AVEVA

CUSTOMER CASE STUDY

Coordinating water production from edge to enterprise with AVEVA™ Operations Control

Gwinnett County Department of Water Resources - www.gwinnettcounty.com
Industry - Water and wastewater

Goals

- Optimize water production using system-wide data

- Aggregate data from six facilities and hundreds of assets across the water network

Challenges

- Mixed hardware and software environment

- Limited off-site visibility with existing data architecture

- Growing data set reaching half a million data points

Solutions

- AVEVA™ Operations Control (Edge to Enterprise)

- AVEVA™ Unified Operations Center

- AVEVA™ Insight

- AVEVA™ System Platform

- AVEVA™ Historian

- AVEVA™ Reports for Operations

Results

- Hybrid cloud solution displays data and analytics securely on any device, on site or off site

- One optimization alone saves 120M gallons of water and $35,000 per year

The Gwinnett County Department of Water Resources (DWR) had a wealth of data along with talented experts ready to use it. But all that data was in different silos where experts couldn't access it readily enough to optimize water production. Its six water treatment plants used a mix of outdated hardware and software that stored data at different sites.

But now, Gwinnett County aggregates real-time and historical data from across its facilities – and gets that data to the right people when and where they need it, both on site and in the cloud. It uses AVEVA Operations Control, which provides access to the AVEVA operations software portfolio as hybrid software-as-a-service (cloud). That hybrid cloud approach lets Gwinnett County tailor its software system to its current needs, while making it easy to add new users and assets as the county continues to grow and its water production system evolves. It gives Gwinnett County flexible, comprehensive access to data that it's already using to save water and money and help the whole county run more smoothly.

"Now we have a wonderful solution that people from all levels–operations, maintenance, engineering, scientists–can use to access data from anywhere they are."
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Sam Paul
Section Manager – Process Automation / SCADA Systems & Projects, Gwinnett County Department of Water Resources

Problems accessing data

The Gwinnett County DWR provides nearly 70 million gallons of clean and safe drinking water each day to almost one million people just outside of Atlanta, Georgia. It pumps water from a lake, processes it, and distributes it. Next it collects the wastewater, sends it to reclamation plants, and then back again to the lake so the whole process can begin again. This process employs almost 220 pump stations and six water treatment facilities.

Before Gwinnett County implemented AVEVA Operations Control, those facilities all operated on a mix of outdated hardware and software. If a scientist or engineer wanted to compare data across facilities, they had to physically gather data on a USB at each individual site before they could even start.

Experts just couldn't get real-time data to make decisions quickly enough to optimize water production. So, Gwinnett County set out to make data from the entire system available both on site and off site at each layer of the organization, so operators, engineers, scientists and management could all coordinate their efforts.

A hybrid cloud solution

After consulting with AVEVA, Gwinnett County partnered with MR Systems, an AVEVA-endorsed system integrator. Together, they used the AVEVA products available as hybrid cloud through AVEVA Operations Control to tailor a solution to the county's needs.

Now each of Gwinnett County's six water treatment facilities uses AVEVA System Platform with operations management interface (OMI) to deploy SCADA at each site. Each of those SCADA systems has an AVEVA Historian for localized troubleshooting. Those historians aggregate their data into tier-2 historians, which then push the data up to a tier-3 historian, using the DMZ SecureLink component of AVEVA Insight, which keeps the data separate from the IT network.

The data in the tier-3 AVEVA Historian also goes to AVEVA Insight in the cloud, where county employees can access it securely on any device, wherever they happen to be. They can even ask Alexa to read them real-time reports. At the same time, the system keeps water resource data secure with two-factor authentication – and executives can choose which users have access to which data.

On site, AVEVA Unified Operations Center takes huge amounts of data from across the entire water system – a half million data points from water production plants, distribution and transmission networks, and hundreds of water collection points – and organizes it into intuitive graphical interfaces.

Improve performance and optimize water production

Now Gwinnett County has secure data historization and access at each level of the operation in a way that separates out the IT and OT networks. The hybrid approach ensures each facility continues to have appropriate control on site, while giving experts remote access to the system-wide data they need to optimize water production across the system.

Flexible data access for the whole county

This access is helping the whole county make better-informed decisions – not just the Department of Water Resources. For example, emergency services can pull up real-time data directly from the cloud about water pressure and flow rates at different locations. They don't have to take precious time during an emergency requesting the DWR to gather that data and send it back to them. It's already there at their fingertips.

If other county departments realize they can also use water system data, it's easy to add new users and choose which data they can access. That easy, flexible access to data makes AVEVA Operations Control ideal for an organization like Gwinnett County with many departments and functions. Different departments can all access data from the same single source of truth as they discover new ways to use it.

In addition to giving Gwinnett County flexible access to data, AVEVA Operations Control also gives the county the flexibility it needs to grow – which it will likely need as one of the fastest-growing counties in Georgia.

