

2012 eNEWSLETTER – VOLUME III - Unlocking Profit through Energy Management

In this edition of the Sustainable Operations eNewsletter of DuPont Sustainable Solutions, we have endeavoured to provide you with engaging content that provides insights into the latest trends and innovations in operational management and sustainability. For this edition, we have focused specifically on energy efficiency – the oft “forgotten renewable”, as some say – and the means through which companies can establish a fully integrated energy management system that both optimizes energy savings and frees capital.

We hope you enjoy the read.

For further information about us, we invite you to visit our DSS EMEA website:
www.sustainablesolutions.dupont.co.uk

Sustainability Contact



More Than Just Turning Off the Lights – Realizing Energy Efficiency in an Office Environment

This article details practical steps companies can take to improve energy efficiency within an office environment.

Feature Article



Effective Energy Management Saves DuPont Billions

By focusing on both processes and culture, companies can realize significant energy savings without significant outlay of capital.

Feature Article 2



Technology Is Not the Only Answer

Though the latest technology can lead to improved energy efficiency, companies should first focus on extracting value from existing assets to generate the most savings.

Infographic



Energy Efficiency Infographic

This infographic depicts the scope for energy efficiency improvements, as well as the means through which companies can achieve savings.

News & Events



News and upcoming events

The latest news about DuPont Sustainable Solutions and where you can find us in the coming months.

More Than Just Turning Off the Lights – Realizing Energy Efficiency in an Office Environment

At a time when companies are trying to lower fixed cost and corporate footprint simultaneously, improvements in energy efficiency are particularly efficacious – a means of reducing cost, greenhouse gas emissions and maximizing operational efficiencies, for example. While the most value can be delivered by focusing on energy-intensive industrial applications, there is certainly space for improving energy efficiency within an office environment as well. Indeed, offices consume a higher percentage of energy than all other commercial buildings¹. However, offices seem to offer great potential for energy efficiency improvements, due to relatively homogeneous energy demand and significant scope to develop non-technical solutions.

When it comes to designing and implementing an energy management strategy for an office, it is easy to focus on the traditional missives: turn off lights and computers at day's end, and buy more efficient equipment, such as LED light bulbs. While such efforts can definitely lead to reductions in energy use, there are other cost-effective opportunities to explore as well.



1. **Make Energy Efficiency a Strategic Priority** – Commitment to energy efficiency must emanate from senior leadership. Without such commitment, corporate-wide acceptance and employee engagement will be difficult to implement and impossible to maintain.
2. **Audit Frequently** – In order to extract maximum value from an energy management system, it is important to understand exactly the quantity of energy being consumed, and the means through which it is consumed. Quantifiable goals should be set, and progress should be tracked continuously.
3. **Engage Employees** – All stakeholders must be fully engaged and invested in a positive outcome. However, this is rarely the case within an office environment. Few employees understand the true energy footprint of a building. While there is often engagement in terms of “turning off” equipment or “turning down” intensity of equipment use, few understand the role of ventilation, water use and heating, HVAC systems and the role of maintenance, for example. As such, companies should endeavor to inform, and then engage. Staff should be motivated to reduce consumption. Competitions, campaigns and team projects can be initiated to obtain buy-in. Benefits of these projects can be reinforced by giving employees a sense of ownership and responsibility.
4. **Communicate Regularly** – In order to maximize employee engagement, frequent communication is paramount. Traditional awareness building communications, such as emails, posters and thematic meetings are helpful to further understanding of the problem and solution. Further, a feedback mechanism is helpful to collect new ideas.
5. **Maintain Equipment** – Proper maintenance is key to ensuring the operational efficiency of company assets. HVAC systems, refrigerators, insulation and other equipment should be checked regularly, and serviced as necessary.

Certainly much value can be extracted from such efforts at little to no cost to the company. While new technologies such as motion sensor lighting can generate savings, it pays to focus on culture first.

¹ Based on data from the Buildings Energy Data Book, a publication of the U.S. Department of Energy

Effective Energy Management Saves DuPont Billions

No matter what the drivers, many companies believe that an effective energy efficiency improvement program can only be implemented through a significant outlay of capital. Although these types of investments are an important part of an energy strategy, they are not the only, or even the first items that should be considered when designing an energy reduction and cost saving transformation. In fact, this erroneous belief hampers many efforts before they even get started, since, in the queue for scarce capital, energy improvement projects are often quickly superseded by those related to increasing capacity or otherwise fuelling corporate growth initiatives. In addition, the scrutiny for energy efficiency projects can often be severe.

