Sustainability 101:

A 10-step approach to achieving leadership in sustainable manufacturing

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Sustainable manufacturer network

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A strong business case can be made for implementing sustainable practices in manufacturing operations to reduce costs, increase sales, retain and attract employees, and improve investment opportunities. The case is made on the theory that what is good for the environment is also good for the bottom line. This paper outlines that business case and identifies a path to developing a business strategy to help compete in a global market challenged in the coming years by environmental and social pressures that have never been faced by small and mid-sized manufacturers.

The goals presented in the following sustainable business strategy are achieved by investing in three primary concepts: extreme efficiency, social responsibility, and cradle-to-cradle, or cyclic, material systems. Leadership in extreme efficiency, or lean manufacturing, can add double digit improvements to your bottom line performance. Leadership in social equity is an investment in continuing productivity gains and is an insurance policy to help attract the best and brightest talent to your door. Leadership in developing cyclic, closed-loop systems reduces raw material costs, improves the environmental attributes in your products, and helps increase sales to the growing "green purchasing" marketplace.

Is Sustainability a Business Fad?

Several major studies within the past two years suggest that the drive for businesses to sustain the ecological systems that support their operations not only is here to stay; it's a business imperative for success in the future. The studies reveal an unprecedented growth in economic affluence in new parts of the world, increasing pace of population growth, and diminishing access to low-cost basic resources. These trends will restrain the unprepared and reward those businesses that are prepared. Knowing how these trends will affect business and which strategies to implement will make the difference between economic failure and success.

At the end of 2011, McKinsey & Company, a global business strategist to FORTUNE 500® corporations, sounded an alarm with a groundbreaking report, "Resource Revolution: Meeting the World's Energy, Materials, Food, and Water Needs," on business access to raw materials by 2030. A few of the report's findings, offer a stark wake-up call:

- There will be 3 billion more affluent consumers in the global marketplace (from 1.8 billion today to 4.8 billion by 2030) which will apply intense pressure on basic commodity prices.
- Steel demand is projected to rise by an estimated 80 percent.
- Global demand for clean water will outstrip supply by an average of 40 percent.

On the price side of the access-to-resources equation:

- Since 2000, real commodity prices have already increased by 147 percent.
- In the past 10 years, the cost to bring a new oil well on line has increased 100 percent.

A similar global study was published in 2010 by Accenture, also a global Fortune 500 business strategy company. This study revealed how Chief Executive Officers, Presidents, and other top-level managers of large corporations rank the importance of sustainability to the success of their companies. The report included the following:

"CEOs around the world are starting to see the shape of a new era of sustainability coming into view. In the face of rising global competition, technological change, and the most serious economic downturn in nearly a century, corporate commitment to the principles of sustainability remained strong throughout the world: 93 percent of CEOs see sustainability as important to their company's future success."

Additional findings include:

- 91 percent of CEOs report that their company will employ new technologies (e.g., renewable energy, energy efficiency, information, and communication technologies) to address sustainability over the next five years.
- 72 percent of CEOs cite "brand, trust, and reputation" as one of the top three actors driving them to take action on sustainability; revenue growth and cost reduction were second at 44 percent.

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These and other respected global business analysts are saying with increasing frequency that the foundational issues at the heart of the sustainability phenomenon– increasing global consumption, the power of technology to over-extract resources, and the resulting ecological assault on Earth's living systems–are having a negative impact on the "business as usual" model. In contrast, the sustainable business approach offers manufacturers a strategic path

through an uncertain future. Its tenets are based on incorporating extreme operational efficiency, socially responsible stakeholder collaborations, and safe and reusable material flows. Each of these three major tactics offers an opportunity to reduce costs, enhance the company's reputation, and increase sales to the growing segment of ecologically-minded customers.

Extreme Operational Efficiency

Many of the benefits of extreme operational efficiency came from the initial resource stewardship demonstrated by the inventor of modern manufacturing, Henry Ford. His work was transmitted to the scientific approach developed by Edward Deming, which lead to lean manufacturing, which was capitalized upon by Sakichi Toyoda with his just-in-time delivery concept and the resulting Toyota Production System. These pioneers set the standard for identifying and eliminating waste from a manufacturing system. Recent advances take the original lean techniques and add the principles of sustainability (lean and green) to push lean manufacturing to a higher performance plateau. The lean and green mindset not only includes the traditional seven lean wastes, but also incorporates energy and material efficiency plus use of safer chemicals to identify and reduce the total cost of production from raw material extraction to the product's end of life.

