

# Energy Intelligence: The Greening Of ROI

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With the recent buzz over energy efficiency and sustainability, the pressure is on manufacturers to adopt new technologies or pay the price when it comes to consumer dissent or supply chain issues. Not to mention that nagging energy bill that keeps climbing...

For this reason, the industry sometimes gets bogged with going green for going green's sake: frankly, it looks good. This motivation often leads manufacturers to put one toe in with initiatives with quick payback—things like lighting, where change is very visible and a rapid ROI is often a motivator.

While lighting initiatives are a great first step, what happens after that? The current efficiency trending hasn't been lost on capital equipment manufacturers and the developments in energy efficiency technology on large purchases have not only improved over the years, they're becoming more cost competitive.

## **Motors**

A typical plant's highest consumer of energy is its motors, and with an upcoming EISA standard taking affect in December, motor specing will be affected whether we like it or not. EISA standards, as well as organizations like NEMA—which create a standard of efficiency for its member companies—may help end users make the decision, or at least help with some weeding out. NEMA Premium® energy efficiency motors program is designed to provide highly energy efficient products that meet the needs and applications of users based on a consensus definition of "premium efficiency" and use of the NEMA Premium® logo for premium products.

But according to motor manufacturer SEW Eurodrive, while premium-efficient motors are important, it's critical to evaluate your entire drivetrain for energy efficiency and remember that energy efficient motors are just a single part of the

efficiency equation.

A recent white paper on the topic suggests manufacturers be careful in evaluating motors based on several areas, and also being aware of areas where NEMA standard may not be enough. In some cases:

- Your new motor may only be a few percentage points more efficient than your previous motor; in cycling or intermittent duty applications, the savings you recognize are so small, they are outweighed by the higher cost of the new efficient motor.
- Other parts of your drivetrain may be much less efficient, causing higher-than-necessary energy consumption from your efficient motor.
- Your new motor may not be well-suited to saving energy in your type of application, e.g. high-cycling applications.

For these reasons, it's important to take a comprehensive look at your application in order to determine what to look for in an energy efficient motor design.

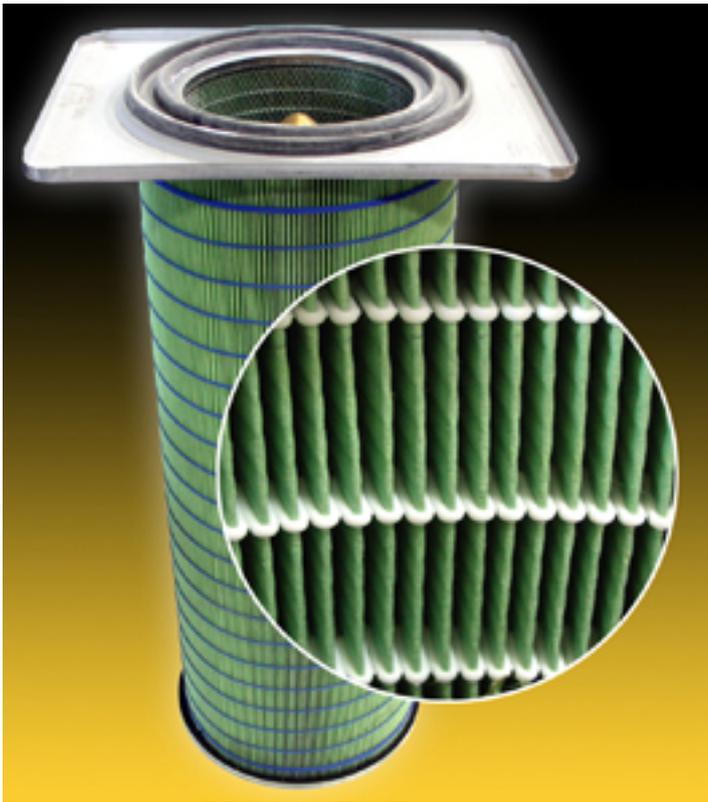
### Compressors

One of the other big consumers of energy in a plant is its air compressors, and as many plant managers well know, it's sometimes exacerbated by employee misuse. That said, leaks can often be the culprit, and the stakes are high.

"Stopping a leak from a 1/4 inch pipe carrying compressed air at 80 PSI can save a company \$12,000 in one year," says Angela Scenna, director of marketing for TBM Consulting. "If a plant were to detect and correct five such leaks, it could save \$60,000 in one year. It adds up quickly."

Still, technology changes and available value added services from compressor manufacturers have created better options for manufacturers to pinpoint compressed air usage and possibly even redirect the "wasted" energy back into the plant for reuse. The Sullair Energy Efficiency System (EES) recovers energy expended by a compressed air system and converts it into a usable source of heat. Plants can use this recovered heat as make-up air, for supplementary heating, or for process heating.

Kaeser Compressors offers programs like its air demand analysis, which monitors and charts air flow, power consumption, system pressures, and air quality during normal operating hours over a period of 10 days. The experts then use the data to identify areas for improvement.



### Dust Collection

Dust collectors are another natural choice for “green” equipment in that they clean up the plant environment. But there are some common myths regarding the features that make one dust collector greener than another.

According to John Dauber of Camfil Farr APC, end users often think that a mechanical fan damper will reduce the collector’s energy consumption, however “a damper will only have minimal effect on energy use. Use of a variable frequency drive (VFD) to control fan speed is far more effective. This electrical control is highly efficient in maintaining desired air flow through the collector, and energy use is greatly decreased, with a typical return on investment of less than one year,” he says. “By helping reduce the spike in overall energy consumption, use of a VFD may also lower your utility rate. Savings can be even greater by using a premium efficiency fan motor in combination with the VFD.”

Further, sometimes it’s something as small as a filter that can make all the difference: “Many filters contain media packed so tightly into the cartridge that most of it is not available for filtering. New open-pleat designs offer better utilization of the media using less media area per filter,” Dauber explains. “Air flow through the filter is improved, for reduced pressure drop and energy savings. Open-pleat filters also respond better to pulse-cleaning and use less compressed air, saving further on energy and lasting longer for lower replacement and disposal costs and reduced landfill usage.”

### Employee Development: Making The Green Choice

It’s not just about the right equipment choices, but also how it’s used. Getting your

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employees on-board with energy efficiency initiatives can be just as difficult as ponying up the cash for new high tech investments.

According to Jon Miller, CEO of Gemba Research LLC, its about appealing to people in a variety of ways, in order to motivate them to pick up new habits.

“For some who believe ‘green is good’ it’s not hard at all to gain high engagement in turning off light switches, listening for air leaks and being mindful about energy waste,” he says. “Others may need to be shown how much money is wasted when air, water, or heat is lost. Ask people if they know what happens if they leave a faucet dripping into a bathtub overnight. You end up with a wet floor and a repair bill. Help them visualize the same losses that are mounting second by second across the workplace when lights are left on or machines are idling. Even if there is no incentive program to share the gains from these energy savings, everyone benefits indirectly when the company wastes less money and is able to reinvest in growth or simply avoid other cuts.”

Ultimately, says Miller, treat your employees with respect, and they’ll listen: “Approach them with humility and listen to them first. Many people become disengaged because they spoke up once in the past and gave a good idea but it was shot down or ignored. We need to regain the trust of these people,” he says.

“Also, if you ask for sustainability and energy savings but you have not addressed minor safety hazards in the workplace, people will see that you care more about something abstract and long-term than about them and their immediate pains. Earn their trust by including safety and ergonomics into sustainability. An efficient workplace is not sustainable if it is not safe.”

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