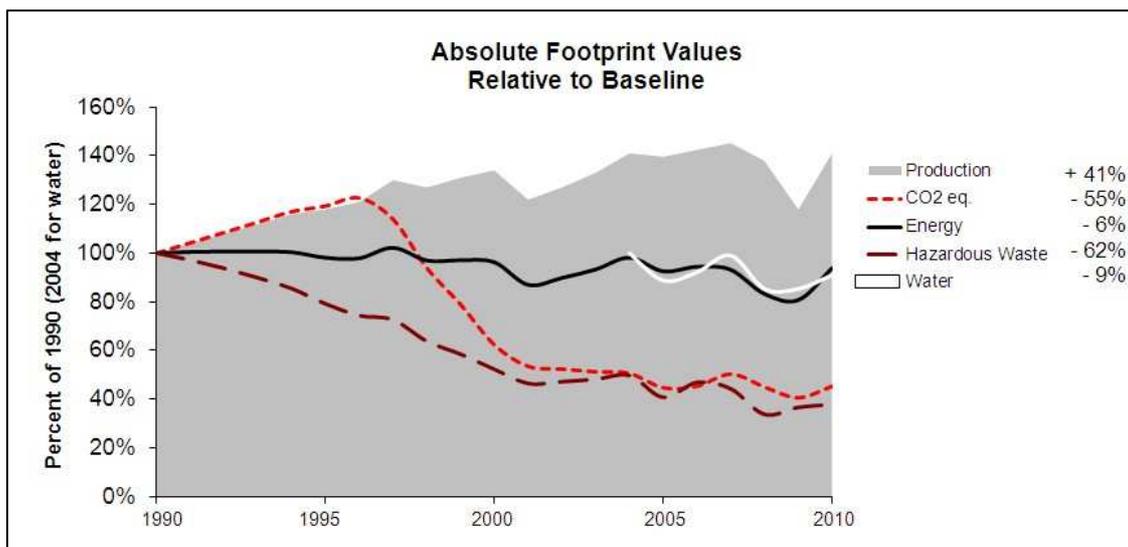


Figure 1: DuPont Energy and Environmental Performance

There is no doubt that many energy efficiency goals can only be met through the investment of capital, but DuPont's experience as owner/operators of more than 150 production facilities worldwide suggests that a highly significant portion—in fact, upwards of 40% of the total energy efficiency improvement opportunity—is achievable through relatively minor, low cost/no cost continuous improvement energy projects rooted in culture change.

Since 1990, when DuPont's then CEO Edgar Woolard committed the organization to a set of environmental and energy management goals that went well beyond compliance, DuPont has increased its overall capacity by 21%. Yet, in the face of that growth, the company's total energy usage has decreased 19%, and its greenhouse gas emissions have decreased 60%². According to one company analyst, the company's energy efficiency work has enabled it to avoid more than US\$5 billion in energy purchases in that period.

DuPont is not alone in leveraging energy efficiency improvements to reduce operating cost and drive growth. With its “ecomagination” program, General Electric (GE) was able to improve energy efficiency by 33% across its global operations, while concurrently reducing greenhouse

² Note this figure was even higher, 72%, prior to the divestiture of DuPont's fibers and textiles operation (currently Invista).

gas intensity by 34%³. This has not only led to significant savings, but also contributed to the sustainability of the business.

Maximizing value from existing assets

To achieve this type of savings, it is vital that companies look beyond simply implementing a few projects - a shift in culture is necessary. This culture change must be accomplished within the context of a comprehensive energy management system, one that incorporates strong leadership, an appropriate organizational structure and includes focused processes and actions. The effective actualization of such a system is no easy matter, and must incorporate multiple confluent elements: clear commitment from senior management; measurable goals and metrics; ownership by line management; a well-developed centre of competency; multi-disciplinary teams; and comprehensive training and skill-building programs. With this, companies have the potential to realize substantial energy savings at little to no cost.

