

## **Sustainable Production Imperatives and Opportunities from Rockwell Automation**

By Craig Resnick

### **Summary**

Rockwell Automation recently briefed ARC regarding the company's initiatives in the area of sustainable production. Rockwell Automation expands the general definition of sustainability, which often refers only to energy and environmental concerns, to include workplace safety, product integrity and reliability, and reuse of waste products in the reverse supply chain. Real economic imperatives drive manufacturers to adopt sustainable production practices. These can help provide a long-term solution to

Rockwell Automation defines sustainable production practices as those that make the manufacturing operations cleaner, safer, more energy efficient, and more competitive.

managing the economic, brand and regulatory risks related to energy, raw materials, workers compensation, lost worker productivity and product liability. Companies that produce the strongest brands will be those that continue to practice responsible manufacturing processes, even in a down

economy. Overall, the elements of the Rockwell Automation sustainable production portfolio are aligned to make manufacturing operations cleaner and safer, while simultaneously being more energy efficient and competitive.

### **Three Key Elements of Sustainability Portfolio**

With an emphasis that sustainability is good for the bottom line, the sustainable production portfolio from Rockwell Automation balances environmental and social performance factors with those for business performance. Products and solutions for environmental, safety, and energy challenges make up the portfolio.

- In the environmental arena, this means reducing emissions and waste, measuring and reporting results, and minimizing raw material use.



- The safety element includes worker and process safety as well as product integrity. Preserving brand integrity while protecting workers and communities during the manufacturing process, and consumers post-production, is of prime importance.
- The energy element involves reducing dependence on non-renewable fuels, boosting energy savings, and building competitive advantage.

Together, these three elements provide the framework to help manufacturers turn sustainability challenges into business advantage.

### Sustainable Production Challenges – Not Just Energy

Though many stakeholders immediately turn to energy as the central focus for sustainability, the key drivers behind sustainability expand that view. These drivers include a focus on resources, which include human, material, utility, and financial. Classic drivers such as cost of goods sold, raw material usage, yield, waste, and utility cost and availability underscore the need for sustainability programs. Efforts to comply with environmental legislation amplify this need.

Sustainability initiatives that address utilities consumption require solutions that monitor, analyze, and control.

Sustainability initiatives to increase yield and reduce waste are familiar to many manufacturers. These include Total Quality Management (TQM); Total Productive Maintenance (TPM); Six Sigma; and lean programs such as Sort, Straighten, Shine, Standardize, & Sustain (5S); and Kanban. These initiatives also include benchmarking and leveraging best practices. For example, the European Commission provides sustainability best practices for integrated pollution prevention and control. Key Performance Indicators (KPIs) and corporate objectives for sustainability are aligned from the plant floor to the enterprise. Historical data is used to analyze operations and perform root cause analysis for production issues.

In addition to material concerns, sustainability initiatives that address utilities consumption require solutions that monitor, analyze, and control. For example, the water crisis will continue, posing real risks for manufacturers dependent on water availability. Having access to water, at the right quality, at the right time, at the right place is a key concern for many organizations, especially for food & beverage manufacturers. In addition to

local production issues, companies have global exposure to scarcity of water and other utilities through their supply chains.

Sustainability solutions are also needed for increasing operational flexibility to meet ever-changing market demands. Older plants were designed for few recipes and limited SKUs, whereas modern plants must be capable of handling limitless amounts of SKUs. Recipe management and execution requires the codification of knowledge, matched with the required equipment capability, suitability and configurability. Plant assets must be utilized to best manage variability in production, material availability, and batch sizes. Processes need to be coupled into single, multidisciplinary automation and information solutions to enable integration.

Increasingly, both improved production flexibility and improved plant operations are becoming part of the sustainability production agenda. As a result, manufacturers demand additional solutions regarding recipe management systems for maintaining recipes and adapting to existing plant equipment. Manufacturers also demand plant-wide automation solutions based on a single architecture for process, batch, packaging, and visualization; and solution implementations based on standards such as ISA S88, S95, and S99. For this, the Rockwell Automation sustainability response is to provide, a single system for plant wide automation, Integrated Architecture™. This system includes Allen-Bradley® controls, FactoryTalk® software solutions for information management and integrated motor control to manage production transfers, solutions for key production areas such as mixing and blending.

## Sustainable Production – Environmental

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Offerings include modular solvent recovery solutions and distillation technology used to separate and recover valuable chemical products from

waste mixtures. Numerous solutions in the portfolio of Pavilion Technologies, a recent acquisition, meet a range of predictive emissions, emissions-monitoring and active compliance-reporting requirements, as well as plant-wide optimization for increased first-pass yield and reduced raw material and energy usage. Water and wastewater management solutions further extend the environmental portfolio. Additionally, Rockwell Automation offers a full scope of project-management services that can help manufacturers build sustainability programs, including consulting, engineering and design, commissioning, startup, and ongoing solution support after implementation.

### **Sustainable Production – Safety and Product Integrity**

Corporate sustainability leaders' track and report safety performance as part of their overall metrics. This is driven by the recognition that a strong brand reputation is essential to the longevity of any company. Today's consumers demand products manufactured using socially responsible processes; communities demand responsible performance to grant a 'license

to operate,' and attracting employees demands a safe work environment.

Rockwell Automation's sustainable production response is to provide a complete portfolio for machine, electrical and process safety applications that are a core part of their Integrated Architecture.

Similarly, product integrity strongly influences brand reputation. A product recall or quality concern can cause significant damage to a company's profitability in both the short and long term. Thus,

Rockwell Automation's sustainability portfolio includes worker and process safety, as well as product integrity. The company enables sustainable production by emphasizing the use of global standards, innovative technologies, well-trained personnel, and ongoing risk assessment as best practices to support and maintain efficient production and to help provide a safe operating environment for employees.

