

Energy Saver Demo highlights huge opportunity for British industry

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Huge amounts of energy are still being wasted throughout British industry because variable speed inverter drives are still not fully appreciated, so Mitsubishi Electric has developed a simple but effective demonstration that can be seen in an on-line video, operated as a virtual demo or used in reality at the company's headquarters in Hatfield.

Inverters have been available for over 30 years, yet there remain many driven machines in industry that do not have them fitted. Matt Handley, who narrates the video, says: "I estimate up to 70 percent of the machines I see in UK production plants do not use an inverter with their drive motor. If fitted, most suitable applications would achieve payback in well under a year, then carry on saving energy for years to come.

"I think the trouble is that the decision to not fit inverters is often made by non-technical people. So we at Mitsubishi Electric have come up with the new demonstrator, which shows energy saving in a very simple and practical way. Delve a little deeper and you get the science behind the savings, which is summed up by the Cube Law."

The actual demo rig in Hatfield consists of two identical blower motors side by side, used to drive fans to support mini footballs in vertical transparent tubes. One motor is operated direct on line (DOL) and so runs permanently at full speed. A manually operated valve is used to restrict the airflow in the tube, mimicking many mechanical damping systems and the ball changes position accordingly.

The second motor is controlled by a Mitsubishi inverter drive, so its speed can be reduced to lower the ball. A Mitsubishi GOT series HMI touch screen is used to display and compare the power consumption of both motors.

"This very clearly shows how much energy is saved, in a way that everyone can understand. If we take readings with the balls at different heights, we can see that the power saved is proportional to the cube of speed reduction."

In the video, which is viewable at the [Energy Saving Drives](#) website. Matt is seen working through the demo rig. It takes about three minutes to run the motors and get the readings. In the second half Matt runs through the theory to derive the Cube Law, then demonstrates the OEC (Optimal Excitation Control) function of the Mitsubishi drive for further energy savings.

Optimal Excitation Control is an innovation unique to Mitsubishi drives; based on advanced motor mapping algorithms it calculates and applies the optimum magnetic flux to the motor for its running conditions. This ensures maximum utilisation of the motor's capacity at maximum efficiency and compliments other optimising functions such as autotuning and automatic slip compensation.

"We have also produced a virtual version of the display, which is hosted on-line at the [Energy Saving Drives](#) website. The idea of this is that potential installers of inverters can effectively run the demo themselves (and in their own premises) to fully explore the genuine potential of inverters. It is designed so that both technical and non-technical people can appreciate inverters' energy saving potential."

Energy prices have risen significantly in recent years and are expected to go yet higher to encourage users to become more efficiency conscious, thus reducing carbon emissions.

"There is now a financial imperative to fit inverters like never before," says Matt. "We are aware that more and more non-engineers are looking at the issue, so we have made the demonstration accessible and understandable to everyone."

Photo Captions:

Picture 1: A virtual version of the Energy Saving Drives display is hosted online at the [Energy Saving Drives](#) website.

Pictures 2 and 3: Machines in many UK production plants do not use an inverter with their drive motor. If fitted, most suitable applications would achieve payback in well under a year.

Pictures 4 and 5: Matt Handley of Mitsubishi Electric demonstrates the energy saving potential of variable speed inverter drives at the company's headquarters in Hatfield.

About Mitsubishi Electric

With over 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 124,000 employees the company recorded consolidated group sales of 39.3 billion US Dollar* in the fiscal year ended March 31, 2014.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe, Industrial Automation – UK Branch is located in Hatfield, United Kingdom. It is a part of the European Factory Automation Business Group based in Ratingen, Germany which in turn is part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of Industrial Automation – UK Branch is to manage sales, service and support across its network of local branches and distributors throughout United Kingdom.

*Exchange rate 103 Yen = 1 US Dollar, Stand 31.3.2014 (Source: Tokyo Foreign Exchange Market)

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