

Executive Brief



Better manage assets to cut carbon emissions

➔ **Important information for those
in your organization who care
about the bottom line and the
environment:**

- plant and facility managers
- financial managers
- senior executives

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Understanding the issues

Commercial and industrial businesses around the world are under pressure to cut energy usage and spending, go "green," and take measures to address climate change. The drivers for change come from many sources: consumers who place increasing value on good environmental stewardship and reflect it in their buying preferences; retailers who demand their suppliers embrace their own particular brand of green strategy; governments that globally mandate change; and investors who rightly demand to know the green credentials of the companies in which they are investing, and how those companies plan to reduce their energy spending. Yet many companies don't know what steps to take to reduce their carbon footprint or how to implement a sound energy management program that also can help them cut costs.

Scientists agree that increasing levels of carbon emissions are a major factor contributing to climate change. World CO₂ emissions are expected to increase by 1.8% annually between 2004 and 2030. Much of this increase is expected to occur in the developing world, where emerging economies, such as China and India, fuel economic development with fossil energy, according to the U.S. Energy Information Administration (EIA).

Energy is the biggest contributor to the carbon problem—both in terms of its generation and usage. Electricity generation consumes 40% of US primary energy (fossil fuels) and is responsible for 40% of the CO₂ emissions. So where is all the energy going? EIA reports that the industrial sector is the largest consumer of energy, factoring in direct fuel use and purchased electricity. Motor systems, in particular, dominate energy consumption. Motors are commonly found in multiple areas of manufacturing, including conveyor systems, tooling machinery, industrial robots, warehousing automation systems, and more. Other notable high energy consumers include lighting, heating, cooling, and air conditioning or climate control units.

Measuring and managing energy usage at the asset level

You can only control what you can measure. And until recently, measuring energy usage at an individual asset level has not been the focus of attention.

Companies have long known the importance of managing their investments in property, plant, and equipment. It's no secret that properly maintaining an asset can extend its useful life, reducing both capital investments and ongoing operational costs. But these traditional attitudes toward asset management miss the bigger picture when you look at the performance of an asset from an energy usage and environmental perspective. Research reveals that energy represents 60% or more of the average company's operating and maintenance budget; energy usage can represent up to 90% of the total cost of owning and using an asset (such as a motor system) over its operational lifetime. And energy spending in North

America industrial and commercial sectors averages three to four times the amount spent on maintenance. Yet most organizations fail to consider energy usage in their cost calculations beyond the initial purchase and are unable to track energy usage for the asset in use. In fact, businesses are surprisingly ill-equipped to adequately measure energy usage at anything other than the plant or facility level. They are unable to detect which assets, departments or even product lines consume the most energy. As a result, they're unable to see and measure the opportunities for improvement.

To make matters worse, it's all too common for equipment in an industrial setting to be improperly installed or maintained. As a result, a particular asset may be consuming more energy than it is intended to consume. Again, this could be avoided or remedied by measuring energy consumption at the asset level.

Increases in energy usage at an asset level are also often a strong signal that the asset is in need of maintenance or repair. Without energy measurement in place, this deterioration in the performance of the asset goes unnoticed and unchecked until the next scheduled maintenance period, or worse, brings revenue generating production to a halt—while secretly costing the business heavily in energy usage and the environment in related carbon emissions.

By carefully managing assets, a company can effect a great improvement on its overall cost and environmental efficiency. To bring about this change, companies need to integrate energy management into their Enterprise Asset Management (EAM) programs, and evolve their EAM solutions to incorporate energy into the DNA of their operations, and into everything they do. This will allow them to better meet market pressures, support their environmental goals, and continue improvements in the company's overall financial performance.

A well-rounded EAM program needs to include:

- Maintenance program management: factor asset operating performance and energy consumption into maintenance strategy and activities
- Alert management: provide early notification and identification of underperforming assets, based on energy consumption
- Planning: form asset replacement strategies that take advantage of energy efficient assets at the optimum economic point

This means carefully monitoring the energy usage of assets, implementing a comprehensive preventive maintenance program that takes into consideration energy usage, and factoring energy consumption into any plans that include asset acquisition, allocation, or replacement. A total EAM program needs to put emphasis on the continuous monitoring, detection, diagnosis, and preventive maintenance of individual assets. In too many cases, maintenance programs are not connected to the energy management system. This leads to costly inefficiencies.

