

January 2008

Maintenance is essential, saving money is optional

As Europe's leading distributor of industrial maintenance, repair and overhaul (MRO) products, Brammer is taking the initiative in helping UK industry to meet the challenges of rising energy costs. Last year alone, Brammer delivered £21 million in documented cost savings to UK industry through innovation and added-value solutions - including energy savings through improved operational efficiencies. Here, Brammer looks at how asking the right questions about motors can save serious amounts of energy – and money.

Recent sharp rises in energy costs, combined with a long-term need for environmental sustainability and conservation, are making the issue of energy management more critical than ever.

With energy costs accounting on average for more than 12% of UK businesses' total expenditure, this is becoming a major challenge for British manufacturing as it strives to maintain competitiveness.

Although a growing number of organisations are bringing in professional energy managers to lead their energy-saving initiatives, only one in three UK businesses has a formal, comprehensive energy policy.

Those who do look closely and systematically at their energy consumption are far more likely to be able to appreciate “whole life costs” – taking into account not just the price of a product but its application, operational cost, longevity and reliability.



And they'll be better placed to reconcile internal site budget constraints with the long-term need for "spend-to-save" to achieve energy cost savings.

One prime example of where "whole life" benefits can be improved is electric motors. They're found everywhere in industry and business, powering almost everything from pumps and fans to compressors.

And they're big energy users. Along with drives, they account for over two thirds of the power used in industry. But this means too that they offer equally attractive scope for energy savings, reduced costs and increased efficiency.

On many sites, motors are tucked away in all sorts of places, often unnoticed. But by looking at them systematically and asking the right questions, it's possible to save serious amounts of energy and money.

So here's a good question to start with:

What's the actual running cost of your motor?

A motor running for eleven hours a day (4,000 hours per year) at a typical industrial or commercial site costs ten times more in electricity than its capital cost. It can range from £1,000 a year for a 2.2kW motor to £18,000 for a 32kW one. Knowing this will help you assess whether the motor is doing a useful and cost-effective job.

Can your motor be switched off?

Powering down motors when they're not in use is always the cheapest way to save energy - provided of course that this is in line with the machine manufacturer's guidelines.



Here's another key question:

Is the motor correctly sized?

It's estimated that 50% of all UK motors in use are unnecessarily over-sized – and many hugely so for the machines they power. Mechanical designers and electrical engineers often err on the side of caution, adding contingency capacity. In this way a basic duty requirement of 7.0kW can easily creep up to a frame size of 11.0kw. So for new purchases, buy a motor that matches the load requirements, plus a small margin of error.

Can the efficiency of your motor be improved? Would better maintenance help?

These questions go to the heart of getting the best energy performance from your motor. Motors work hard, and they become less efficient over time through wear and tear. An 11kW motor operating at 87% efficiency could cost £1500 more over its lifetime than one that is just 5% more efficient. So when you consider running costs and efficiencies together, it's clear that buying the most efficient motors and keeping them properly maintained can save a large amount of money.

Of course, it's equally important to check your drive systems regularly, ensuring their alignment and maintaining belt tension and gear lubrication to maximise their efficiency. Even a small misalignment will reduce system efficiency and increase energy cost.

And this might also lead you to think about your whole system. Many motors are connected to machinery with gears, pulleys or belts - but this can waste energy. Choosing directly connected motors running at the right speed is much more efficient.



Can you reduce the speed of your motor? It can be wasteful to drive every motor at the maximum speed all the time. And one of the best ways to save energy with motors is to fit variable-speed drives (VSDs) to units that need to operate at a range of speeds. VSDs are particularly energy-efficient - lowering the speed of a motor by just 20% can save up to 50% in energy.

Is it better to rewind and repair, or to replace?

We've seen that a motor will consume many times its purchase cost in electricity – so reducing its energy efficiency by having it rewound may be a false economy. Although the cost of a rewind will be lower than buying a new motor, the increased running costs and reduced reliability could quickly wipe out your initial saving.

What about new purchases?

Always specify EFF1 high-efficiency motors. They may cost more, but use 3-5% less energy and qualify for 100% tax relief under the Enhanced Capital Allowance scheme. The initial higher cost is offset by the reduced running cost over the life-time of the product. Think too about automated process control systems to manage motor speeds – they can save up to 15% of your running costs. Create a management plan for buying and repairing your motors. A structured approach will reduce downtime, cause less disruption, and allow you to make purchasing decisions based on “whole life” operating cost, not just initial cost.

-Ends-

