for Seats to:

- **More than double their throughput**—instead of 400 stitches per minute, the system is capable of 1200 stitches per minute and consistently delivers 800 to 900 stitches per minute
- **Make better use of available labor**—instead of having to use their best labor on pleating, one less-skilled operator could do the work of two
- **Increase quality and consistency**—John says, “Consistency is vital. We’ve separated ourselves from the competition with our consistency.”

This early series used a standard floppy disk for pattern storage.

This Is Now

Seats now uses Mitsubishi Electric PLK-G10050 industrial sewing machine, which delivers:

- **High-speed sewing with industry-leading tact time**—at 2800 stitches per minute, Seats more than doubled throughput again
- **Powerful penetration force**—even at the start of stitching and thread trimming the 750W direct-drive servo motor carries out low-speed sewing with ease
- **Prevention of skipped stitches and thread breakage**—even when stitching material thickness changes, digital feedback control on the programmable presser foot mechanism prevents sewing quality and consistency issues

Mitsubishi Electric continues to advance industrial sewing machines with e-stitches, e-Patterns and automatic presser foot adjustment.





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John Studnicka
– Director of Operations
Seats, Inc.

The Future Looks Bright

The large-area, electronically-controlled, programmable sewing machine can also be linked with other machines to enable Mitsubishi Electric e-F@ctory functionality. The enhanced connectivity will allow Seats to:

- Track production across the factory
- Orchestrate factory operations
- Enable preventive maintenance

This ongoing innovation, quality and performance are some of the many reasons Seats has been a Mitsubishi Electric customer for over a quarter of a century. “Mitsubishi Electric has always been a super partner for us. Transitioning from manual to programmable sewing was one of our easiest startups.”

What’s next? Robotics is coming to sewing. This will allow Seats to continue to be one of the most design-forward seat suppliers. They’re currently putting nine different panels with different colors and contours on the facing alone. John says, “We need to stay on the forefront of that. Mitsubishi Electric can help us do that.”

AUTOMATION SOLUTION INGREDIENTS

- **PLK-E10040 Programmable Sewing Machine**
- **PLK-G10050 Programmable Sewing Machine**

NEXT STEPS

For more information or a free consultation with an automation engineer, please

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Learn more about Seats Inc.:
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