Consider TCO to save money – and the planet

Investing in energy efficiency has significant business benefits for industry, explains Joris Cocquyt, Head of Sales for IEC Low Voltage Motors, ABB.

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Energy efficiency – achieving the same outcome using less electricity – is broadly understood as an essential contributor to reaching Net Zero. The International Energy Agency (IEA) describes it as "the first fuel – the fuel you do not have to use."

In a recent survey by ABB, which included over 2000 businesses, cost (50 percent) was listed as the biggest barrier to improving energy efficiency. What these businesses may not yet realise is that efficiency can also save them money as well as contribute to net zero.

The good news is that energy-efficient technology is available today that simultaneously maximises return on investment (ROI) and minimises emissions. Here is what businesses need to know.

Electricity: the real cost

Electricity is typically an industrial facility's greatest single operating expenditure (OpEx). Electric motors, in turn, are generally the most energy-intensive components within a facility. Around the world, approximately 300 million motors currently power pumps, fans, mixers, and conveyors, among many other types of machinery. Therefore, any opportunity to reduce their operating costs thanks to more energy-efficient technology will have a significant impact on the bottom line.

The most efficient motors available today are synchronous reluctance motors (SynRM). These motors are capable of achieving IE5 efficiency, meaning that they have energy losses 50 percent lower than those of an IE2 motor and 40 percent lower than those of an IE3 motor.

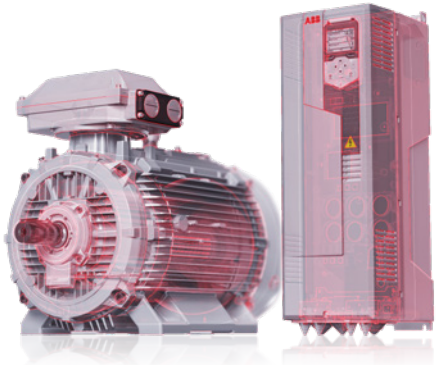
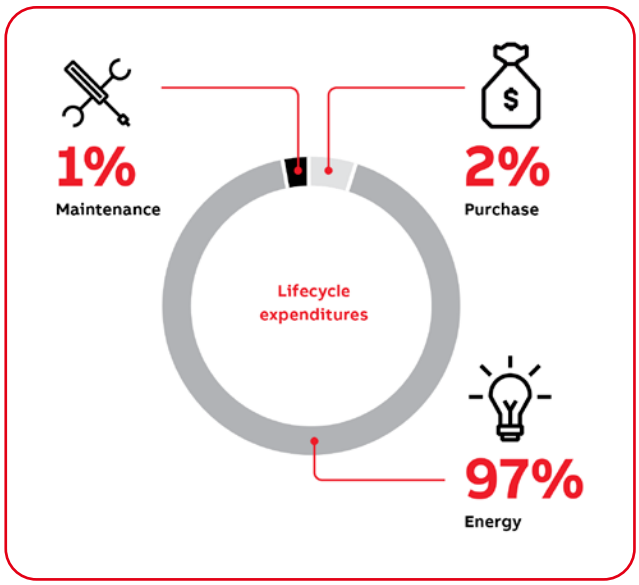


ABB IE5 SynRM and Drive

A less efficient motor is cheaper in terms of capital expenditure (CapEx), but more expensive in terms of OpEx. Looking at the total cost of ownership (TCO) makes this clear: approximately 97 percent of a SynRM motor's TCO results from the electricity used to power it. Around 1 percent goes to maintenance, and the motor's CapEx is just 2 per cent. Therefore, spending a small amount upfront on a more efficient motor makes sense.



Savings in action

Rapid advances in technology mean that even motors installed as recently as five to ten years ago may be worth replacing in advance of their end of life. Continuing to use less efficient motors often means that a business is losing money in the long term. More efficient motors are designed as drop-in solutions, minimising the cost of installing them and eliminating the need to modify existing machinery in most cases.

Since electricity is such a significant proportion of a motor's TCO, efficiency also affects return on investment (ROI). For example, the Doone Kennedy Hobart Aquatic Centre in Tasmania, Australia, is a pool complex that was struggling with operating costs. After a careful review of the facility's pool filtration and water circulation system, HVAC central plant, and greywater systems, the council decided to "future-proof" its equipment by investing in highly efficient technology. This included state-of-the-art SynRM motor-drive packages.

The new motor systems have resulted in savings of USD 23,900 per year, which will quickly pay for the cost of the new equipment and continually deliver ROI going forward. The changes also eliminate the equivalent of 77 tons of carbon emissions every year.

What about existing motors?

It may not always be viable to replace a facility's electric motors with new high-efficiency models. In these cases, operators can improve their efficiency using variable speed drives (VSDs). A VSD ensures that a motor only runs as fast as it needs to, resulting in significant savings. This has the most significant impact when used with motors running pumps, fans and compressors, where a VSD typically reduces power consumption by around 25 per cent. Modern motors are also compatible with VSDs, and SynRM motors use them as standard.

Go green, save money

Energy efficiency is a genuine win-win: it is better for a business's bottom line and it is an essential step toward Net Zero. Many businesses have already pledged to invest in energy efficiency, including by joining efforts like the Energy Efficiency Movement. As industry begins to embrace energy efficiency, we can look forward to a more financially successful, sustainable world.

Click the button below to learn more about the Energy Efficiency Movement.

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