Alphabet Soup of Sustainability S

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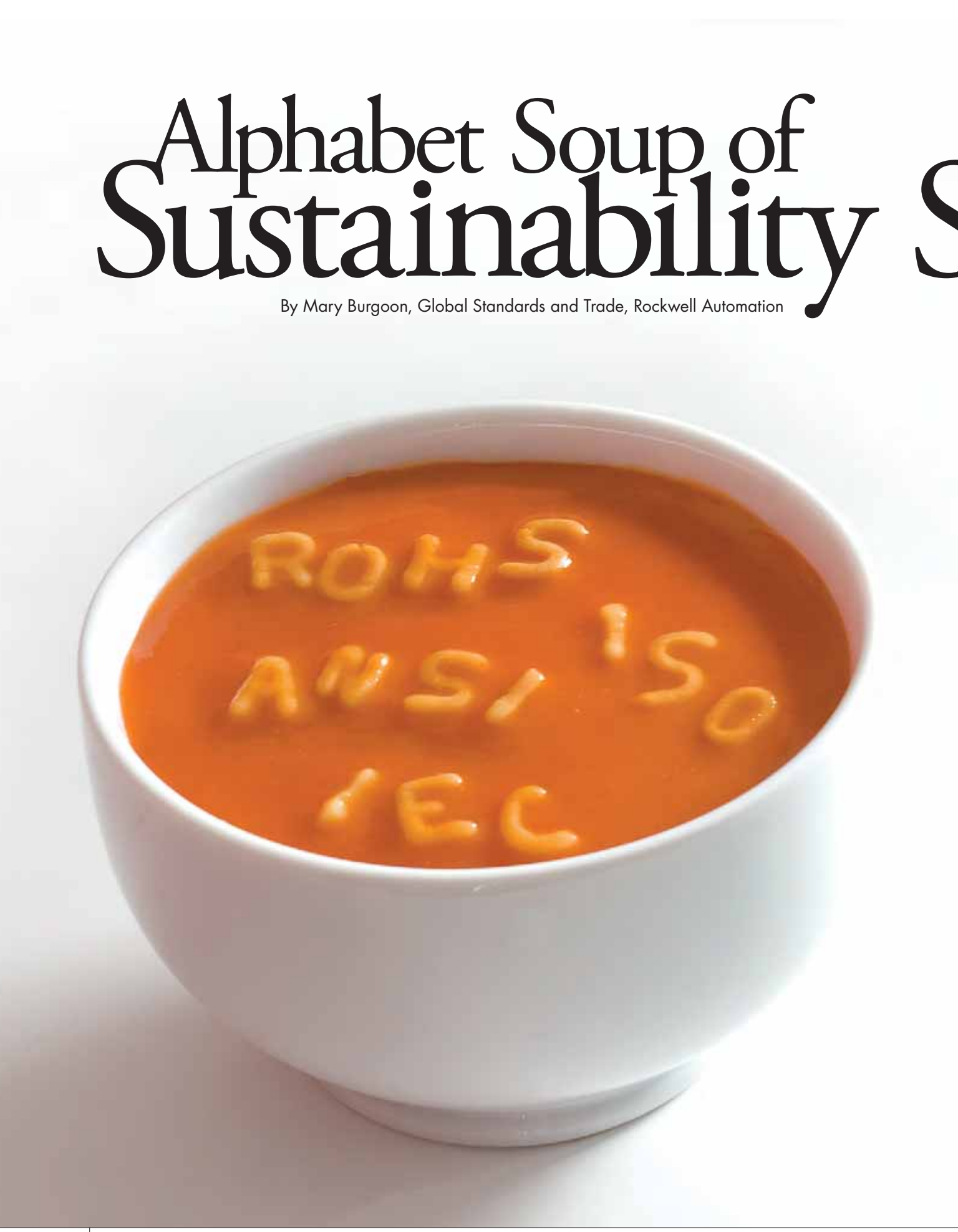

Standards

Sustainable production includes a mix of terminology and standards you need to understand to implement a more flexible and productive operation.

