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# PBC Linear increases uptime and production throughput with Mitsubishi Electric’s automation solutions

## Case Study

### Solution

- M70V
- MDS-D Drive
- A740 Inverter

### Product Benefits

- Significantly improved machine uptime
- Virtually no operator errors
- Increased production throughput
- Reduced setup time

### Mitsubishi Electric Value-added Advantages

- Easy-to-use HMI
- Compact design
- Reliable



### BACKGROUND

Founded in 1983, PBC Linear created a patented and innovative solution to the common problem of failing linear ball bearings. Since then, the company has expanded its technology, expertise and services to include a complete line of linear motion products, from out-of-the-box components to mechanical sub-assemblies and complete linear systems. PBC Linear manufactures all of these products from its Rockford, Ill. headquarters.

A machining center must be up to the task of machining parts for the company’s linear motion products, including PBC Linear’s Redi-Rail® linear guides and Hevi-Rail® heavy-duty linear bearing system, both with continuous rail lengths of up to 19 feet. That requires specific applications such as cutting parts, tapping, and drilling holes into hardened pieces of steel, ensuring that the guides’ components line up with one another.



*“The retrofitted machining center with the Mitsubishi Electric CNC, drives and inverter is reliable and has reduced operator errors to almost zero. We create a perfect part every time.”*

*– Jeff Colson, Systems Integrator, PBC Linear*

### CHALLENGE

PBC Linear needed a machining center that could machine parts longer than the 12-foot parts its existing machine could accommodate. Longer parts on that machine had to be done in several stages and set ups, which was time consuming and error prone. PBC Linear determined that a new machining center was cost prohibitive, so the company purchased a used machine with an adjustable spindle head that could handle parts up to 30 feet. Unfortunately, the machine’s downtime far exceeded its uptime. “The machine gave us nothing but fits. Not even the manufacturer could repair the multitude of problems,” said Jeff Colson, systems integrator at PBC Linear. To get a return on its investment, PBC Linear had to retrofit the machining center to achieve its original objective of machining longer parts in one stage.

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### SOLUTION

Having worked with Mitsubishi Electric Automation in the past, Colson immediately considered the company as a top contender for the machine's CNC system, drive and inverter. However, Colson looked at other options as part of his due diligence and discovered that using an outside retrofitter or another automation products manufacturer would be too expensive and would limit customization.

Mitsubishi Electric Automation application engineers recommended the M70V Series CNC because it offers most of the functionality of a higher end platform at a more affordable price, so it would be ideal for PBC Linear's everyday production needs, while keeping the retrofit costs down. In addition, the M70V would meet the high accuracy required to machine linear guides. The retrofit of the machining center also included a Mitsubishi Electric A740 variable frequency drive to control the motor speed and an MDS-D drive to control the spindle motor.



### RESULTS

PBC Linear is very pleased with its retrofitted machining center and has experienced significantly increased uptime due to the Mitsubishi Electric products. "The retrofitted machining center with the Mitsubishi Electric CNC, drive and inverter is extremely reliable," said Colson.

The machine is also easy to use, partly because PBC Linear customized the HMI on the M70V CNC. "The machine is extremely easy for the operators to use. As long as they answer basic questions, they create a perfect part every time. The operator errors have dropped to almost

zero," said Colson. And, because the machine handles parts up to 30 feet, PBC Linear can machine longer parts in one stage and one setup, further reducing the potential for errors.

He also likes the ease of use of the M70V CNC itself. "With the new control, if we shut the machine down, or if it blows a fuse, we can pick up where we left off. Everything is right whether the machine turns off intentionally or unintentionally," Colson said. He explained that on most machining centers with a z-axis, the machine can fail before the brake grabs. Because the Mitsubishi Electric control doesn't fail when it shuts off, PBC Linear saves on tool breakage.

Retrofitting an old machine actually worked out better for PBC Linear than if the company had purchased a new machine. "Because we essentially created the machine, taking a base machine, adding the right equipment, and customizing the software and processes, it's just the way we want it," concluded Colson.

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