



# Lean and green: Use lean manufacturing principles to deliver green results

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One of my heroes from the lean and quality movement, Japanese organizational theorist Masaaki Imai, used to say this about successful lean and kaizen implementation: “My definition of lean is to employ minimum resources for the maximum benefits. Therefore, kaizen leads to lean, and lean leads to green. Kaizen is the most environmentally friendly approach.”

While there's no doubt that lean results in lowered waste, material and labour costs, there is less discussion about the benefits of lean in relation to green manufacturing,

warehousing, the office, health care and the like. Consumers, regulators, shareholders and stakeholders are all asking for more sustainability. It's a different world than it was even 10 years ago.

Here are a few examples of results cited in the U.S. Environmental Protection Agency's “The Lean and Energy Toolkit”:

- From 2005-2007, General Electric reduced greenhouse gas emissions by 250,000 metric tons and saved \$70 million in energy costs.
- A Baxter International facility combined lean/Six Sigma and

energy-efficiency efforts to save \$300,000 in energy costs in one year.

- Toyota Motor Manufacturing North America has reduced average facility energy consumption per vehicle by 30 per cent since 2000. In fact, Toyota has reduced its landfill contribution down to functionally zero, and achieved ISO 14000 certification because of it.

It's interesting that these three companies are bridging the continuous improvement gap between operational performance and environmental performance. It's true that when many of

us implement lean in our organizations, we try focus on easy-to-change items all the way up to equipment reliability. Embracing lean and green manufacturing requires giving more focus to environmental and energy concerns than just the implementation of reliability improvement projects.

It's easy to do, but it requires a subtle change in perspective. Improvements geared toward equipment reliability have distinct linkages to environmental performance, such as reducing the amount of product and raw material waste through:

- The elimination of catastrophic breakdowns through formalized root cause analysis;
- Providing routine monitoring of system parameters through predictive technologies; and
- Preventing interruptions to production cycles with a focus on overall equipment effectiveness.

## From lean to green

The similarity between lean and green is waste. So it should make sense that to achieve higher levels of environmental performance, your organization must first adopt the principles and practices of lean. Two examples from the EPA's research on lean and the environment help to illustrate this point.

- Eastman Kodak conducted numerous lean kaizen events focused on energy reductions by asking “what do we use energy to do?” They found

## From the bookshelf

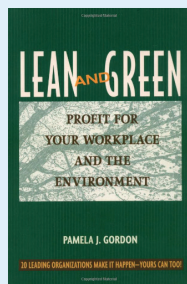
### *Lean and Green: Profit for Your Workplace and the Environment*

By Pamela J. Gordon

The main point that Gordon makes is that if you reduce waste and increase recycling, it will be good for the environment and for profits. It's really as simple as that. Plus, if you've already started your lean journey, enhancing that journey to increase recycling shouldn't be that hard.

There's still a sense out there that business profitability and environmental responsibility are at odds with each other. In much the same way as we're not able to see the truly transformational nature of the introduction of the Toyota Production System (TPS) because it was so long ago, we're still holding on to this belief. Toyota turned the world on its ear when it brought forward TPS, and most everything that they did was very innovative, even if today we take some elements of TPS for granted.

Gordon proves that capitalism and environmentalism are not mutually exclusive. She shows how green business practices enable organizations to save millions of dollars each year with more than 100 examples of how it's been done. She details such waste-saving,



profit-building acts as basic as digging out usable pre-worn shoe covers to wear in the clean room, and as broad as the city of Santa Monica paving residential streets with white top to reduce urban heat and increase surface longevity. These ideas all came from those closest to production, a key tenet of lean.

Many business leaders have invested time, energy, attention and financial resources in environmental protection, but sometimes their efforts are not consistent, appreciated or even encouraged. To her credit, Gordon personally visited 16 of the companies cited, adding a higher degree of authenticity to her work and this book.

In short, this is a well-researched and very readable, practical guide aimed at people just beginning their journey. It proves that integrating environmentally friendly processes and procedures in manufacturing operations is not only necessary for code compliance and corporate public relations, but can also improve a company's financial performance.

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