Improving operations and cutting energy costs:

Step-by-step instructions for manufacturers

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Business Solutions

Improving operations and cutting energy costs for manufacturers

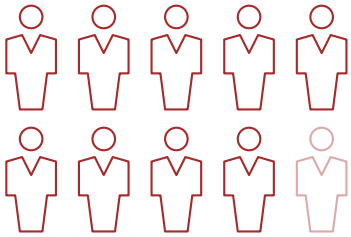
For manufacturers, the need to improve operations, streamline production, and optimise energy consumption has escalated to a business critical issue.

Out of control maintenance costs, system failures, and energy waste all have become concerns of Facility Managers and their managers.

Once only on the agendas of Facility Managers, the necessity to cut costs and increase profits has facilitated the shift of energy management from a tactical issue to a strategic one.

However, currently, only about half of manufacturers have energy management plans in place for the next five years. The disparity between the recognised need and the neglected planning is leading manufacturers to demand guidance and direction for cutting energy costs and improving operational efficiencies.

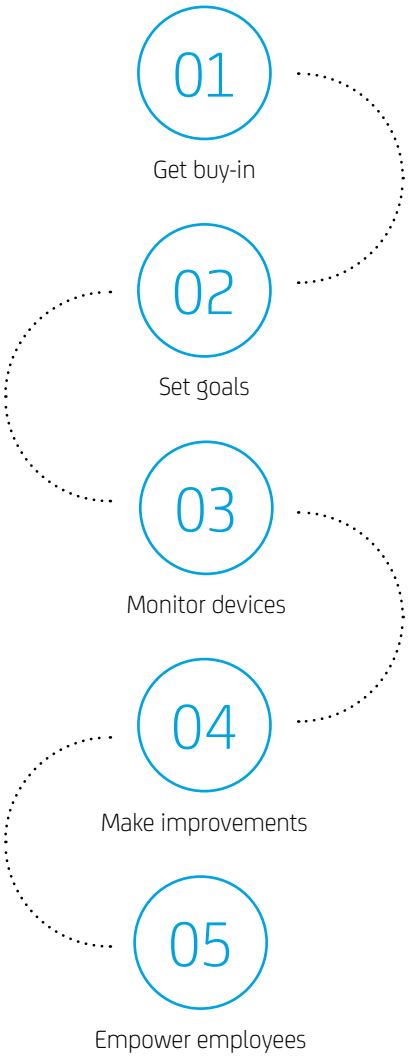
The outlook, however, is not as bleak as it may seem. There are new techniques and innovations that allow forward-thinking manufacturers to plan and implement real change in energy management and operational efficiencies.