Socially Responsible Stakeholder Action

A business is given legitimacy by society to perform a needed function. This is manifested in the laws enacted by local, state, and national governments to protect the quality of life for each constituency. A license to operate, permits that demonstrate compliance, and continued customer support have an effect on how investors, future employees, and community member view the company as either a valued or unwanted corporate citizen. Socially responsible stakeholder partnerships support the notion that there is business value in establishing outreach programs to key stakeholders. Reaching out to employees, the neighborhood, community organizations, government regulators, and potential investors to gain insight into their needs, wants, and concerns has business value. The responsible business takes advantage of what is learned and takes preventative action prior to any one issue becoming urgent. As noted in the study above, reputation plays a key role in one of the most critical challenges facing a business in a growing market – access to the best and brightest talent. Strategically applied socially responsible stakeholder collaborations are being used with great effect to attract and retain talent, supporters, and investors. Successful efforts are also used to lower recruiting costs and increase innovation and productivity compared to competitors.

Implementing Closed-Loop Material Flow Systems

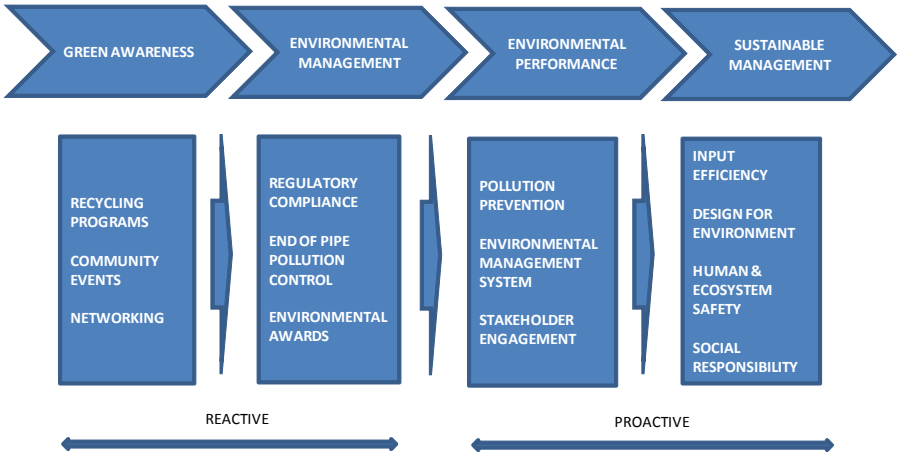
Original equipment manufacturers (OEMs) are starting to focus on the sustainability of their supply chains to help reduce the total environmental impact of the products they sell. To test the business case for this approach, take a walk out into your shop and ask yourself "How often is a unit of energy, raw material, or water used once, contaminated with a foreign substance along the way, and disposed of after one use?" It happens all too frequently. This drives up operational costs, increases labor, and inhibits achieving optimum productivity gains.

Leadership companies implement programs to capture every possible Btu of energy and find ways to reuse it in a cascading sequence until the useable energy content is finally extracted. Also, they are not satisfied with reaching standard industry scrap rates, but improve their performance through lean and green evaluations to continuously increase their first-pass yield to drive down raw material purchasing cost.

More attention is also given to improving chemical characteristics to ensure that what is generated as a waste is nonhazardous, and can be sold as a reusable material input to a buyer. These techniques help to create a closed-loop system of material reuse instead of using energy and materials once and then paying high prices to dispose of them as a specially-regulated waste. Through their own in-house experiences, OEMs see a tremendous cost reduction opportunity by collaborating with sustainable supply chain partners.

A Path toward Sustainable Manufacturing

Regardless of where you are starting, developing a sustainable manufacturing leadership approach is easy and eminently business-savvy because it helps you take your company to an elite level of performance. It also puts pressure on competitors to catch up to your higher morale, lower operating costs, and higher productivity. The following steps will help identify the next actions to take toward a more sustainable approach to manufacturing. Successfully implementing these essential actions will result in a "green" leadership position in the manufacturing sector.

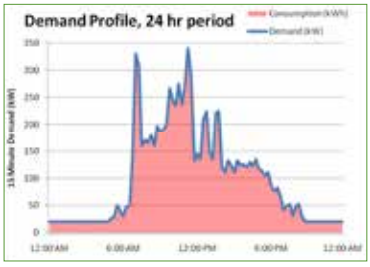


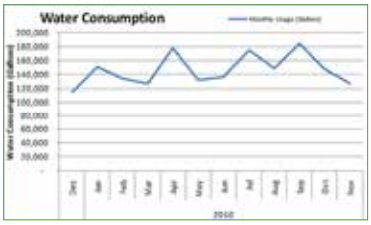
1. Become informed

Learn the language and concepts that form the foundation of sustainable business practices embodied in concepts like resource productivity, design for the environment, industrial ecology, and social responsibility.

