



Control Systems International®



The City of Phoenix (COP) needed to totally revamp all of its water/wastewater treatment systems to replace old and obsolete technology. COP engineers started looking for a distributed control system (DCS) that could handle their many needs and multiple sites. They wanted a standardized system that would have the same look and feel at all of their sites and allow them to keep existing I/O hardware. So, the department engineering staff spent two years studying new state-of-the-art process control systems and preparing standards. This study was thoroughly reviewed by Phoenix Water Services, City Management Staff, and the City Auditors Department.

In the final evaluation, **UCOS DCS** by **Control Systems International, Inc.**, was chosen over Rockwell Automation and Westinghouse Process Control as the technology best suited to meet the future control system needs of the City of Phoenix Water Services Department.

“The entire evaluation committee selected CSI’s as the best overall proposal, all factors considered. It is noteworthy that in addition to CSI being the lowest priced and most responsive proposer, they also were the overwhelming choice of two separate evaluation committees,” stated the Water Services Department’s funding request to the Phoenix City Council.

Project Profile: City of Phoenix Water Dept.

City of Phoenix is Under Control with UCOS®



UCOS replaced existing systems that were “obsolete or systems of lesser technology” at four sites: the 23rd Avenue wastewater treatment plant, the 91st Avenue wastewater treatment plant, the Union Hills water treatment plant, and the Cave Creek reclamation plant.

UCOS is also being installed at the North Gateway reclamation plant which is currently under construction.

The City of Phoenix chose UCOS because it saves time and money. UCOS allows an engineer to embed the project specification into a library of device templates. Each template completely defines a device including its operator interface graphic, logic, and tag definitions. Those device templates are then tested and certified **before** the system is developed. Once system configuration begins, UCOS allows engineers to insert devices simply by clicking on a template. Since each device is pre-tested, pre-configured, and pre-certified, completely configuring thousands of similar devices in UCOS can be accomplished in seconds. Not only is that faster than creating devices one at a time, it also guarantees that all similar devices will be consistent and reliable. This eliminates the endless cycles of pre-installation re-engineering that typically occurs due to errors and inconsistencies within the control system. Not only does UCOS speed up development time for one project, this same basic control scheme can be used on subsequent sites, further reducing development and implementation costs, and ultimately ensuring success.

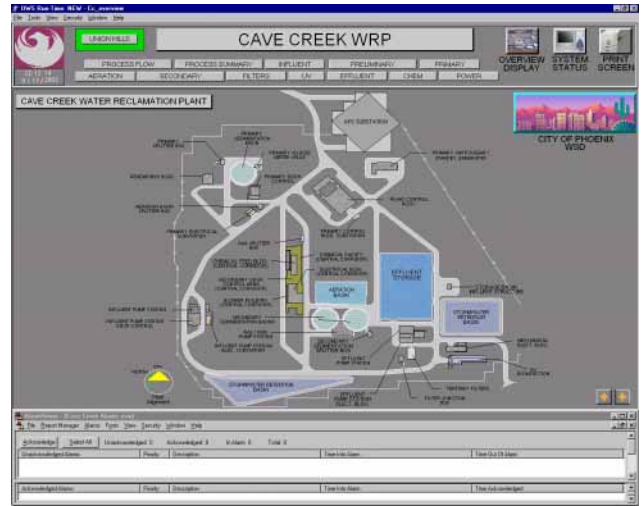
With its highly visual, object-oriented approach, UCOS allows any engineer to easily understand the operational characteristics of the entire control scheme. The engineer can see the logic, operator interface, tag definitions, and faceplates of any device or sequence of devices which greatly reduces training and maintenance time, as well.

COP Reduces Costs with UCOS

UCOS is an open system which supports a broad range of off-the-shelf I/O hardware and operates on Windows NT/2000 at the supervisory level.

At Cave Creek, CSI engineers replaced an obsolete and un-supported GE/Parsons-XLS DCS with UCOS but did not have to replace any of the OPTO-22 I/O. This alone saved hundreds of thousands of dollars because none of the I/O had to be rewired, tested or debugged. No fieldwork was required at this site and the cutover was done live, so there was no down time for the system conversion. This is important since The Enhanced Surface Water Treatment Regulations require the plants to remain "100% operational."

The Union Hills site used a Wonderware HMI with Siemens/Texas Instruments programmable logic controllers (PLCs) and I/O. Although UCOS could have connected to the existing PLCs and I/O, Phoenix Water Services wanted to replace the I/O. So, CSI connected UCOS to the new Modicon Quantum racks, scanners, and I/O using the existing field wiring and fiber optic network.



Cave Creek Overview Screen

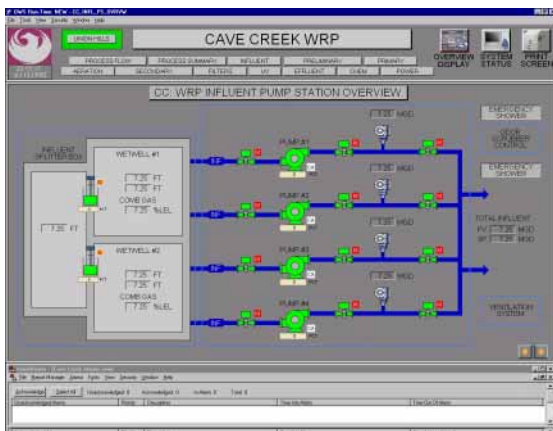
Both the 23rd Ave. and 91st Ave. treatment plants have GE/Parsons XLS DCS systems with OPTO-22 I/O. CSI engineers are installing UCOS without replacing any I/O at those plants or having to do any fieldwork at the I/O level. Downtime at a treatment facility can be costly due to EPA fines, so both of these plants will be cutover to UCOS with no downtime.

The North Gateway facility is still under construction but is being equipped with a UCOS DCS for monitoring and control. The North Gateway plant will also use OPTO-22 I/O and the same HMI look and feel as the other four plants.

When the project is completed, UCOS systems will monitor and control more than 22,500 real-world I/O points across all five sites.

Because of UCOS's unique and patented features the City of Phoenix saved more than an estimated million dollars by using UCOS for these projects.

Phoenix Water Services Department has included in the contract a 100 percent option clause which will permit it to install UCOS at five additional water production sites. Since the city's water/wastewater control scheme is already configured and tested, and with UCOS's ability to cutover without any down time the City of Phoenix will be able to save money and achieve facility efficiencies long into the future.



Operator Workstation Screen

Cave Creek and Union Hills share some resources and personnel, so both sites are managed as one. UCOS monitors and controls two different kinds of I/O at the two different sites. Both facilities have the same look and feel on the HMI screens, and personnel from either plant are able to operate Cave Creek from Union Hills or vice-versa.

When all five plants are upgraded with UCOS, operators will be able to securely monitor and control any plant on the system from any other plant on the system.



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