Recent increased interest in sustainable production has brought with it a super-sized bowl of alphabet soup with terminology and standards through which to sort. The ABCs of sustainable production focus on energy, the environment, safety, social responsibility and their related standards. When you're aware of the standards and how they're related, you'll have the tools to build a more sustainable and profitable operation.

Manufacturers who adopt sustainable production practices turn marketplace challenges into advantages. Sustainable production includes cleaner, safer and more energy-efficient operations.

How? Production is cleaner when it reduces material waste and process emissions, and efficiently uses natural resources. It's safer when it protects workers, processes, equipment and the community from harm. It's more energy efficient when more goods are produced with less energy consumption of water, air, gas and electricity.

Remember, soup is good food. So grab a big spoon and get ready to digest a healthy serving to help you feed your sustainability programs.

Groups in the Soup

Sustainable production uses technologies to transform materials within an integrated supply chain to optimize product yield while reducing emissions of greenhouse gases (GHG). Sustainable production also helps cut down use of nonrenewable or toxic materials and generation of waste materials.

Industry and governments are partnering to produce sustainable results that facilitate trade and protect society. Global trade regulations and industry requirements are driving the need for equipment and system standards.

Standards contribute to sustainable production through adoption of internationally recognized best practices that set benchmarks for safety, quality and performance of equipment and systems while reducing risks and costs. All these factors lead to optimized solutions for you.

Many organizations are involved in coordinating and developing sustainable production standards, including the:

- International Organization for Standardization (ISO, www.iso.org).
- International Electrotechnical Commission (IEC, www.iec.ch).
- American National Standards Institute (ANSI, www.ansi.org).
- National Institute of Standards and Technology (NIST, www.nist.org), which is part of the U.S. Department of Commerce.
- National Electrical Manufacturers Association (NEMA, www.nema.org).
- Institute of Electrical and Electronics Engineers (IEEE, www.ieee.org).

Some of these groups have combined their efforts. For example, the ISO and IEC are working together on Energy Efficiency and Renewable Energy Sources — ISO Strategic Advisory Group/IEC Strategic Group, both of which are providing technical direction to their respective technical management boards.

These strategic groups' current focus is to review existing published standards and current standards development activities and identify opportunities for future standards work to address energy efficiency and renewable energy sources to meet industry and regulatory needs. The groups also coordinate efforts of ISO and IEC to ensure that harmonization occurs. Work under consideration that may affect Rockwell Automation and its partners and customers includes:

- Standards for industrial efficiency indicators for energy-intensive industries.
- Standards for assessing and rating industrial processes.
- Standards on combined heat and power, biogas and geothermal energy sources.
- Standards for industrial boilers.
- New standards in the fields of lighting, rotating equipment, heating and cooling, power generation and distribution.

Rockwell Automation is participating in these groups to identify requirements and participate in standards development that can be implemented within its product and systems portfolio to meet customer's sustainable production needs.

Setting New Standards

Energy management standards have been or are being developed around the world. For example, ANSI MSE 2000:2005 has been issued in the United States, and provides a framework for a management system that lowers energy costs. It also reduces environmental impact; aligns actions with organizational strategies and goals; sustains productivity and savings improvements; and encourages continual improvement.

Meanwhile, the European Union (EU) has issued standard EN 16001 that specifies energy-management system requirements to enable all types and sizes of organizations and companies worldwide to develop and implement a policy, identify areas of significant energy consumption and target reductions.

The ISO 50001 energy management system standard (under development) aims to replace the U.S. and EU energy-management standards with a harmonized, international standard. Ninety participants from 25 countries are helping develop this international standard. Participating countries have existing activities on energy management and strong interest in developing a harmonized international standard. Estimated publication date is late 2010 to early 2011.

> International collaboration between industry and government groups focus on establishing globally accepted standards for sustainable production.

