



Decisions at Your Fingertips

Do you need to turn your data into information that's easy to use for decision-making? Learn how to put your data in context with a real-time information architecture and simplified reporting.

By Keith McPherson, Director, Rockwell Automation

>> In industrial automation, solutions aren't just about answers — they're about getting complete answers to specific questions. From shaping a strategy that supports process standardization to integrating plant-floor systems for mission-critical operations, a key to success is using wisely the information already at your fin-

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gertips. Most workers are tasked with getting product to market rather than spending their day managing billions of data points. Therefore, information must be organized and put in the proper context so the right people can access and use it on demand.

So, what tools are available to help you do this?

One tool is the latest market development in machine-level historians (FactoryTalk® Historian ME, see page 25). It can capture data at a 10-ms scan rate in full resolution. Multiply

that by the number of controllers installed in a typical plant, and it's easy to appreciate the challenges of organizing it all.

All that information is critical. When effectively organized, raw data supports decisions at every level of an enterprise, from management to line workers. For example, it can help food manufacturers to track dangerous product deviations, provide rationale for capital investments, and spit in-field performance metrics back to engineering so products can be designed more efficiently and reliably.

Another tool to put data in perspective for you is software technology that combines data from varying sources through a Unified Production Model (UPM), which organizes it into information that's more meaningful. This technology, FactoryTalk VantagePoint from Rockwell Automation, helps support better decision-making across the organization.

In the past, organizing information so the right people get it when they need it has been challenging. Operators must gather data from systems that vary in age and compatibility. In addition, a thick layer of security helps protect the data, further hampering attempts to create collaboration and access. Add to that the sheer variety of data sources, and it's obvious how difficult it can become to organize — much less standardize — analyses or outputs such as reports or trends.



Control systems, human-machine interfaces (HMI) and historians have information about the plant and its products. Enterprise resource planning (ERP) and customer relationship management (CRM) systems have information about orders, inventory levels and customer preferences. Other applications contract information that forecasts demand, set production and maintenance schedules, and manage recipes and quality results.

Information from any of those caches certainly is important to improving process, enhancing quality or enabling sustainable manufacturing or lean goals. However, users can achieve the greatest results when those data stores are combined and placed in context.

Organized Information Makes a Difference

The Santa Rosa Water District (SRWD) is one organization that benefited from putting their data into context. SRWD needed to track flow (a process and controls issue) and water consumption (primarily a CRM-type issue that enables them to bill their customers). The facility also needed to sample water quality from various process phases and areas of the facility, and test and document



their results at an on-site lab using a Laboratory Information Management (LIM) system.

The operators knew that when a problem arises, they could make better decisions about corrective actions needed by comparing what happened during the process with lab results from the LIM system. SRWD implemented VantagePoint to achieve this goal.

>> First-Of-Its-Kind Energy Trending Application

Operators improve throughput; management asks for more cost savings. Plant managers achieve better OEE; still, management wants more cost savings. Now, an RSEnergyMetrix™ embedded visualization layer from Rockwell Automation helps plant personnel cut energy consumption costs.

“RSEnergyMetrix is essentially an energy historian with time-stamped data coming off sensors that can track anything flowing in a pipe, measuring anything in a wire,” says Phil Kaufman. He serves a dual role as business manager for the Rockwell Automation Power and Energy Group, and program manager for the development of engineering standards and tools for the systems and solutions business.

“We push the energy information into FactoryTalk VantagePoint, which takes data from disparate systems and provides visualization and reporting. And now energy is another key performance indicator that can be evaluated as a cost of goods sold, rather than a cost of doing business.”

Viewed in that light, decision-making about daily energy consumption can be put back in the hands of control engineers and other operations personnel who can personally affect energy consumption.

For example, operations personnel at one plant learned the company would save \$66,000 annually by batching an operation and performing it on second shift when the use and cost of energy was lower.

“Since 1992, we’ve been able to tell customers how much energy they’re consuming. We’ve already gone after the low-hanging fruit, such as turning off the lights or putting in a variable-speed control system,” Kaufman notes. “The next step was to tie production data to the energy consumer. VantagePoint achieves that.”

