

## Efficiency and flexibility in water analysis



“Efficiency and flexibility” were words laboratory manager Henrik Lindblom used when describing goals for the new instruments they selected for water analysis. An increase in analytical demands at VA SYD resulted in a comprehensive reorganization at their laboratories. Recently installed Thermo Scientific™ Gallery™ and Gallery™ Plus discrete analyzers assist in saving hands on time and managing their daily workload.

VA SYD, located in Sweden, supplies households in southwest Skåne, Malmö, Lund, Burlöv and Eslöv, distributing drinking water, cleaning wastewater, and handling solid waste. The collaboration initially started between Lund and Malmö in 2008 with two additional cities, Burlöv and Eslöv, joining later. With 350 employees, VA SYD serves over half a million people by continuously controlling the quality of drinking water and the cleaning process of wastewater. VA SYD is also responsible for monitoring the condition of water delivery systems.

In addition to overseeing their own water supply, VA SYD also manages the wastewater processes of external customers, such as food and color production factories. That cooperation dates back to the 1980's when the environment of Malmö was scanned for possible pollutants, such as lead and cadmium.

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**“An excellent correlation to existing flow injection analysis and manual methods, a short training period, reduced hands on time when analyzing the samples and a short time to result with Gallery and Gallery Plus instruments are clear advantages.”**

Henrik Lindblom  
Laboratory Manager, VA SYD, Sweden

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▲ Group manager Clara Krantz with Gallery Plus analyzer.

### A singular vision

Four years ago, laboratory manager Henrik Lindblom began to organize the VA SYD laboratory a little differently. He envisioned a specialized task for each laboratory along with a continuous and less batch-oriented workflow. At that time, all wastewater samples from external customers were tested in the Bulltofta laboratory which also analyzed drinking water samples. Each time sample batches were switched from wastewater to drinking water, the entire system required a thorough cleaning.

With an increasing number of samples and tests (today around 230,000 per year) greater efficiency was required of an efficient analytical workflow. Today all wastewater samples are analyzed in four wastewater laboratories by one to four laboratory engineers at each site. One group manager supervises two laboratories and each laboratory is situated near a wastewater treatment plant. Bulltofta laboratory, which has 18 employees, is divided into two departments, one monitoring drinking water and the other analyzing environmental samples, such as sludge from wastewater treatment plants or soil samples from surrounding farms.

### New analytical platforms

Due to the increased analytical demand on the laboratories and the need to have a more efficient workflow, Henrik Lindblom decided to upgrade the instrumentation used for analyzing water samples. He invested in a Gallery Plus automated discrete photometric analyzer capable of simultaneously analyzing several parameters from a single sample. This first analyzer was installed in Malmö at the Sjölanda wastewater treatment plant where it replaced two older instruments.

“The combination of self-taught software and an easy to use instrument makes the Gallery Plus analyzer very user-friendly. You don’t have to be experienced to be able to run the system,” said Lindblom.

One important goal achieved with the new analyzer was ease of use. Lindblom wanted the instrument to be so easy that a summer assistant could quickly learn and routinely run the instrument within one week.

“Two training days are enough to use the Gallery unit routinely,” Lindblom said.

Lindblom explained further, “An increase in the number of samples makes it impossible to have any interruptions in the workflow, e.g., during sick leave. The incoming samples need to be analyzed daily.”

Lindblom was so satisfied with the capability of his first instrument, two Gallery automated discrete analyzers with a slightly lower throughput than the Gallery Plus were installed at Klagshamn and Ellinge wastewater treatment plants.



▲ Lab engineer Roaam Al-Sclawi with Gallery analyzer.

### Substantial saving of hands-on time

In Sjölanda laboratory approximately 50 samples per day are analyzed with a Gallery Plus instrument. From each sample five parameters including ammonia, nitrate, total nitrogen, phosphate, and total phosphorus are usually measured. The laboratory staff at Sjölanda consists of one group manager and three laboratory engineers. The Gallery Plus analyzer, acknowledged for its operational simplicity, replaced a more complicated instrument which required an expert user to operate.

“It takes less than 15 minutes for the Gallery analyzer to be operational whether or not you are an experienced user compared to as long as one hour with our previous system,” says Henrik Lindblom. “The Gallery Plus analyzer uses disposable, plastic cuvettes which mean there is no glassware to take care of and wash afterwards.”

Lindblom also commented positively on the automatic dilution features. “As less time is spent on manual sample handling, we are more effective.” He continued, “Another clear advantage is the time savings as no reagent preparation is needed. Ready to use system reagents are easy to work with. There is also no method change-over time with discrete analysis compared to the previous method. For example, if there is a problem in the on-line process and the laboratory needs to analyze nitrogen in a sample urgently while phosphorus is being analyzed, you do not need to change reagent and wash pumps before being able to analyze that sample. You just insert the sample and request the test. With our previous instrument one sample measurement could take up to one hour before the result was available. Gallery units provide flexibility and are able to report results quickly to customers even when additional tests interrupt the routine workflow.”

### Expanding workflow automation

VA SYD's future plans include connection to a Laboratory Information Management System (LIMS) to further increase efficiency in the laboratory. In the existing workflow, results are reported separately after analysis. Both Gallery and Gallery Plus instruments can be connected to a LIMS, reducing the time required to report results. The Gallery analyzer has the capability to read information from bar-coded sample tubes such as an ID, the origin of a sample, the requested method and analysis type, thereby reducing manual work and the risk of human error. Once the LIMS is incorporated, it is anticipated that efficiency will be substantially increased.

### Future plans

Laboratory manager Henrik Lindblom expects VA SYD's water and wastewater management collaboration to expand to include at least a couple of new municipalities within the next five to ten years.

This will result in a larger number of samples requiring analysis and a greater need for laboratory workflow optimization. From the beginning of 2013, for example, the number of nitrogen samples analyzed on a daily basis has doubled from 20 to 40 samples at Sjölanda laboratory.

Lindblom is convinced that Gallery analyzers will assist in managing their growing workload in the coming years. “An excellent correlation to existing flow injection analysis and manual methods, a short training period, reduced hands on time when analyzing the samples and a short time to result with Gallery and Gallery Plus instruments are clear advantages.”

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