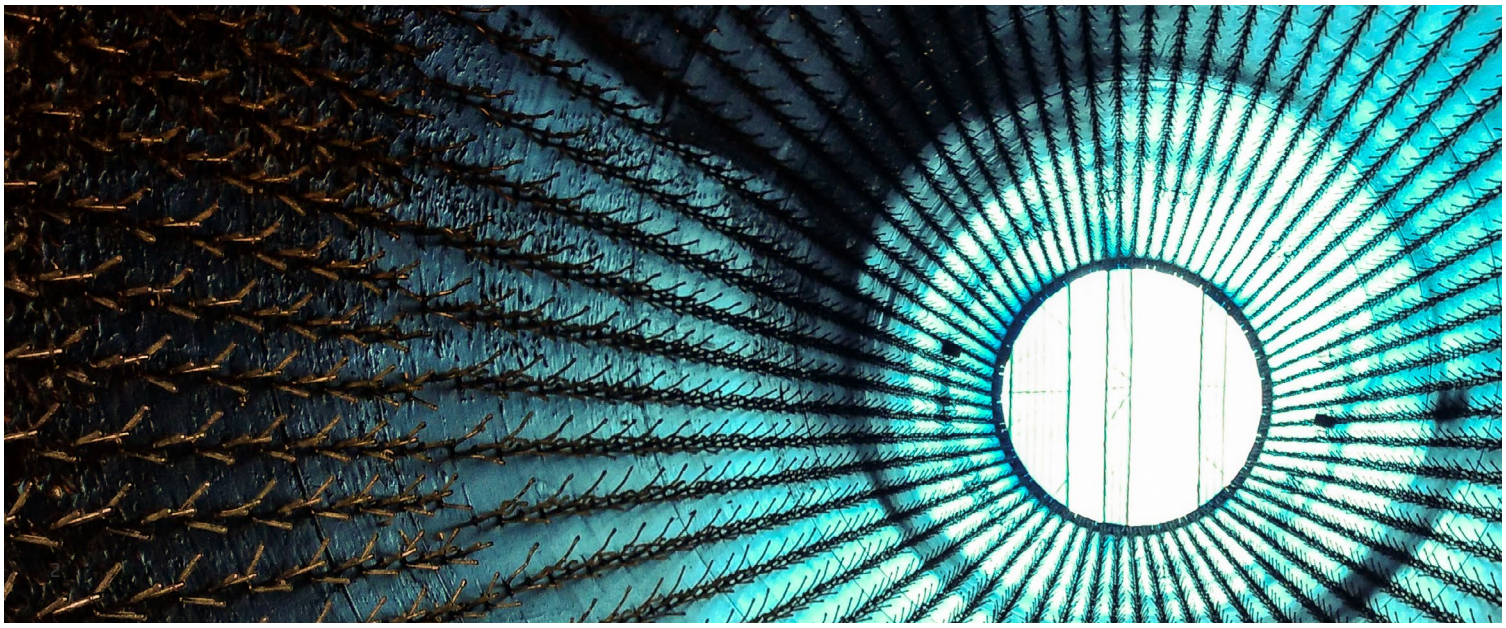


9 out of 10 manufacturers discuss energy matters at the board level.

Siemens.

The five steps required for manufacturers to affect change in this realm are:





01 Step one: Get buy-in

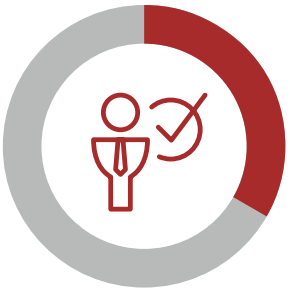
Like any great undertaking that requires a change of policy, procedure, or perception, an energy and operational revolution for a manufacturing company requires the buy-in of everyone involved: from the c-suite to the shop technicians.

What is most important about this critical step in the process is not the "how" or even the "why," but rather: the "when." Do not make plans and set goals and only then seek buy-in from the people who will be affected by the proposed changes. This will inevitably cause them to be defensive and resist the involuntary adjustments.

Instead, as you begin the process, involve the team. Don't come to them with a fancy presentation of the changes and improvements you plan to make; instead, start with a presentation about the problem and begin to build a business case on how the problems will be addressed.

- Show statistics of current energy consumption across all layers of the manufacturing process; include examples of wasteful systems, devices, and practices
- Explain the implications of the escalating costs and highlight the benefits that come from energy and operational efficiencies
- Showcase companies in similar verticals that have successfully implemented similar programs, the employees who contributed, and how everybody benefitted
- Present a clear ROI on how the bottom line can be affected

Invite everyone on the team to contribute their thoughts and ideas and be a part of a task force. By involving them early in the process, you gain their buy-in and you acquire partners for setting and achieving your goals.



A third of chief executives and managing directors retain control over energy efficiency decisions.

EEF.

02 Step two: Set goals

With collaboration from key stakeholders and departments in the value chain, the second step of the process is to set goals.

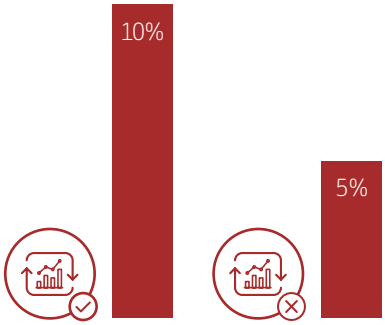
As always, energy and operational goals must be specific and measurable. In other words, they need to be based on real data of the energy performance of systems and devices within the manufacturing process.