The ISO 50001 standard will provide manufacturers with a process to proactively assess, manage and measure energy usage modeled after the Plan-Do-Check-Act framework used in ISO 9001 and ISO 14001. The ISO approach is as follows:

Plan – Establish objectives and make plans (analyze your organization's situation, establish your overall objectives and set your interim targets, and develop plans to achieve them).

Do – Implement your plans (do what you planned to do).

Check – Measure your results (measure how far your achievements meet your objectives).

Act – Correct and improve your plans and how you put them into practice (correct and learn from your mistakes to improve your plans and achieve better results in the future).

This new standard specifies requirements for an energy management system which enables an organization to take a systematic approach to the continual improvement of energy efficiency and energy performance. It doesn't state specific energy performance criteria.

Some key benefits of the ISO 50001standard include:

- Enabling an organization to take a systematic approach to continuous improvement of energy efficiency and energy performance.
- Providing a framework for industrial facilities seeking to manage energy use.
- Providing procurement practices for energy using equipment and systems and the energy supply.
- Providing a way to measure current energy usage.
- Validating continuous improvement.
- Promoting energy-management best practices.

After implementing ISO 50001, manufacturers can develop an energy-use baseline and actively manage energy use and costs. Firms also can reduce emissions, to improve product output over time, and document savings for internal and external use.

Environmental Standards

Product environmental and energy efficiency regulation is proliferating globally, such as China's Restriction of Hazardous Substances (RoHS), and EU RoHS and REACH directives. These regulations reference standards that will provide base requirements for conformity assessment systems implementation.

Customers will require their supply chain manufacturers to comply with these standards so they, too, can demonstrate compliance, minimize risk and contribute to their own sustainable production efforts when they incorporate the purchased product in the manufacture of their product.

Some of the essential environmental activities include:

- IEC Technical Committee 111 Environmental standardization for electrical and electronic products and systems.
- ISO 14006 Environmental Management Systems Guidelines on Eco-Design.
- BSI PAS (Publicly Available Specifications) 2050 — Assessing the life-cycle GHG emissions of goods and services.
- ISO Technical Committee 207 – Environmental Management.

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The IEC Technical Committee 111's work has created publications on the following standards and PASs:

- IEC 62321 – Determination of levels of six regulated substances. Six substances are regulated in the EU RoHS Directive.
- IEC 62430 – Environmentally Conscious Design for electrical and electronic products.
- IEC 62476 Technical Report – Guidance for evaluation of product with respect to substance use restrictions in electrical and electronic products.
- IEC PAS 62545 – Environmental Information on Electrical and Electronic Equipment (EIEEE).

Standards are being developed for Material Declaration and for electrical product recycling.

In ISO Technical Committee 207, a series of standards outline how to conduct product life-cycle assessments. This committee also handles activity related to GHG measurement and reporting.

Better to be Safe

Safety is an essential element of sustainable production. You can't have a sustainable operation without systems designed to enhance productivity and safety.

The specialty chemicals sector is keenly aware of this. Chemical company leaders are evaluating new approaches to increase performance while helping mitigate production risk. Manufacturers need to gain a competitive edge through advantages available by using common systems for process and safety control.

These benefits include helping reduce problems associated with multiple programming requirements, including increased operation, maintenance and training costs.

This approach allows manufacturers to achieve operational benefits of integration while meeting safety requirements for separation.

Industry standards for chemical manufacturers, such as IEC 61511, include specific performance and life-cycle criteria that quantify system reliability through failure rates. These failure rates are based on three key criteria: fault detection, fault tolerance and Probability of Failure on Demand (PFDd). PFDd quantifies dangerous undetected failures.

Another safety trend is in development of new functional safety standards.

For example, robots play a key role in industries from consumer packaging to automotive to plastics to electronic manufacturing. Availability of more cost-effective, smaller and higher-performance robots makes financial justification easier. While robotics automation boosts productivity, robotic work cells that lack an adequate safety environment won't be optimally productive.