Allen-Bradley process and machine safety products are a core part of the company's Integrated Architecture. In addition, as with the environmental objective, a full spectrum of engineering services are available. These include safety consulting, risk assessment, site implementation, maintenance, training and system integration. Furthermore, ICS Triplex process safety solutions help manufacturers adhere to or exceed industry safety standards, leading to increased uptime, improved worker safety, and preserved resources by reducing the chance of process failure.

To assist manufacturers who today are finding themselves held responsible for the entire “chain of custody” of their products, Rockwell Automation’s FactoryTalk software features track and trace capabilities that can help minimize waste throughout the manufacturing process, provide safer production practices and, if necessary, help execute product recalls.

## Sustainable Production – Energy

The central theme of many sustainability programs is energy. The Rockwell Automation sustainability offerings help customers reduce energy consumption, reduce dependence on non-renewable fuels, and minimize the risk to profits represented by pricing volatility, whether energy is a fixed or variable cost for production.

Solutions and services for auditing, monitoring, reporting, and optimizing energy usage can help manufacturers design and implement effective energy savings programs. Software offerings include RSEnergyMetrix™, FactoryTalk VantagePoint Energy Management Dashboards, and solutions within the Pavilion Technologies portfolio. Finally, products such as the full line of monitors within the company’s Power and Energy Management group, as well as Intelligent Motor Control and PowerFlex® variable frequency and liquid-cooled drives, can be deployed

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through normal channels or under the supervision of a Rockwell Automation Certified Energy Manager. These specialists provide assessments and audits for a variety of stakeholders, from those who need guidance on how to structure a program to those who need data to document their savings.

In addition to programs to reduce energy demand, Rockwell Automation continues to make investments in automation control and networking technologies that help alternative energy manufacturers innovate new systems that can help reduce consumption of non-renewable fuels, reduce carbon emissions, and reduce manufacturing energy costs.

## Manufacturing Convergence and PartnerNetwork™

In their quest to be increasingly profitable and competitive, Rockwell Automation customers are seeking sustainability solutions that reduce their cost of automation. They also recognize that they need additional automa-

tion to maximize manufacturing efficiencies, simplify information flow, and perform business to manufacturing systems integration. For this, Rockwell Automation's sustainability response is to provide plant-wide automation solutions based on the convergence of multiple control disciplines (information, control, communications, and power) into a common control platform. This unified information and control framework, delivered by the company's Integrated Architecture, is designed to help customers re-

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duce production costs, improve regulatory compliance and respond more quickly to changing market demands.

Furthermore, members of the Rockwell Automation PartnerNetwork™ program have offerings that complement the provider's sustainable production solutions. For example, leveraging the Cisco and Endress+Hauser strategic alliances

enable improved data flow and better monitoring and control of manufacturing assets. Rockwell Automation's distribution partners also provide domain expertise and product offering in these areas.

### Approach and Application

Identifying its customer's real needs and opportunities is Rockwell Automation's first step. For example, the company performs energy assessments and audits at key customers to evaluate their energy generation and consumption, identify savings potentials, align processes to reuse heat, avoid peaks, and target opportunities. Simple changes in programming could provide a return on investment (ROI) of less than a year; installing supervisory systems, additional sensors and control systems could provide an ROI of between six months and two years; and installing new boilers could provide an ROI of between one and two years.

As a global manufacturer itself, Rockwell Automation applies sustainable production technologies and principles in its own facilities. As a result, Rockwell Automation was again named to the list of Ethisphere's "World's Most Ethical Companies," reporting its own sustainability performance annually, with the most recent report indicating reductions in electricity, gas, liquid fuel, CO<sub>2</sub>, and solid waste. Acquisitions of Pavilion Technologies, ProsCon, ICS Triplex, CEDES, and Rutter Hinz all contribute to the company's sustainable production portfolio.

## In Summary, Sustainability is an Opportunity

In light of the current economic uncertainties, manufacturers, processors, and OEMs will only invest in information, automation, machinery and processes that will make a significant impact on profitability. Those investments must make a direct impact on the use of water, air, gas, electricity, steam, raw materials, and the ability to adhere to regulatory imperatives, which dictate what to measure and what will matter. Those investments must also make an indirect impact on consumer satisfaction, investor confidence, shareholder resolutions, consumer product safety and recall prevention and mitigation. These investments must be more than green, and must address both energy and environmental concerns, efficient use of production assets and raw materials, workplace safety, and product integrity. Sustainability is becoming a business imperative, not just a societal and environmental imperative, and must improve competitiveness.

A primary challenge for Rockwell Automation is to clearly deliver the message that its sustainability solutions will provide competitive economic advantages to their manufacturing customers. Many of these customers

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seek leaner, greener, and safer solutions by leveraging full single vendor integration of automation and information, both horizontally and vertically across systems, as part of flexible platforms that provide continuous improvement. The assessment and audit services from Rockwell Automation will assist in this regard. Also, Rockwell Automation must focus

on its customer's immediate and long term business needs as a complete solutions partner, versus simply as an automation supplier.

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Rockwell Automation provides customers with an external Web page that addresses the company's sustainable production solutions and case studies: <http://www.rockwellautomation.com/solutions/sustainability/> as well as a White Paper based on the perspectives of a customer sustainability panel: [http://literature.rockwellautomation.com/idc/groups/literature/documents/wp/5058-wp002\\_-en-p.pdf](http://literature.rockwellautomation.com/idc/groups/literature/documents/wp/5058-wp002_-en-p.pdf)