To gain the visibility necessary to report on, benchmark, and compare device-level performance, find an energy management system that will provide real-time data collection and automatically analyze the data to provide actionable insights for the asset level.

Based on this data and the insights provided, you can set goals and define metrics in several areas:

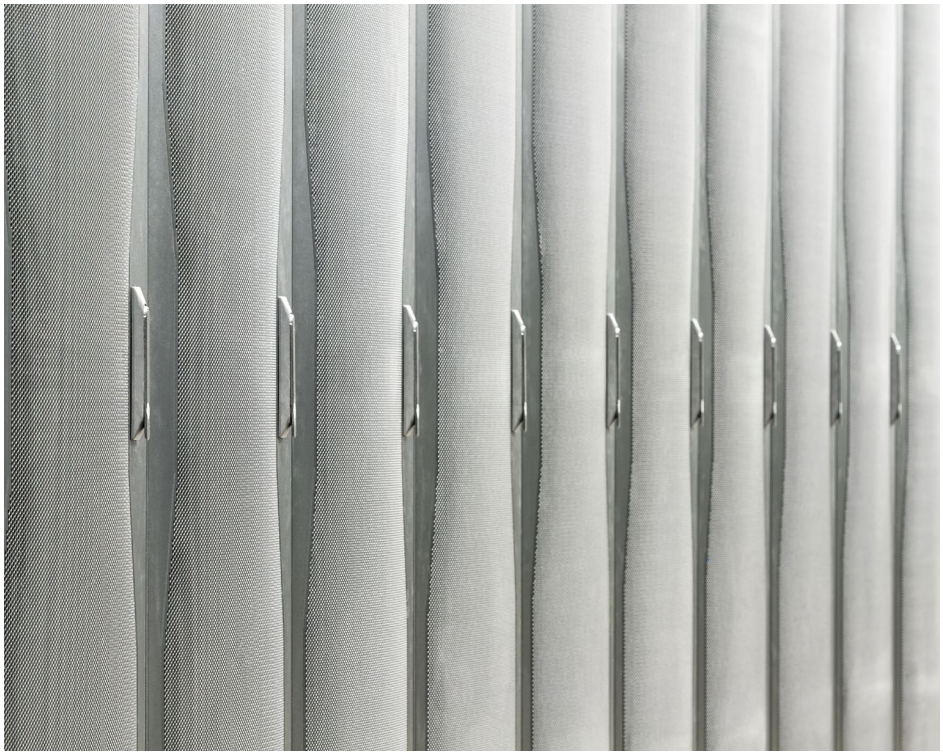
- Effective monitoring of energy metrics
- Improving equipment performance through predictive maintenance
- Identifying and correcting system inefficiencies
- Reducing total cost of operations
- Facilitating behavioral change and culture supporting energy management

Make sure your goals include Key Performance Indicators (KPIs), based on the collected data and established benchmarks, to gauge your success along the way.



Companies with automated data collection at the production asset level enjoyed a 10% reduction of median energy intensity vs. 5% for those without.

LNS Research.



> “The industrial sector offers tremendous opportunity for energy savings, and a significant opportunity to instill the tenets of energy efficiency within facilities that, in turn, employ and influence millions of people... The sector itself, working constantly to increase shareholder value and reduce expenses, has found energy efficiency investments to be an attractive avenue to achieve those ends.”

Source: American Council for an Energy-Efficient Economy.

03 Step three: Monitor devices

On a strategic level, the decision to monitor energy consumption on a device level is one of the smartest choices made by today's industrial manufacturers.

It provides the granular visibility necessary to cut costs and improve operational efficiencies.

On a tactical level, monitoring the health, performance, and energy usage of each device enables manufacturers to then prioritise high impact systems. This helps increase the efficiency of motors and systems and optimise their maintenance schedules, the combination of which cuts energy costs and increases operational efficiencies.

Monitoring devices ensures facility wide visibility, which enables system wide improvements, like:

- Reducing maintenance costs and preventative maintenance
- Improving facilities operations
- Enabling operational efficiency of machinery
- Understanding metrics that reveal the effects of energy consumption on product quality
- Discovering the optimal operational schedules of systems
- Reducing total cost of production
- Improving decision-making throughout the enterprise

04 Step four: Make improvements

Stakeholders are on board; goals and metrics are set; devices and systems are being monitored; now, it is time to make improvements.

