SCADA to Ignition Conversion to Increase Efficiency

PROJECT SUMMARY

Fair Oaks Ranch hired Patti Engineering to upgrade their servers from Windows 7 to Windows 10. With the Windows 10 upgrade, the SCADA system in place would no longer be supported, so the older software was transitioned to Ignition. The upgrade to the Ignition software offered better support, and higher resolution, and made it possible to create a mobile version giving Fair Oaks Ranch the capability to check in remotely.

The HMI interface was upgraded with better graphics making it feel more like a webpage than a typical HMI screen. Implementing responsive screens made operation equally user-friendly from both PC and mobile devices. Patti Engineering was able to replicate the screens that users interacted with on a daily basis, so the only visual difference in the new system was better resolution.

Another significant benefit of the upgrade was the implementation of report generating. This new capability replaced the manual data collection practice of physically visiting each station daily to record the data, removing the element of human error, and improving overall efficiency.

Most of the major changes to the system were made to the back-end, which made a difference for the Patti Engineering support team as well as the Fair Oaks IT and security departments. Patti Engineering was able to utilize the MQTT modules to facilitate communication from the distributed plants back to city hall over cell routers, reducing bandwidth usage. This solution will reduce overall data usage and

cost for the city. The Ignition modular licensing also contributed to a reduction in the overall cost of the solution for Fair Oaks Ranch.

The IPC hardware at Fair Oaks was completely replaced allowing Patti Engineering to program the new hardware at the office prior to the installation. All other local controls hardware was left the same, minimizing downtime. The only downtime for the upgrade was during the physical installation of the new hardware.

CHALLENGE

For security and general operation reasons, Fair Oaks Ranch needed to upgrade from Windows 7 to Windows 10. As a result, the SCADA software they had been running needed to be replaced, as it was not supported on Windows 10. In addition, data collection had been a manual process where water treatment personnel were traveling to each location daily to record water usage levels as well as other data. With the expense of transmitting cell data back to the central server rising, and a requirement of local control at each plant even if the cell data-based network was down, Fair Oaks was searching for a solution that would help them succeed with their goal of more efficient data collection, and decreasing their overall operating costs.

SOLUTION & BENEFITS

Ignition has a module licensing structure that let Patti Engineering pick and choose the specific modules we needed for the project. In addition, Ignition

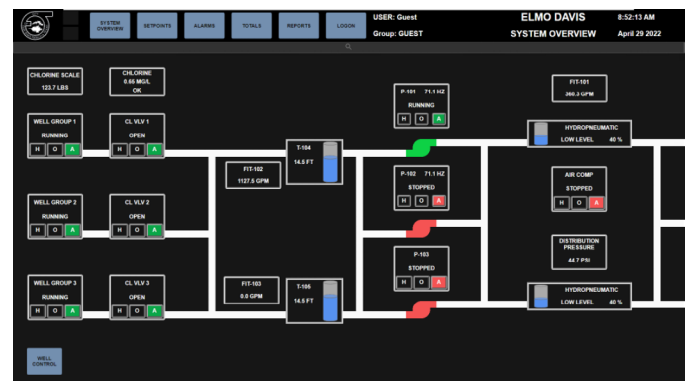## SOLUTION & BENEFITS (CONT.)

supports the Hub & Spoke model of devices with a partner company's MQTT module and the Edge version of Ignition. All of these factors allowed for a reduction in cost for the client. Upfront costs with licensing and Edge gateways were lower, and the MQTT modules reduced the bandwidth used. The Edge gateways allowed Patti Engineering to provide local HMI control at a reasonable price point, while the MQTT enabled data to be pushed back to a central server for logging/alarm/reporting/remote control purposes while reducing cell data usage.

Fair Oaks Ranch was filling excel spreadsheets with manually collected data, so Ignition's reporting feature only supports generating PDF reports, which did not work for this situation. Instead, Patti Engineering took advantage of the Python/JavaScript capabilities of Ignition to generate an excel sheet and make it available for download on the Perspective webpages. Luckily Python and JavaScript support embedding cell formatting in the document prior to export which let Patti Engineering replicate everything including logos, colored text, and equations.

RESULTS

Patti Engineering's Ignition solution reduced the costs associated with upgrading the SCADA system through the use of Ignition's module licensing structure. This solution also significantly improved overall efficiency by providing mobile access and report generation capabilities, replacing the previously manual process of visiting each site to collect the daily data. The addition of mobile screens also allowed for ease of remote support by city operators, and the only downtime Fair Oaks Ranch had for the upgrade was during the physical installation of the new hardware.

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