Indeed, almost every industrial site has numerous opportunities to improve energy efficiency with minimal investment. For example, at a leading Russian petrochemicals company, a comprehensive review of one facility led to the identification of dozens of opportunities to improve efficiency. Grouped together, these opportunities have the potential to translate into direct savings of approximately 100 million rubles. Beyond this, the competencies and internal processes developed by performing this exercise will allow the company to easily identify future opportunities, implement appropriate solutions and develop new standard operating procedures to maximize efficiency across each of its sites.

At its sites, DuPont has a system in place to identify the highest savings/lowest cost opportunities, starting with the lowest hanging fruit, gathering input from the people who know these processes best. Basically, energy consumption is mapped to identify the areas of highest potential, workshops are conducted with a cross-functional team of stakeholders with intimate knowledge of the equipment, and ideas are generated, studied and prioritized. The top ones are selected and studies are done to test the changes and ensure that they can be incorporated safely and without consequence to product quality and production goals and do not cause any other unanticipated adverse event. Then processes are put in place to implement, execute, integrate and institutionalize what is changing the standard operating procedure for that piece of equipment.

Key to the success of this model is having the desire, the ability and the enthusiasm to form multi-disciplinary, cross-functional site teams to tackle these issues. This is not something that the energy expert or a lone engineer can tackle by themselves. Insight is needed from operators, from maintenance, from mechanics, from core process experts, from energy experts, from engineers and, of course, management supervision to help keep everyone focused, resources flowing and commitment high.

Ultimately, business leaders have much to gain by unleashing the potential to improve energy efficiency within their existing asset base. By implementing an integrated energy management system, and cultivating a robust energy savings culture, it is possible for companies to realize substantial savings, while paving the way to a more sustainable future.

³ World Business Council for Sustainable Development “General Electric, Energy Efficiency as Strategy” 2008

Technology Is Not the Only Answer

As the world transitions from an epoch of cheap, abundant energy to one characterized more by frugality and austerity, the pressure - and impetus - for industrial companies to be more efficient is increasing rapidly. On one side, regulations are becoming ever more stringent – voluntary programs are increasingly being reinforced with regulatory mandates, as in Finland and India. On the other though, companies are realizing significant benefit from more efficient use of energy; namely, they save money and improve their environmental footprint. No matter the driver, it is clear that improved energy management is compulsory for growth.

Though many business leaders now see the value in driving energy efficiency, they also often mistakenly believe that energy management requires big capital investment in new technologies. This can be a major hang-up for companies that are already dealing with tightened budgets. Contrary to this way of thinking, DuPont has found that more than 40% of total energy efficiency improvement opportunities can be achieved through minor, low cost, continuous energy improvement projects that are grounded in corporate culture change. Energy reduction can be considered part of the cost “portfolio.” Companies can make significant gains with a ‘block and tackle’ strategy of addressing the minor, low-cost efficiency opportunities.



“There is a common misconception that to be energy efficient, a company must invest in the latest energy efficient technologies” says Christopher Smith, Global Practice Leader for Operational Efficiency. “However, in our experience, the most value can be extracted by cultivating a robust energy management system that incorporates the review and optimization of all energy-intensive processes taking place on a given site. Further, through proper maintenance of equipment, much energy waste can be prevented.”

The most successful companies realize that long-term energy efficiency is dependent on a larger cultural shift. Just achieving quick wins in terms of energy cost-savings and lowered risk does not equate to long-term sustainability. However, the cultural shift that allows for these quick wins also lays the groundwork to deploy other energy management technologies and a holistic energy management system, which paves the way for innovation in the future. Companies must understand the impact energy and materials have on their business and view their consumption as a strategic issue.



The miracles of science™

Energy Efficiency infographic

[View the full screen Energy Efficiency Infographic](#)

ENERGY EFFICIENCY THROUGH CULTURAL CHANGE
DuPont Sustainable Solutions

Chris Smith
Global Director, Energy Efficiency
Global Sustainability Solutions
"There needs to be a culture created where everyone is empowered to identify problems, bring them to the attention of others, and, as appropriate, work to solve them."

