

# War on global warming sees Small drives called up

ENERGY SAVING IS NOW SO HIGH ON THE INDUSTRIAL AGENDA THAT VARIABLE SPEED DRIVES SHOULD BE CONSIDERED FOR EVEN THE SMALLEST MOTORS, WHERE PREVIOUSLY THE INITIAL OUTLAY WAS CONSIDERED UNRECOVERABLE. DRIVES MANUFACTURERS HAVE RESPONDED WITH A FLURRY OF NEW PRODUCTS.

**D**rives represent one of the key technologies for improving energy efficiency in almost all areas of industry and small drives will have an increasingly vital role to play in the coming few years.

Indeed, the recent Stern Report has served as a wake up call for many industrialists by addressing energy issues in financial and commercial terms rather than as nebulous global phenomena. Drives manufacturers can develop the report's theme to show how saving energy benefits individual companies as much as mankind as a whole.

Mitsubishi Electric has unveiled three new small sizes of its flagship F700 series drives, extending the range from the existing 0.7kW model down to 0.2kW sizes. The range, which goes up to 630kW, majors on performance and efficiency. In addition to its inherently efficient operation, the F700 also offers a forward-looking 'Optimum Excitation Control' function. This monitors changes in the load profile and automatically optimises energy usage to provide a 10-15 per cent efficiency advantage.

Actual energy savings can be monitored via the front panel, which can display the power, percentage or cumulative energy saving in kW/hours or local currency. This information, along with other performance measures can be downloaded via the communication network to a central location.

F700 inverters feature a custom-designed ASIC which boosts performance by reducing speed fluctuations to less than 50 per cent of those measured using conventional drives.

In standard form, the F700 is ideally suited to fan, pump and agitator duties where its energy saving capabilities will offer huge benefits. Additionally, a flux vector option is available for applications requiring high levels of dynamic control.

ABB's new general machinery drive is rated

from 0.37 to 7.5kW and is claimed to be up to 60 per cent smaller than comparable products allowing notably increased packing density in control panels. To enable easy side-by-side mounting all units in the range are the same height and depth, with only the width varying between sizes.

No additional space is needed for air circulation, partly because of the use of a new generation of power semiconductors which gives lower power losses, reducing the need for cooling through large heat sinks.

Despite the small size, the drives have both EMC filter and brake chopper built in, although many other features are available as options. The drives are available as single-phase, 200 to 240V, 0.37 to 2.2kW; three-phase, 200 to 240V, 0.37 to 4kW; and three-phase, 380 to 480V, 0.37 to 7.5kW.

Features include ABB's FlashDrop technology, enabling users to upload parameters in less than 2 seconds without even powering the drive up. Important parameters can be quickly and safely downloaded into a drive using a handheld FlashDrop unit. This makes it easy for OEMs to pre-configure drives before delivery and helps high-volume OEMs to streamline the commissioning process.

## Future proofing

Control Techniques says it has put two years' intensive development into its new Commander SK AC drive range to meet the present and future needs of customers in the biggest sectors of its market, distribution and OEM.

Like its competitors, this year's watchwords are compact size, simplicity of use, price and functionality. Yet, scratch the surface, says the company and there is a very smart, versatile product that is also suitable for more complex system applications.

The first phase of the launch covered sizes up



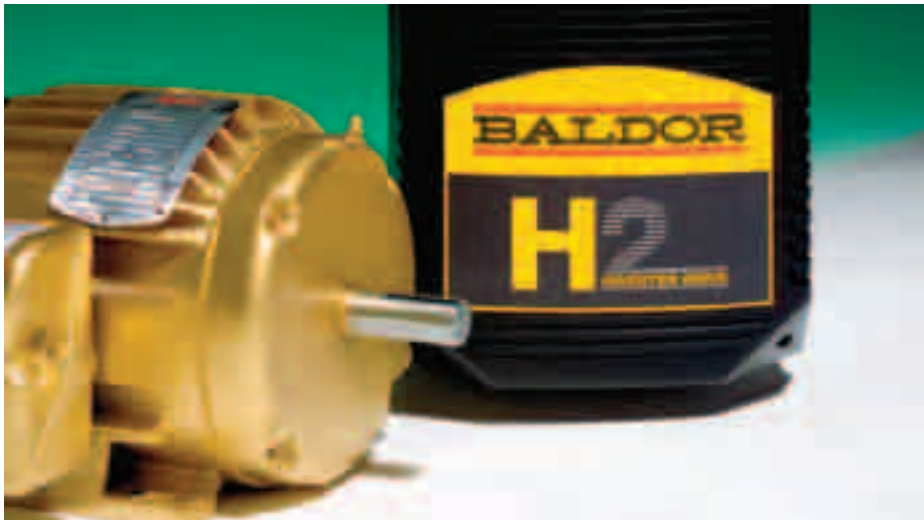
**General purpose drive:** New Rockwell PowerFlex 40P offers increased functionality

to 4kW. The second phase will see larger sizes up to 110kW introduced over the next year.

