The Appliance of Science – Delivering Efficiency in White Goods

By Alex Lidow, CEO, International Rectifier

For the majority of us, white goods such as refrigerators, dishwashers and washer/dryers have become an essential part of modern life. Furthermore, a growing part of the world's population is finding those same goods within their own grasp.

Clearly, neither those who rely on, nor those who have newly acquired the appliance trappings of modern life want to give them up. Indeed, if anything, consumers expect more functionality and performance from their white goods without, of course, wishing to pay more. And because of the implication for electricity consumption, this growing demand for white goods concerns governments, environmental organisations, energy suppliers, OEMs and, ultimately, consumers themselves.

The concern stems from the fact that the majority of the world's electricity supply is derived from resources that can simply not be renewed at the rate we are using them. What's more, it is now widely accepted that the release of greenhouse gases into the atmosphere as a result of burning the fossil fuels used to generate the majority of electricity is one of the major contributory factors behind man-made climate change. Common sense would indicate that an increased prevalence of white goods can only contribute further to electricity use, speeding the elimination of scarce resources and doing further environmental harm. But does this really have to be the case? Fortunately, thanks to new ways of dramatically improving the efficiency of white goods, the answer to that question is 'no'. The key to resolving the seemingly contradictory requirements of meeting growing demand for white goods while reducing overall energy use lies in the choice and control of the electric motor at the heart of the appliance.

It is estimated that around 50% of the electricity consumed flows through the electric motors found in home appliances and other applications including factory automation, air conditioners, fans and pumps. The problem, however, is that the majority of these motors are simply not efficient. For this reason, the permanent magnet synchronous motor (PMSM) is now favoured for many domestic appliances and air conditioning units because it has a much higher efficiency than a traditional induction motor, especially for variable speed operation.

In the past, implementing complex variable speed motion control has been a major challenge. Now, however, things are changing thanks to the emergence of dedicated motor control platforms from companies such as International Rectifier. By incorporating all of the digital, analogue and power silicon, in addition to motor control algorithms, development software and design tools, IR's iMOTION™ platform, for example, provides a system-level variable speed motor control subsystem from front panel and power entry to motor terminals.

Platforms like these not only lower the cost of the technology being delivered, but also slash the energy needed to operate the device while enabling greater functionality (such as the better spin cycles, quieter operation, and range of fabric care options available in the new generation of washing machines). At the same time, such platforms eliminate the need for a specialized knowledge set, leaving engineers to concentrate on those aspects of a design that can deliver real competitive advantage.

On Tuesday, May 21st at the PCIM Europe Exhibition and Conference in Nuremberg, Germany
A Special Presentation:
13:00 - 13:45 hours
Delivering Global Energy Savings: Power Management with Difference
By Alex Lidow, CEO, International Rectifier

The more efficiently we use our energy, the better we live because the cost of energy saved goes back directly into our standard of living once the cost required to effect the energy savings is subtracted. Almost one third of the world's global consumption of all forms of energy can be saved as a result of improved power management. This presentation will discuss how adopting electronic power management technologies that deliver energy-savings at cost parity when compared to traditional electro-mechanical solutions will significantly grow our global standard of living while minimizing the impact on our environment.

www.irf.com