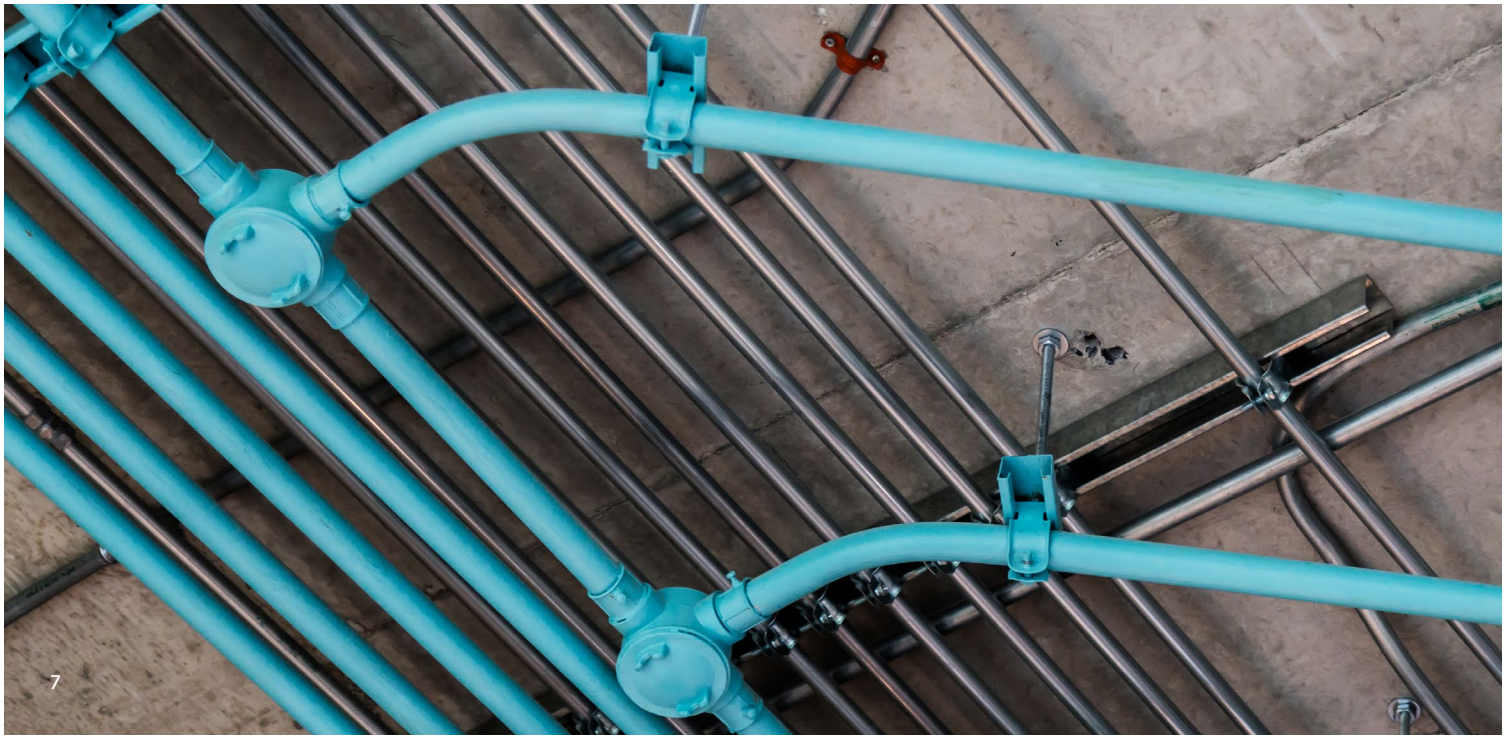
> “By implementing Nissan Green Program 2016, our third mid-term plan, we are taking both large and small steps – and harnessing the power of new technologies – to reduce the environmental impact of our operations.”
>
> **Carlos Ghosn**
> **President and CEO Nissan Motors Ltd.**

The retrofits and other enhancements you choose must be based on the data you have gathered.