ENERGY INTENSIVE INDUSTRIES*
with % of energy consumption

- 24% Mining, Metals, and Minerals
- 20% Oil and Gas
- 13% Chemicals
- 4% Pulp and Paper

KEY ELEMENTS THAT DRIVE THE NEED FOR ENERGY EFFICIENCY

- ACCESS TO CAPITAL
- VOLATILITY OF RESOURCE COSTS
- PUBLIC ACCOUNTABILITY
- PUBLIC POLICY
- COMPETITION

ENERGY EFFICIENCY AT DUPONT STARTED WITH STRATEGIC ENERGY MANAGEMENT

- 135+ plants produced 100 tons
- 6 BILLION energy cost savings since 1998
- 4% reduction in energy use while output increased by 40%
- 40% increase in productivity
- 60% increase in energy efficiency
- 45 MILLION gallons of water saved

5 COMPONENTS OF STRATEGIC ENERGY MANAGEMENT

1. Identifying and elevating energy cost as a strategic business issue
2. Identifying and executing the right projects to drive highest-gain results
3. Implementing a vertically integrated management approach to drive results
4. Connecting many disconnected components of complex energy management
5. Developing skills and capabilities of the people in the organization

Case Studies:

- The Bolid Energy Plant, Lulea, Sweden**
 - In 2000, saved \$20 million (2% of the plant's total energy costs)
 - Implementing 200 projects that required little or no out-of-pocket spending and 48 finished capital projects with ROI = 123%
- Titanium Technologies Sets the Gold Standard**
 - In 2000, a continuous improvement program to reduce energy use while increasing TiO₂ production was initiated
 - By 2002, the site had increased production by 7.2% and 1000 tons
 - Energy usage decreased by 40%
- Sixteen Savings @ Saffire River**
 - Over \$70 million savings in energy costs from 2001 to 2002
 - Saved 400 million lbs
 - Site energy productivity (lb BTU per pound of product) improved 40% in 2002 vs. 2001 production

DOWNLOAD OUR ENERGY EFFICIENCY WHITE PAPER

Energy Value Creation

- strategic energy management operational discipline
- Energy consumption reduction
- Reduced exposure to escalating energy prices
- Cost reduction
- Market
- Reduced risk

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News & Events

News

DuPont Announces New Format for Safety Awards, Opens Calls for Applications

After celebrating the 10th edition of the DuPont Safety Awards in Istanbul, Turkey last year, DuPont has announced that the annual award ceremony will now broaden its scope, becoming the DuPont Safety and Sustainability Awards.

» [Read more about the new format of the DuPont Safety and Sustainability Awards](#)

U.S. Secretary of Energy Tours DuPont

U.S. Secretary of Energy [Steven Chu](#) addressed a standing-room-only audience during his TechCon keynote speech on the topic of “Unleashing Innovation to Solve Energy and Climate Challenges.” As the lead U.S. official on energy, Chu is charged with addressing the global climate crisis, helping the nation invest in clean energy and reducing its dependence on foreign oil.

» [Read more news about DuPont](#)

Upcoming Events

2nd Annual Global Health & Safety in Mining Forum

London, United Kingdom - 18-19 September

Topic: Leading for Sustainable Safety Excellence - DuPont Integrated Approach (DnA) for Safety

Speaker: Peter Augsten

Best-in-Class Operations & Maintenance Strategies for Chemicals & Petrochemicals

Amsterdam, The Netherlands - 19-20 September

Topic: Integrating a robust safety programme within your operations and maintenance strategy to ensure successful plant operations

Speaker: Henry Walters

12th Russia & CIS Refining Technology Conference & Exhibition

Moscow, Russia - 20-21 September

Topic: Latest Developments in Low Cost Hydroprocessing Technology

Speaker: Andrew Tyas

Global Local Content Summit 2012

London, United Kingdom - 24-27 September

Topic: Local Content

Speaker: Angela Fratila

DuPont Safety Days

Geneva, Switzerland - 24-27 September

With great pleasure, we invite you to our Safety Event where you will have the opportunity to take part in live experiences and participate in exciting workshops. Our high caliber speakers will bring new insights into solving challenges such as food risk assessment, food protection, maximizing workplace safety, operational efficiencies, environmental management and process technologies, protecting people from first responders to industrial workers. DuPont provides solutions to meet a variety of safety needs.