Because AVEVA products are hardware- and software-agnostic – and because AVEVA Operations Control makes them available as a hybrid cloud – they can easily incorporate data from new assets. All Gwinnett County needs to do to add a new water treatment plant or water network expansion is add new areas to its existing software system.

Flexible financing makes those investments in data even easier. Because AVEVA Operations Control makes AVEVA operations software available as hybrid cloud, implementing or expanding software capabilities doesn't require large CAPEX outlays. Instead, the county can invest in its data capabilities by rolling them into its OPEX budget.

As an added bonus, its software will remain evergreen with automatic updates through the cloud, so the county doesn't have to worry about CAPEX funds being available down the road to upgrade its whole system once again.
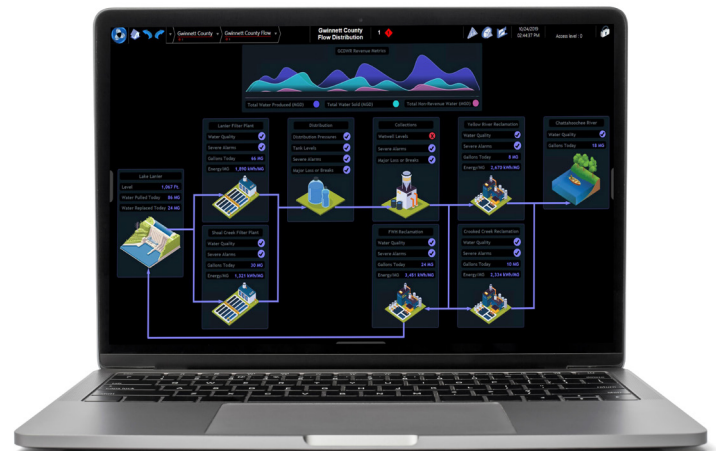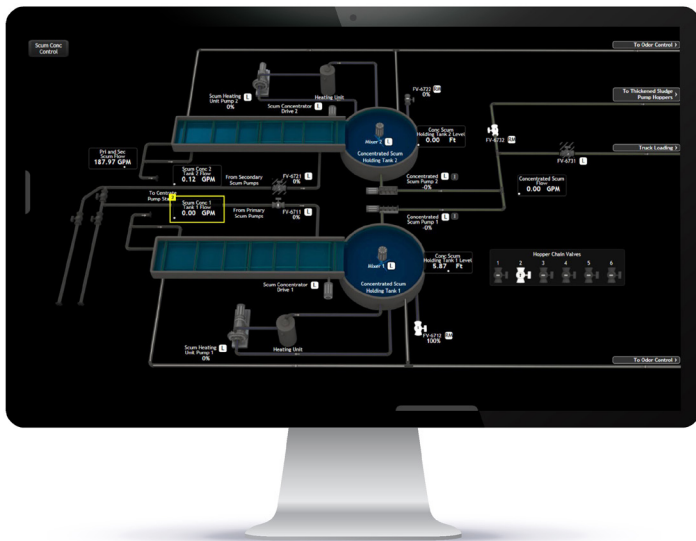

Deploy end-to-end visibility

Optimizing water production

Gwinnett County is just starting to discover what it can do with its flexible data access – but it's already using it to optimize its team's talents to produce and distribute water more efficiently. Operators access AVEVA Insight's automatic analyses in the cloud to keep the water system running at its best. AVEVA Insight uses machine learning to detect anomalies so operators can fix them quickly.

It also automatically analyzes data to let operators know what the best operating point is for a pump and tells them which pumps need to be staged first. Operators can easily see the runtime or cycles on a pump and check to see how it compares to historical averages. As a result, operators have been identifying water loss that had otherwise gone undetected. For example, operators discovered and fixed totalizer sensors that had been off for a long time.

Engineers and scientists are also using the combination of historical and real-time data across the system to save water and reduce costs. By analyzing data across the system, they realized that they could reduce the amount of time they backwashed pumps.

Reducing that time is saving 120 million gallons per year per plant – and around $35,000 in energy costs. That reduced backwash time also reduces wear on equipment, which will help save additional maintenance costs over time.

A model of sustainable water production

Those savings in water and resources fit perfectly with the Gwinnett County Department of Water Resources' long-standing commitment to sustainability. As it continues its award-winning work and educates its community about water conservation and sustainability, it now stands as a model of how to use advanced technology to accomplish those goals.

Contextualized view across information types

"I feel very comfortable using the AVEVA platform. It's not just because of the platform. It's the people I work with. If I have a challenge in the system, I know who to call, how to get support on time."

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Sam Paul
Section Manager – Process Automation / SCADA Systems & Projects, Gwinnett County Department of Water Resources

Click here to Gwinnett County explain how they're using data to optimize water production.