The Commander SK is said to be a very competitive, compact drive, with an ease of set-up that brings much lower support requirements. For OEMs who need price, simplicity and flexibility the Commander SK has a list of embedded features over and above other mainstream drives available today.

As standard, the Commander SK is said to be simple to fit and can be programmed for most tasks using just ten basic parameters on the front-mounted keypad. A plug-in Smart-Stick allows easy copying of parameters from one unit to another.

For OEMs, the Commander SK dimensioning allows high installation density, saving significantly on control cubicle size and installed cost.



**Extended range:** Baldor has introduced higher power options in its H2 family of drives

But despite its “simple and compact” headline Control Techniques has packed the SK with features: dynamic braking, ModBus, PID control, EMC filter, fieldbus options, extensive memory, basic closed-loop and positioning control – even task scheduling.

As is increasingly common, DIN rail mounting is possible, all sizes have an internal braking chopper and EMC filter. The Commander SK is even said to provide simple PLC functionality using a Logic-Stick and therefore the promise of major cost savings.

It should also be noted that this year there have also been drive developments in other parts of the drives spectrum with, for example, both Mitsubishi and Baldor introducing larger drives and washdown/splashproof drives.

### Higher power and washdown

Baldor has greatly extended its H2 family of drives with new higher power options – up to 96kW – washdown variants, and more plug-in expansion cards. One of the key features of the H2 drive family is a high-integrity design strategy which includes FMEA (failure mode and effect analysis), built-in protection modes to guard against misuse, and a manufacturing process embracing stress testing and full-load testing of final products.

And to finish where we came in, Mitsubishi’s extensions to the F700 drives range includes the F700 FSU floor standing unit which covers the range from 45kW up to 450 kW (630 kW for light duty) and provides a cost effective AC-in, AC-out solution for IP20 standalone use, such as in a control room. Assembly and installation usually takes less than an hour with the unit being delivered in easy to handle, pre-drilled sections.

The drive is aimed at both retrofit and OEM users, being suitable for a wide range of applications from fans and pumps, conveyors and hydraulics to compressors, pumps and blowers.

Rockwell Automation has extended the Allen-Bradley PowerFlex range of drives with the addition of the PowerFlex 40P, a highly flexible and cost-effective drive that addresses the requirements for closed-loop control and Category III Safe-off functionality to EN 954-1, in a compact design.

The PowerFlex 40P is a general-purpose drive geared for machine level or standalone applications. Features designed to offer the user more functionality and application versatility include: dual-channel pulse-train input; Drive Guard, to achieve Category III Safe-off (as per EN954-1); and a DC bus ride-through feature for use in critical applications where continued drive output is required, even in the event of a “brown-out” or reduced voltage situations.

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## Integrated drive aims to cut costs for multi-axis applications

German manufacturer Elau has launched a new integrated servo drive for packaging machines, the iSH Servo series, aimed in particular at reducing hardware costs by about 15 per cent per axis where more than three servo axes are required.

This new servo module, with flange dimensions of 70 and 100mm, combines the compact Elau SH servo motor and the necessary power electronics of the Elau MC-4 servo amplifier in a single module. These are connected directly to the PacDrive motion/logic controller by means of a new cabling concept and power supply.



**Integrated system:** New Elau iSH cuts hardware costs for multi-axis servo installations

Hybrid cables run from the power supply to the servo modules, allowing up to 16 iSH servo modules to be supplied by the same power supply. Line and tree structures can be constructed as well as a mixture of both variants with the hybrid cables using distribution boxes.

Compared with standard cabling, Elau says this reduces cable lengths required by up to 70 per cent.

The iSH drives are fully software compatible with the existing SH servo motors and MC-4 servo amplifiers. They can therefore be connected within the same synchronised drive network. The electronics of the iSH drive can be expanded with I/O or safety functions using option modules.

The I/O module uses the drive bus to link up to a maximum of eight sensors or actuators with the controller. The safety module integrates all expanded safety functions that are required to develop safety concepts in accordance with EN 954-1 Category 3 and PL d/EN 13849 for packaging machines as well as the existing basic functions of “Safe Stop 1” and “Safe Torque off”.

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