As a Network member you will develop or enhance business relationships, gain exposure to best practices from peers, and stay up-to-date on relevant industry trends and issues. Access to these resources can help you achieve your sustainability goals. Please visit **sustainablemfr.com** to be aware of membership benefits and network happenings. Call 888-394-4362 or email info@sustainablemfr.com with questions.

2. Identify your baseline





To start from a strong foundation that will support future progress, seek out the impact on your operations regarding the environmental, health and safety laws and regulations, energy consumption, water consumption, key raw material consumption, and recycling and disposal.

3. Develop your unique values

Every company has a set of values that lead to helping establish an environmental vision. Often these values are already embodied in various places in current management philosophy but unarticulated. They should identify what are important qualities for the company, such as energy efficiency, waste reduction, toxic waste, safe working conditions, green buildings, etc. These values will be used to establish priorities and are used to weigh what is considered significant for the overall success of the company.

4. Establish your performance goals

Set specific goals, (by percentage of reduction or another metric) and gauge progress against your baseline performance.

5. Develop a plan, train, and educate your people

Training is required for management, staff, customers, and other stakeholders to assure a common understanding and a shared commitment and language to efficiently communicate progress. Management should develop a vision, staff should determine how each position can contribute, customers and other stakeholders should inform them how their products and/or services will help improve their lives.

6. **Implement internal management systems**

   The three core principles of extreme efficiency, social responsibility, and cyclic systems will be difficult to implement without strong management systems in place such as Design for Environment, an environmental management system, a chemical management plan, and a social responsibility program.

7. **Assess progress against goals**

   Using internal management systems allows management to review baseline data against performance against annual goals. Many leadership companies develop a sustainability dashboard that is used to evaluate the success or failure of the company's efforts.

8. **Review for continuous improvement**

   Internal assessments are critical to ensuring that the company's efforts are continuously improving over time. This is the responsibility of management, supported by key staff to conduct internal checks, follow up corrective actions, and report back to management.

9. **Report progress to stakeholders**

   Data collected from reviewing for continuous improvement and assessment against goals can be leveraged to develop reports to stakeholders to ensure close engagement and developing strong feedback loops from key company constituencies.

10. **Celebrate successes**

    Keep morale high by recognizing and rewarding both large and small successes in the program. There is nothing worse than a company initiative that ignores the efforts invested by staff in the company's vision.

A New Era

As the Millenials (Gen Y) become a larger and larger percentage of both the workplace and the marketplace, the elements of business that are important to them will have an ever-increasing impact on corporations as well. This is a generation that seek to affiliate with companies that have demonstrated social responsibility. They want responsibilities where they know that what they do is making a difference – making the world a better place to live. Therefore the businesses that develop a sustainability plan and work toward

achievement of its goals will rank higher on the list of both desirable employers and companies to do business with. Both ways manufacturers benefit from a strong and visible sustainability initiative.

Sustainability is not a fad. It is a practical approach to doing business in a world with limited resources that drops additional profit to a company's bottom line while having a strong, positive morale-boosting impact on a company's workforce. It is also being required by the largest corporations of their supply-chain partners.

Every company, regardless of its size, can follow the ten steps to developing a sustainable manufacturing approach outlined here. There is no better time to start than today.

For more information contact:

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The Sustainable Manufacturer Network is a professional organization of individual members from companies of all sizes leading the drive toward environmentally friendly manufacturing. Network members benefit by gaining perspective and interacting with others from across industry sectors who are tackling the same issues.

The mission of the Network is to be the principal resource for advancement of cost-effective environmentally and socially responsible manufacturing. Industries served include: food and beverage, textile mills and products, apparel, leather and allied products, wood products, paper, printing, chemicals, plastics and rubber products, nonmetallic mineral product, primary metal, fabricated metal product, machinery, computer and electronic product equipment, appliance, transportation, furniture and related products, renewable energy, and other manufacturing industries.

Sustainable Manufacturer Network is an affiliate of the Fabricators & Manufacturers Association, Intl. (FMA)—a 40+ year old association, based in Rockford, Ill., dedicated to the growth and sustainability of the North American metal processing, forming, and fabricating industries.