

### Solution

- GT15-J61BT13, CC-Link for GOT
- GT1550-QLBD, 5.7" GOT
- QJ61BT11N, CC-Link Master
- Q00JCPU-S8, 8-Slot PLC Base

### ADVANTAGES

- Customizable to fit specific needs
- Flexibility to adapt to different environments
- Scalable depending on the size of the habitat
- Improved energy savings

### BENEFITS

- CC-link I/O 2 Series CPU and Ethernet Gt required minimal integration time
- Integrated into the radio transceiver system without third-party software
- Less time spent by zookeepers manually opening and closing gates
- Increased safety for both animals and staff



*“Our past experience with Mitsubishi Component’s performance, flexibility and reliability were a good fit for the challenges that the Zoo Habitat Door control projects presented.”*

– Greg Bernhard, Unique Automation, LLC

## **Unique Automation, LLC** *Motion Control Solutions*

### Challenge

A municipal zoo in upstate New York constructed a new habitat for their elephants and wanted to automate the giant, hydraulically operated gate system that controlled the elephant’s movement within the facility. The zoo wanted a new system to accommodate their unique needs of safely moving elephants around the enclosure, while allowing their keepers complete control. The challenge was to automate the gate system while creating a safe operating environment for both the elephants and staff. Since elephants can weigh up to 11,000 lbs., the system had to be strong and reliable yet flexible enough to adapt to the zoo’s environment. There were several areas where control was needed within the habitat and the system had to communicate with each station.

### Background

The New York Zoo contracted Unique Automation, LLC to install a newly designed, custom-engineered solution for their elephant habitat. As a Mitsubishi distributor and integrator, Unique Automation LLC. used their more than 80 years of collective pneumatic, hydraulic, and electrical drive/control experience to complete this project quickly and effectively. Mitsubishi components provided the right communication abilities, covered the required distance, and gave Unique Automation complete control to customize the system according to the zoo’s needs—while leaving room to expand the system, as future needs change.

## Solution

Unique Automation engineered the new system based on an older, manual system to use a MELSEC-Q Series Base Unit and two HMIs running CC-Link networking technology to connect the entire system together. This system allowed zookeepers to operate the hydraulic power unit and control the gates on three separate elephant enclosures, while maintaining communication with all interfaces. This allowed remote operation from seven different stations throughout the facility.

Zookeepers could also operate the elephant doors and man-gates with remote, analog joysticks, keeping the keepers and the elephants safe. Engineers programmed the system with passwords and user access accounts for security to prevent accidents and unauthorized access.

## Results

The zoo was pleased with their new system and because of the success; news spread within the community and a second New York zoo contracted Unique Automation to also engineer and retrofit an existing, manual system. They replaced the older remote system with a system similar to that used in the first zoo, but with the addition of using proportional regulators to control the speed of the gates with potentiometer joysticks. Both systems used CC-Linked HMIs.

The gate automation provided both zoos with many benefits including energy savings from having the hydraulic power systems change from a run-all-the-time mode to a powered-as-needed mode. There was also less noise, less wear-and-tear on the equipment and a smarter use of human resources. The forced feedback system on the gates also made the environment safer for both the elephants and zookeepers.

Unique Automation is installing another system at an Oregon zoo, using an even more complex system with added Ethernet capability. There is also interest from zoos in Pennsylvania and Nevada to implement similar systems.

Mitsubishi components offer complete customization particular to their clients need—no matter the location. This solution can be replicated and scaled to include different scenarios. Mitsubishi controllers with GOT interfaces connected using CC-Link give the opportunity to pick-and-choose specific features for a complete, custom solution. The GOT HMIs can also be custom programmed to the client's need. Mitsubishi can provide you with the right components for the job and customize them to your unique needs.