[Rockwell Automation EnergyMetrix](http://www.rockwellautomation.com/go/rsenergy)

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“We allow the data to be the master in whatever system — and on whatever brands — exist in a plant,” says John Theron, product manager for Rockwell Software. “VantagePoint interacts with all the data sources on the floor that we can expose to the model, and the UPM continually refreshes itself, arming users with the most up-to-date information available while the original data remains at its source.

“There is a tremendous amount of time spent moving information from one system to another in a typical plant,” Theron explains. “The UPM is a reusable model, so

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it saves that development and transfer time and allows operators to spend their time acting on information, not just moving it around.”

Plant-Floor Agility

While a software engineer building simulations might need highly granular data from a range of processes or key performance indicators (KPI), other personnel might have more limited needs. The key to achieving agility on the plant floor is in providing information that’s relevant, accessible and easy to disperse.

“VantagePoint is user-friendly, which is what makes it a great tool for integration between IT, the plant floor, business management or quality assurance,” says Ted Hill, director of business development, Rockwell Software. “You navigate through

For troubleshooting purposes, the ability to pull information from multiple systems is essential.

UPM model the way business people do, not the way IT people do and, based on your credentials, you get access the information that is relevant to you.”

What’s relevant, of course, varies by role. A process engineer might need data on pressure, vibration or temperature, while quality assurance will need specs on the “golden batch” and lab results. Maintenance personnel need machine run times and performance specifications, and asset managers need cost and warranty information. A plant-floor operator might need access to all of those systems to answer one simple

question: Am I on schedule to make my target?

For troubleshooting purposes, the ability to pull information from multiple systems is essential. For example, a consumer products manufacturer needed to investigate a downward trend in overall equipment effectiveness (OEE). Deter-

mining its cause required pulling information from multiple systems: process information from its historian, and alarm information from another part of the plant that shows changeovers, disruptions and recon-figurations. VantagePoint enabled the manufacturer to bring that information together for the first time.



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>> Practical Application of VantagePoint

Let's examine how FactoryTalk® VantagePoint technology can support decision-making that helps business leaders meet their goals.

In a typical plant, people at the business level set a goal to decrease energy consumption. To accomplish this, first you need to analyze consumption.

To determine how much energy you're using, losing and recapturing and when, where and how, you must get information out of many plant systems. Production information comes from the historian and asset management systems. Information about what was consumed might reside in the MES.

Pulling all those pieces together means manufacturers can tally total energy-spend. That information enables analysis of what percentage of the cost of a good is attributable to energy costs.

From a business perspective in this scenario, knowing what it costs to make a single widget empowers you. Your managers then can make better decisions about factors such as system upgrades or the best time to buy energy. That enables them to track the results of those decisions.

For a plant manager, the ability to link energy consumption with output helps them make informed decisions about staffing shifts and ordering material. It allows line operators to determine whether they should let a line run during a corrective action, or shut the machine down and cycle it back up again.

One company learned the hard way. Its typical plant power usage averaged about 7 MW for a particular time period. A maintenance team went into the plant to make an upgrade and turned off all the machines. When they turned them on to cycle up again, power usage spiked to 13 MW.

"You pay for power based loosely on average use statistics," says Phil Kaufman, business manager for the Rockwell Automation Power and Energy Group. "The penalty assessed by the power company for exceeding the company's average during that 45-minute window of time decimated the company's profit that month."

Knowing how much energy it takes to spin up a big piece of equipment, and making an intelligent decision about when to do so, gives your plant another way to save hard-won profits. VantagePoint provides that insight.

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In addition to providing role-appropriate information, VantagePoint makes that information accessible through its interactive browser. It provides a range of presentation tools designed to facilitate more efficient reporting and information sharing among plant personnel.

Focus on Business Goals

The technology isn't just a pretty dashboard. Its purpose is to enable decision-making by helping users access and correlate data. After all, manufacturing goals, incentives and initiatives are driven by business objectives.

Using VantagePoint normalizes information and reports so that people at the business-level of the organization get the information they need. It also provides people at the manufacturing level the analytical data they need to break down their processes and determine how they can meet those business objectives.

The technology cuts across all industries and a range of production disciplines. It connects to all disparate sources of information and organizes that information in a way that everyone in the plant — not just IT wizards — can access and use." □

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