



CASE STUDY  
**WAUPACA ELEVATOR  
COMPANY**

## A Vision of Rock-Solid Reliability

In the old comic books, the superhero would use his X-ray vision to peer through walls and find the clues to solve a mystery. Today, while they may not save the world from any nefarious villains, Mitsubishi Electric PLC data logging and diagnostics technologies are helping Waupaca Elevator Company's dealer technicians look deep inside residential elevator systems to troubleshoot thorny service issues.

Founded in Waupaca, Wisconsin in 1957, Waupaca Elevator makes residential elevators and dumbwaiters for applications throughout North America. They provide the mechanics of the elevator, electrical controls, and do custom interior finish work for the installation. Vice President of Operations Gary Ziebell says Waupaca Elevator's focus now, as always, is on solutions "that just work," because reliability is key.

The customers who buy a residential Waupaca Elevator — whether they're elderly, disabled or simply looking for a high level of comfort and convenience — demand rock-solid reliability. So do Waupaca Elevator's independent dealers.

To maximize profits selling such specialized lift systems, dealers have to be able to efficiently handle complex installations. Then, they need to be able to service the systems quickly, especially when doing warranty work. Because the dealers typically offer more than one elevator line, making the dealers' job as easy as possible is a competitive imperative.



Mitsubishi Electric FR-D700 Variable Frequency Drives (VFDs) deliver maximum reliability for Waupaca Elevator Company's residential customers.

## Helping Resistors Keep Their Cool

One way Waupaca Elevator engineers help to make dealers' lives easier is by working to mitigate the effects of voltage fluctuations on elevator braking resistors.

Ziebell explains, "Typically what will happen with electric winding drum drives is they will bleed excess current off to the resistor when they're not in use. We were looking for a solution where we could turn off the braking resistor."

That's where Mitsubishi Electric was able to step in to help. The company's FR-D700 VFDs allow the braking resistors to turn off automatically as needed, reducing overheating and helping to extend resistor life. And upgrading the drives was only part of a more comprehensive solution.

## Data Tells the Inside Story

Along with the VFDs, Mitsubishi Electric supplied Waupaca Elevator with their latest iQ-F compact programmable logic controllers (PLCs). With built-in data logging and diagnostic capabilities, these controllers enable dealer service technicians to track the usage history of each elevator and monitor service fault codes.

Upon arriving at the site, the technician sets up a Waupaca Elevator-supplied wireless router and logs into a mobile interface hosted right on the iQ-F. Because technicians bring their own router and don't need to log into the customer's Wi-Fi, there are no security risks.

"It's become a great service tool for them," Ziebell says, "because they'll log in and see a red box that tells them, 'Hey, check this component.' They have a quick interface tool to use, plus, the schematics and manuals for each control system are included within the data system, so they're always on hand."

The system also takes care of one of the main complaints Waupaca Elevator used to receive from dealers. "They really don't like it when new installations take longer than expected," Ziebell says. "With the diagnostics capabilities built into the iQ-F PLC, installers can quickly find out where any issue may be if they're having trouble with an install."

Fault code information is also recorded on an SD memory card in the drive unit. This historical data can be especially helpful when tracking down an intermittent problem. Even if the issue is not causing immediate troubles while techs are on site, they can access a record of all switches, outputs, motor currents, and positions during any elevator movement in the last ten years — invaluable information that helps the techs diagnose issues and quickly decide on an effective course of action.

If the problem is beyond the technicians' knowledge base, the data can be pulled off the SD card and emailed to Waupaca Elevator for analysis. It's a convenience that can potentially save hours on the phone.

## Building Confidence and Profits

Since it was implemented by Waupaca Elevator in early 2020, Mitsubishi Electric's data logging capabilities have helped to significantly shorten the duration of each service call, enabling Waupaca Elevator dealer technicians to service more units in the course of a day.

Data logging has also proven helpful in training new technicians. The system helps inexperienced elevator techs get up to speed more quickly, so they can handle service calls on their own with less in-shop or ride-along training.

Another benefit is that the logged data can show if there has been any unusual usage of the elevator. Service techs can then take a little time to educate end-users on ways to prevent future failures.

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Data logging and diagnostic capabilities within the iQ-F PLC help Waupaca Elevator dealer technicians handle more warranty calls in less time.





*“With the diagnostics capabilities built into the Mitsubishi Electric iQ-F PLC, installers can quickly find out where any issue may be.”*

**Gary Ziebell**  
— Vice President – General Manager  
Waupaca Elevator Company

When the technician provides usage tips that work to head off future problems, it helps to strengthen customer confidence in Waupaca Elevator systems. Plus, it can turn a frustrating situation into a positive interaction that builds trust between the dealer and end-user.

For a company known for no-nonsense reliability, the combination of the iQ-F PLC and FR-D700 VFDs provides Waupaca Elevator with a solid competitive advantage. Residential elevator dealers are all about ease of installation and ease of service, and the new systems effectively address both concerns.

Ziebell adds, “The other nice thing is that, now, if a drive gets damaged in the field, we can just send them a drive right off the shelf. We don’t have to program it. The technician can just drop it in and the unit is up and running. The PLC does the programming automatically.”

In the long run, the data-driven capabilities of iQ-F PLCs will save dealers and customers money by enabling proactive preventive maintenance. Ziebell observes, “It simply costs less to switch out a drive or electrical component before failure. Plus, it works to maintain consistent reliability.”

## Looking Back, Looking Forward

Along with all their service benefits, iQ-F PLC and FR-D700 VFDs offer exceptional backwards compatibility.

That’s essential for Waupaca Elevator, Ziebell says, “Because we have over 30,000 elevator units in the field, spanning decades of technology updates. With the Mitsubishi Electric systems, we don’t have to keep track of different firmware versions. Their team will help to generate the code we need to service older equipment. It makes life a lot easier for us and for our dealers.”

Mitsubishi Electric’s programming expertise and focus on delivering industry-leading service has led Waupaca Elevator to expand their partnership. Looking into the future, Ziebell says the built-in data technologies will help Waupaca Elevator track component life expectancies, customer usage patterns, and more.

“We’ll be able to see how long specific components last before they have to be replaced, and find out how many calls they get in during their service life,” Ziebell explains. “That’s a vision for the future, but for now, we’re looking forward to getting valuable information from these systems that we can use to help our dealers, our customers and, ultimately, Waupaca Elevator Company’s product offering.”



Learn more about  
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### AUTOMATION SOLUTION INGREDIENTS

- FR-D700
- iQ-F Series PLC

### NEXT STEPS

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