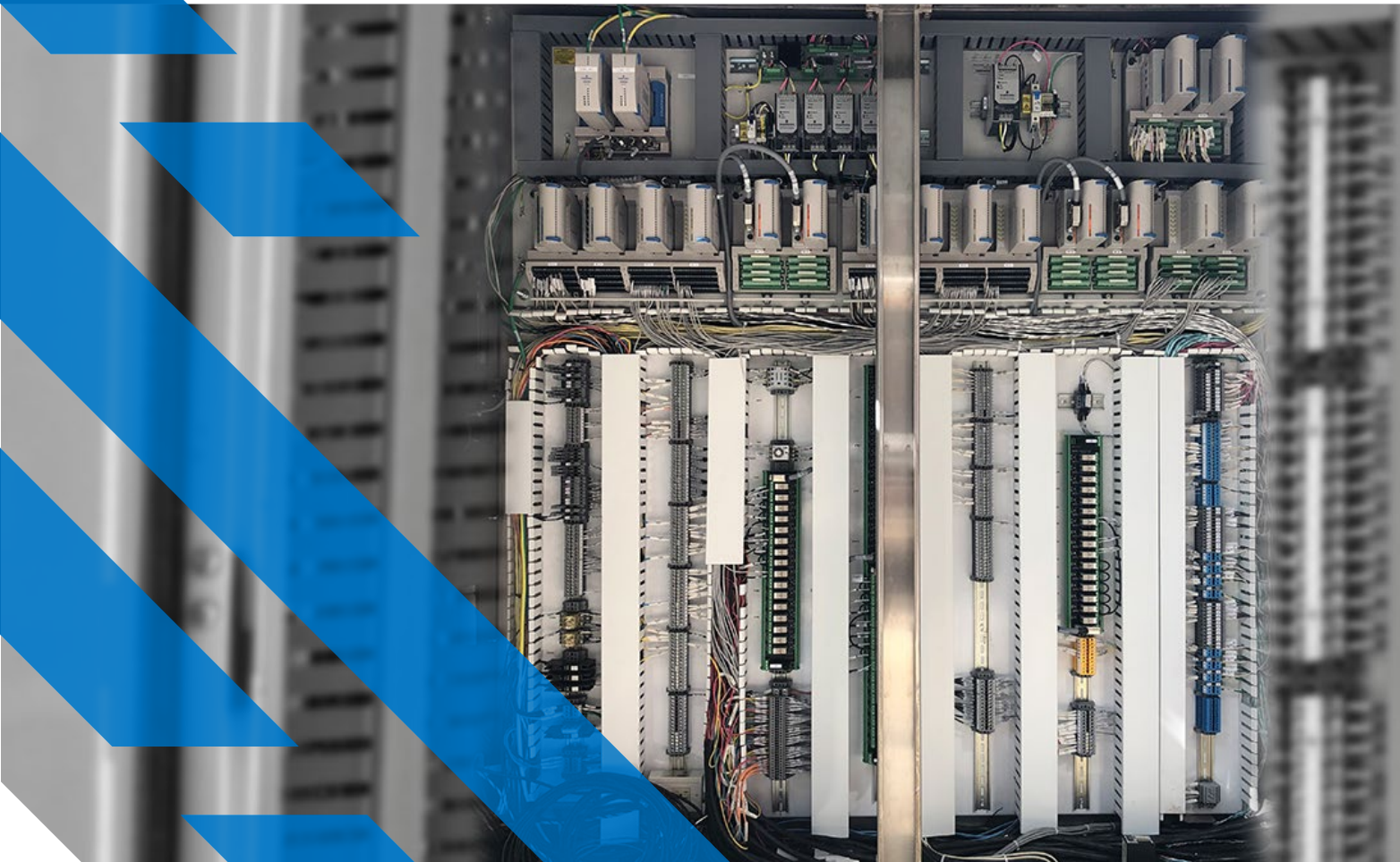


CASE STUDY / CONTROL SYSTEM UPGRADES

# STANDARDIZING A MODERN CONTROL SYSTEM FOR RELIABLE GENERATION

In need of a consistent control system platform, El Paso Electric set out to upgrade several of its units and sites with a modernized solution.