According to LNS Research, you shouldn’t focus only on “pursuing ‘low hanging fruit’ initiatives around areas such as lighting, compressed air, HVAC, and others and not tackling the bigger, more systemic issues relevant to the production process or energy-intensive production assets.”

Some improvements to consider:

- Optimising scheduling of systems with heavy energy consumption to take advantage of lower energy costs during off-peak hours
- Saving costs, staff resources, and downtime by transitioning from preventative maintenance of equipment to predictive maintenance that identifies equipment failures ahead of time based on data
- Monitoring and correcting BMS overrides
- Measuring and reporting on the outcome of retrofit activities before and after they occur
- Encouraging social responsibility by instilling behavioral change and workplace awareness in the organisation to combat wasteful habits



05 Step five: Empower employees

Business strategists and motivational experts may disagree: are our employees our greatest asset or are they the cornerstone of industrial manufacturing?

One thing is for certain, in industrial manufacturing scenarios, in order to cut energy costs and improve operations, we need the commitment, motivation, support, and participation of our employees.

No matter how much we automate our processes and our systems, there is still a behavioral aspect to be addressed and optimised.

Give them information

Optimising scheduling of systems with heavy energy consumption to take advantage of lower energy costs during off-peak hours.

Describe positive effects

Explain to employees how their actions affect the company, its profits, and its global footprint.

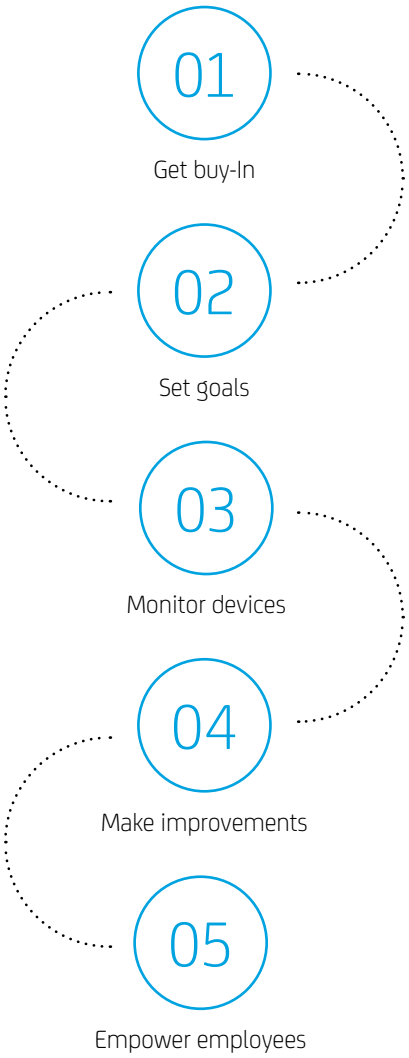
Celebrate successes

When an employee does something well, acknowledge him (preferably around his peers). When the company does something well, acknowledge everyone. These celebrations, both large and small, empower employees to do more.

The five steps to cutting energy costs and improving operations

Discrete and process manufacturers will continue to use and rely upon energy, but by optimising manufacturing processes and the systems running the plants, we can create the same (or greater) outputs with more efficient energy use.

The five steps required for manufacturers to affect change in this realm are:



> “Over the past 30 years, energy intensity has been cut in half to 4.32 thousand Btu. Half of the reduction can be attributed to energy efficiency improvements.”
>
> **National Association of Manufacturers' "Efficiency and Innovation in US Manufacturing Energy Use."**

In fact, research shows that we are reducing our energy intensity, the amount of energy it takes to produce one dollar of goods, which was 9.13 thousand Btu in 1970, reduced to 4.32 thousand as of 2003.

This is in great part due to energy efficiency and system level improvements.

In addition to aligning with corporate social responsibility goals and Lean Manufacturing, Six Sigma, or other management models, these five steps will ensure manufacturers’ energy efficiency that leads to reduced consumption and costs and improved efficiencies and results.

To learn more about energy management solutions and corporate sustainability, visit **centricabusinesssolutions.com**

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