

IN BRIEF

The **International Society of Automation (ISA)** has formed a task group to determine whether companies that follow its ANSI/ISA99 standards (which cover industrial automation and control systems security) would have been protected from threats such as the Stuxnet malware. The group will also identify any changes needed to the standards being developed by the ISA99 committee. It plans to produce a report summarising its findings by mid-2011.

Roll-Royce's electric-powered Phantom car, announced at last month's Geneva Motor Show, will be powered by two 145kW electric propulsion systems supplied by the US electric drivetrain specialist, **UQM Technologies**. Each system will deliver 800Nm of torque. Rolls-Royce plans to use the vehicle as a testbed on which to base future decisions on alternative drivetrains.

The market analyst **ABI Research** predicts that the global market for energy-harvesting systems will grow from just \$3.82m in 2009 to \$418m by 2016. These systems convert ambient energy from light, heat, motion or vibration into usable energy to power devices such as wireless sensors.

The **Automation Federation (AF)** is leading a new manufacturing technology project within the **Intelligent Manufacturing Systems** programme. The aim is to develop an international network through which the Automation Competency Model, developed by AF and the **US Department of Labor** in 2009, can be disseminated and updated. This network will be called the Automation Competency Model Network (ACMN).

The US wind turbine developer **Northern Power Systems** has announced a 2.3MW turbine with a permanent magnet direct-drive technology that avoids the need for gears and allows the turbine to operate in lower windspeeds than competing technologies. The turbine is said to capture more power over a wider range of speeds than other designs and to have lower maintenance costs.

The chip developer **austriamicrosystems** has announced a 10-bit magnetic rotary encoder chip for contactless position sensing which, it claims, is the lowest-powered and smallest available. The AS5050 encoder, which provides automatic power-down and wake-up modes, is targeted at low-power applications such as robotics and servomotor control. Depending on the readout rate, the current consumption is reduced to μ A levels.

Mechanical gull takes off as flight mysteries are 'solved'

AT THIS MONTH'S Hannover Fair, Festo unveiled the latest in its menagerie of mechanical creatures inspired by nature – an uncannily lifelike flying robot called SmartBird.

Festo says that its researchers have succeeded, for the first time, in unravelling the mystery of precisely how birds fly. It has harnessed this knowledge to give SmartBird a unique movement that distinguishes it from all previous mechanical flapping wing systems and allows the battery-powered contraption to take off, fly and land autonomously.

The 450g "bird" flies, glides and sails through the air just like the herring gull on which it is modelled, with no additional drive mechanisms. Its 2m-wide wings not only beat up and down, but also twist to precise angles. This is achieved using an active, articulated torsional drive which, in combination with a complex control system, is said to deliver "unprecedented efficiency" for mechanical flight systems.

The aim of the SmartBird project was to achieve a lightweight structure that is efficient both in terms of resources and of energy consumption. It also had to display good aerodynamics, a high power density, and extreme agility.

The bird's propulsion and lift are achieved solely by flapping its wings using just 23W of power. There are four onboard servodrives – two for controlling wing torsion, and two for the head and tail sections. The driving power comes from a tiny brushless exterior-rotor motor and a 450mA, 7.4V lithium polymer battery.

The wings are driven via a two-stage



helical transmission system, causing them to beat up and down with a reduction ratio of 1:45. Three Hall sensors monitor their positions. The flapping and bending forces are conveyed from the transmission to the wings via a flexible link. Opposing movements of the head and torso sections are synchronised using two of the servo actuators. The torso thus bends aerodynamically, displacing its weight and helping to improve the SmartBird's manoeuvrability.

The bird's wing positions, torsion, and other factors such as battery charge and power consumption, are monitored wirelessly using the ZigBee protocol. This allows the mechanism to adapt to new situations within a fraction of a second.

Measurements have shown that the bird has an electromechanical efficiency of around 45% and an aerodynamic efficiency of up to 80%.

The torsion control parameters can be adjusted and optimised in real time during flight. The wing flapping and twisting sequence is controlled to within a few milliseconds to optimise airflow around the wings.

Festo believes that the SmartBird project could lead to practical applications ranging from energy generators to actuators for process automation.

www.festo.com/cms/en_corp/11369.htm

CC-Link conformance test centre opens in Germany

A test centre has opened in Germany to test the conformance of European-developed products with the CC-Link industrial networking technology. The centre, located in Düsseldorf, is being run by Mitsubishi Electric in cooperation with the 1,400-member CC-Link Partners Association (CLPA).

The new centre gives European



manufacturers a convenient location for conformance testing, avoiding the need to send their products abroad as they have had to do in the past. John Browett of the CLPA describes the centre as a "testament to the increasing popularity of CC-Link in Europe".

CC-Link was originally developed in Japan and has become the *de facto* standard for automation networking in Asia. The global installed base is now around eight million nodes, and there are more than 1,100 CC-Link-compatible products available from more than 240 manufacturers. Conformance testing ensures that devices will be fully interoperable with all other devices used on a CC-Link network.

European automation manufacturers no longer need to send their products abroad for CC-Link conformance testing