The system allows the utility to increase service reliability and operational efficiency.



# A UTILITY GAINS EFFICIENCIES WITH A COMMON CONTROL SYSTEM PLATFORM

A unique set of power generation units migrate to an integrated system with Emerson Ovation multinetwork technology.

## PROJECT STATS

### CLIENT

El Paso Electric

### LOCATION

El Paso, Texas

### COMPLETION YEAR

2020

# 4

UNITS UPDATED

# 2019

EMERSON OVATION  
POWER GENERATION  
PROJECT OF THE YEAR

## CHALLENGE

El Paso Electric (EPE), a public utility powering West Texas and southern New Mexico, recognized a need to upgrade and standardize the control systems at its Newman and Copper power plants in El Paso, Texas. The Newman site actively managed three separate units with three individual — and sometimes antiquated — technologies, while also managing the unmanned Copper site remotely. To maximize its service reliability and increase operational efficiency, EPE sought a plan to bring all of its functional units under the same distributed control system (DCS) solution.

## SOLUTION

Our team was selected to provide preliminary engineering, detailed design, and procurement and construction management of the systemwide controls upgrade to an Emerson Ovation technology platform. To maintain consistency across the project execution of each unit, we developed a uniform approach no matter the generation type or existing system, including an overarching procurement specification for all equipment across all units and facilities.

Once this standardized approach was established, we set out to evaluate and implement each unit's upgrade starting

with Unit 3, a conventional gas-fired boiler with Foxboro I/A controls. We replaced the existing control system and converted and modernized the existing logics, graphics and control system interfaces. We also redesigned the electrical system to eliminate hardwired circuits and incorporated the functionality into the new Emerson Ovation control system.

With Unit 3 upgraded to the new platform, our team began work on Unit 5, a 2-on-1 combined-cycle unit with GE Mark VIe gas turbine controls and Fuji Micrex programmable logic controller (PLC) steam turbine controls. Both the gas turbine and steam turbine controls were brought into the Ovation DCS. We also integrated the existing PLC-based duct burners into the Ovation system, as well as the gas





turbine water wash skid and excitation controls, eliminating the need for various data links.

The team then set its sights on upgrades for the Copper Power Station, an unmanned, off-site simple-cycle gas turbine. The update required implementing a new turbine control system (TCS) to improve the dependability of communications between Newman and the remote facility, as well as enhance troubleshooting capabilities. We also performed instrumentation design to increase reliability and mitigate spurious trips by replacing switches with new transmitters.

We also evaluated the need for instrumentation upgrades for each unit, successfully enhancing Units 5 and 3.

And with all others complete, Unit 4 is the final piece being added to the new controls system platform.

Unit 4 is a 2-on-1 combined-cycle unit with Foxboro I/A controls and Westinghouse turbines. This upgrade included gas turbines, steam turbine, heat recovery steam generators, balance of plant and excitation controls brought into the Ovation DCS. We also integrated the existing PLC-based duct burners into the Ovation system.

In addition to the Unit 4 controls upgrade, significant instrumentation upgrades were performed. The original Westinghouse pressure, switch and gauge cabinets were modernized. New cabinets with all new instrumentation were fabricated and assembled off-site for ease of field installation. We also coordinated full design and procurement activities with the vendor.

## RESULTS

The new control system was established in spring of 2019 with the final unit estimated to be complete in 2020. EPE has already benefited from increased system reliability and durability across its units, while also boasting the extensive maintenance, troubleshooting and platform consistency benefits of a modern control system. The successful implementation was recognized by Emerson Ovation as well, winning the technology provider's 2019 Power Generation Project of the Year award.



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