Greater Wellington Regional Council Gains a Clear View on Water Production

Rockwell Software Applications Ease Compliance, Improve Performance and Promote Conservation

**Challenge**
- Difficult to store, analyze and report production data from water treatment system

**Solutions**

**Production Intelligence**
- FactoryTalk Historian SE software gathers and stores historical information across different levels and tiers of the organization
- FactoryTalk VantagePoint EMI software provides a comprehensive picture of the factors contributing to operational performance

**Results**

**Increased Accessibility to Reliable Data**
- Increased visibility into the production process for real-time and historical reporting and analytics
- Pre-validated data collection and storage ensures only accurate information goes into reports
- Web-based portal for data reporting helps maintain a single version of the truth

**Improved System Performance**
- With immediate access to system-wide production metrics, a wider team is able to respond to errors or failure, like pipeline leaks, before they create major issues

**Reduced Time and Cost of Regulatory-Compliance Reporting**
- Reduced compliance reporting time from three or four days to minutes, saving $23,000 annually
- Access to 10 years of data storage, exceeding compliance needs

**Background**

In 2008, the New Zealand Ministry of Health issued revised drinking-water standards for drinking-water safety. To comply, water treatment facilities must track, save and provide monthly reports on water production, intake and discharge levels. At the same time, water providers need timely usage reports to make sure municipal customers can properly budget and forecast for city water needs.

As one of the largest water producers in New Zealand, the Greater Wellington Regional Council (GWRC) understands these requirements well. The GWRC is responsible for supplying clean water to more than 10 percent of New Zealand’s population. Drawing water from lakes, rivers, wells and aquifers, the council is the wholesale water treatment provider for the cities of Lower Hutt, Porirua, Upper Hutt and Wellington.

In order to comply with the changing regulations, the GWRC required a reporting solution that can provide accurate and timely reports generated from data automatically retrieved from its existing water treatment production and control-system infrastructure. As a result, the GWRC was not only able to comply with government reporting requirements, but it was also able to leverage real-time production data to improve water treatment distribution, and better inform internal and external stakeholders on water production and usage.
Challenge
The GWRC employs the most advanced water treatment system in New Zealand with a supervisory control and data acquisition (SCADA) system that runs four entirely automated water treatment plants, 15 pumping stations and more than 180 kilometers (110 miles) of pipeline. This system provides high-quality water for the southern portion of North Island.

However, collecting process data from disparate sources proved challenging, especially since data needed to be stored in a reliable time-series archive for analysis and reports. Lily Wang, data analyst for GWRC, explained that it was time consuming to manually extract and organize data from different sources within the water treatment system for required governmental compliance reports. A faster, more accurate and automated reporting system was needed, one that could generate predetermined reports automatically and share them with authorized groups. This system also needed data validation capability as well as the ability to retain 10 years of data.

Solutions
“After comparing several options, Rockwell Automation provided the most advanced and impressive capabilities, meeting or even exceeding all our data collection and reporting requirements,” commented Wang.

GWRC implemented FactoryTalk® Historian Site Edition (SE) and FactoryTalk VantagePoint Enterprise Manufacturing Intelligence (EMI) software onto GWRC servers. The historian provided ready connectivity to GWRC plants’ automation-system controllers, with the capability to automatically pull tags directly from different controllers via interface nodes. Tags are then stored in the FactoryTalk® Historian server for the required 10-year retention period. Once stored, this information is available to be retrieved for trending comparisons and other analyzing and reporting purposes.

Using FactoryTalk® VantagePoint EMI software, the GWRC’s data-management system is able to schedule and produce 11 automatically generated reports to provide information on weekly and daily water consumption, discharge, intake, water quality and reservoir levels, as well as reports on lake storage volumes and total-flow volume.

Analysts like Wang, water production/maintenance engineers and operators, business managers, marketing, and GWRC committee members charged with water-supply management and regional strategy have access to this data from any location. Secure login via a Web browser brings each stakeholder to a single portal where they can access predetermined dashboards and charts.

Facility operators have visibility of real-time consumption data for validation that usage levels are as expected. If demand peaks, more water can be supplied from other plants. Business managers are able to make comparisons on year-to-date usage versus the previous year, to ensure billing forecasts based on past usages are accurate, or to update expected revenues.

“The FactoryTalk software suite’s high level of integration and multicompatible connectivity to existing hardware and software components in our plants and business system has given us the ability to pull reliable data from the widest variety of sources,” Wang said. “Combined with the processing power in FactoryTalk VantagePoint software and its accessible dashboards, trends, X-Y plots, and Microsoft Excel reports, we are able to transform all this rich data into information people can actually use for a diverse set of purposes.”

The GWRC accesses consumption reports using a FactoryTalk VantagePoint EMI portal via Web browser, allowing all verified stakeholders to gain insight into production, without creating version control issues.

Water Consumption in the Wellington Region for the week ending Wednesday, 1 April 2009

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>5%</td>
<td>1st Source</td>
<td>17.13</td>
<td>18.74</td>
<td>18.75</td>
<td>17.65</td>
<td>17.36</td>
<td>12.36</td>
<td>12.56</td>
<td>13.96</td>
<td>14.75</td>
<td>13.94</td>
<td>11.15</td>
<td>11.33</td>
<td>12.93</td>
<td>11.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.50</td>
<td>0%</td>
<td>3rd Source</td>
<td>15.79</td>
<td>15.78</td>
<td>15.68</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
<td>15.69</td>
</tr>
<tr>
<td>20.00</td>
<td>0%</td>
<td>4th Source</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td>0.00</td>
<td>0%</td>
<td>5th Source</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>35.80</td>
<td>3%</td>
<td>2nd Line</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
<td>35.80</td>
</tr>
</tbody>
</table>

The GWRC accesses consumption reports using a FactoryTalk VantagePoint EMI portal via Web browser, allowing all verified stakeholders to gain insight into production, without creating version control issues.
Results

The GWRC had a need for a reliable and effective data-management solution. Working with Rockwell Automation, they developed a production intelligence strategy that empowers stakeholders with information they need to help make informed decisions.

Data is now more quickly available and accurate. “Reports that used to take me the better part of a week to create and several more days to validate can now be produced in a few minutes or even seconds,” claims Wang. This level of insight allows operations managers and business leaders to incorporate production metrics into business plans and to give feedback to system technicians based on hard data to more quickly resolve issues or improve operations.

As a data analyst, Wang checks water intake and production data every day. “With real-time data immediately available, it’s as easy as doing a balance check.” In the summer of 2012, during one daily validation, more water was taken in than what was fed into the drinking-water system, signifying a leak. Wang was able to immediately contact the maintenance engineers responsible for the appropriate plant and direct them to the relevant pipeline to find and fix the leak. The problem was discovered and solved before the leak was noticeable to production engineers or developed into a larger issue. Wang added, “Our data system is so reliable now, that we’ve made it public.”

The GWRC now offers a live map* of the current rate of water supply, which is updated every 15 minutes. As residents are now able to see water use by city over a monthly, quarterly and annual basis, the GWRC hopes a public that is more informed about water production and usage will better conserve water, especially in times of peak demand.

The GWRC has rolled out this same scalable solution to track system-wide chemical and power usage. “We have a firm grasp on our chemical and power inputs,” explains Wang. “We can optimize the control system to get the best information to our business managers, so they get the best value from our budget.”

*http://www.gw.govt.nz/live-water-supply

The results mentioned above are specific to the Greater Wellington Regional Council’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.