Using strategic maintenance to cut energy costs

A major retail chain running an air handler at a store performed preventative maintenance every four months, changing the air filter, as prescribed by the process control strategy. The air handler never went down, and store employees were happy with its ability to keep the store cool during even the hottest months.

Once the store evolved its asset management strategy to incorporate energy consumption, as well as related costs and emissions, and tied its maintenance program to its

energy management system, it saw some alarming trends over the course of a 16-month maintenance cycle. Operators noticed that after two months, the air handler began using more energy, and continued to do so until its next regularly scheduled maintenance period. Energy consumption dropped again after maintenance was performed, only to repeat the cycle as the maintenance period progressed.

Having visibility at the asset level, and tying energy consumption and emissions in to the asset management system allowed the retailer to realize that changing its maintenance cycle to once every two months made good environmental and financial sense. By spending the money to change air filters more often (at roughly \$40 US per filter), the company realized a 12-13% reduction in energy usage. This translated to roughly \$9,700 in savings over a one year period. The representative savings over 100 or 1,000 installations would be truly remarkable.

Energy efficiency cannot be estimated without having accurate data. And preventive maintenance is the single greatest contributor to asset useful life and optimum equipment productivity. Efficient assets, then, minimize energy use and improve productivity.

Picking the right technology

To implement and sustain a well-rounded, environmentally and socially responsible enterprise asset management program that takes asset sustainability into account, a company needs software tools that can gather, store, and process large quantities of information related to energy consumption at the asset level, asset condition, asset productivity, and more.

It is critical for businesses to select a software application that gathers all disparate asset information, such as data on HVAC units, chillers, boilers, lighting, manufacturing equipment—anything that consumes energy—into one place. The software then needs to provide operations staff with actionable information on how and when to maintain, replace or alter those assets based upon their operating conditions and how much energy they consume, as well as the date on the calendar. The net effect is that total energy spending can be reduced while increasing the performance and uptime of assets.

At the bare minimum a well-rounded EAM system must provide the ability to support the management of property, plant, and equipment to meet the operations, economic, and socioeconomic needs of today without compromising the ability of future generations to meet their own such needs. Specifically, based on an inherent continuous commissioning process, the system should:

- Track commodity (electric, water, gas) consumption and rate details associated at the asset level with value roll-up within the organizational asset hierarchy.
- Monitor and measure existing and pre-existing asset performance and energy consumption, combine it with other operating, financial, and environmental factors, and produce reports and Key Performance Indicators (KPIs) with actionable information.
- Monitor asset conditions and energy consumption and provide trending information and early notification of underperforming assets
- Trigger a comprehensive preventive maintenance program by set dates, by performance condition (including energy consumption), or by selected time intervals.
- Allow users to enter inspection results as subjective values (good, poor, fail) or as quantitative values.
- Extensively gather data for asset performance and maintenance history.
- Choose from a library of preformatted reports covering best-practices business processes, including reporting on energy usage and comparison.
- Understand and account for direct and indirect energy, energy costs, fuel mixes and support a broad set of natural resources, including WAGES (water, air, gas, electricity, steam) usage logging and reporting.
- Support a Service-Oriented Architecture (SOA), to facilitate the interoperability of the EAM system with other core solutions, such as ERP and production planning.

No green strategy can succeed without the informed gathering, processing, and dissemination of data related to asset performance and energy intensity. Without this data, there's no real way to measure areas of weakness that need improving, areas where the program can grow, or the success of the program as a whole. A comprehensive, green-oriented enterprise asset performance management solution can help a company operate more efficiently to cut energy and equipment costs, while also increasing its compliance and consumer appeal.

Infor's approach

Infor has redefined enterprise asset management from a solution that helps you maintain and extend the life of your assets to a solution that also can help you lower costs by reducing your energy consumption while still satisfying your operating requirements. Infor EAM Asset Sustainability Edition combines innovative energy management capabilities with existing enterprise asset management functionality to identify, optimize, and automate proactive maintenance, comparing both the asset performance and its energy usage across the enterprise. With Infor EAM Asset Sustainability Edition, you also contribute to environmental sustainability by reducing your energy consumption, which means your business contributes less to CO₂ emissions. Implement EAM Asset Sustainability Edition and your business will be making great strides in its ability to meet its financial, operating, and environmental goals. For additional information, visit www.infor.com/green.

About Infor.

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