Significant international efforts are developing automated machinery safeguarding strategies for worker safety, according to the ARC Advisory Group. For example, in the United States, the Robotics Industry Association (RIA) has made significant efforts to develop a new revision to the 1992 Robot Safety Standard.

The revised standard ANSI/RIA R15.06-1999 includes risk assessment, methodology and guidelines for safeguarding robotic systems. This offers new and improved information for users, system integrators and supplier's robots.

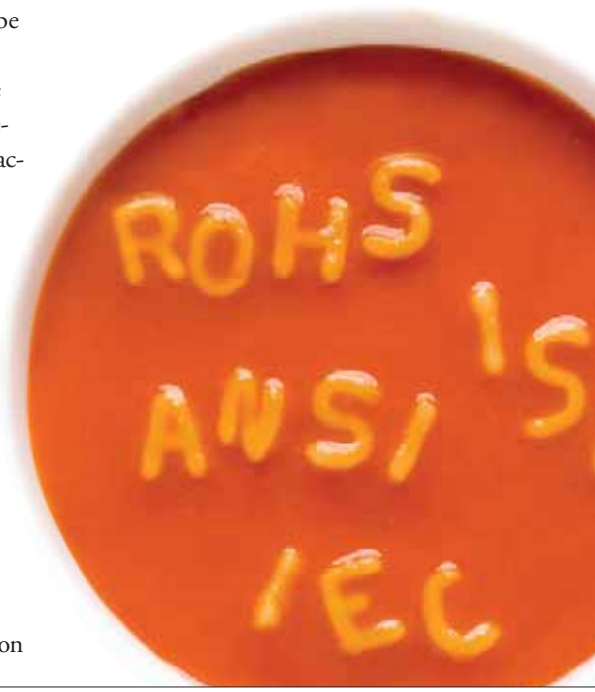
The Canadian Standards Association (CSA) also revised its 1994 robot safety standard, and it's now based on the U.S. standard. Users who follow this new CSA Z434:2003 standard will comply with the ANSI/RIA R15.06-1999 standard; therefore, CSA Z434:2003 becomes a North American standard.

However, because minor differences exist between the U.S. and Canadian standards, users who follow ANSI/RIA R15.06-1999 may not fully comply with CSA Z434:2003.

Another trend is that safety-related investment is expected to be a significant component of overall capital expenditure for manufacturing companies during the next five years. The primary drivers are the need for manufacturers to maintain increased productivity, retain qualified employees, protect workers, and reduce workers' compensation costs and liability claims.

Manufacturers and machine builders also are discovering that an effective way to

A complete sustainable production program addresses energy, environment, safety and social responsibility.



increase productivity and flexibility is to engineer and embed safety into systems and processes at the front end.

Social Responsibility is Another Key Element

Social responsibility standards led by ISO 26000 are yet another key element to sustainable production. Sustainable business means providing products and services that satisfy the customer while operating in a socially responsible manner.

The ISO 26000 voluntary standard will be published in 2010. This standard is being developed as a "guidance document." It isn't intended to be used for certification because it won't include specific requirements.

ISO 26000 will add value to existing initiatives for social responsibility by providing harmonized, globally relevant guidance based on international consensus among expert representatives of the main stakeholder groups. This will encourage implementation of best practice in social responsibility worldwide, according to the ISO.

The purpose of the standard is to develop an international consensus on what social responsibility means and issues that companies need to address. The voluntary standard also is designed to provide guidance on translating principles into effective actions; refining best practices that have already evolved; and disseminating the information worldwide to benefit the international community (see www.iso.org/iso/socialresponsibility.pdf).

Put Standards Knowledge To Work

Now that you know the ABCs of production sustainability standards, you can put your knowledge of these standards to work to help you realize greater returns from sustainable production efforts.

A complete sustainable production program will address energy, the environment, safety and social responsibility while yielding financial benefits for your company's bottom line. □

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