

Innovative robot design set to revolutionise the market

The landing of the Mars rover Curiosity took seven exciting minutes. Now it will be looking for signs of life on the Red Planet. Here, we look at some of the technologies that will be helping along the way

The new Mars rover Curiosity ended its six month long journey to Mars with a successful landing on August 6th 2012 – the start of a new, exciting excursion on the Red Planet. In contrast to the rovers Opportunity and Spirit, Curiosity can travel further distances on its six wheels and run longer without solar energy, as a radionuclide battery gives energy for years.

The plan is for the rover to explore the immense Gale Crater on Mars for signs of life, for two years. Much of the technology focus has been on the impressive scientific equipment on board – a gas chromatograph that will hopefully uncover organic compounds; a spectrometer that will analyse the composition of rocks which will be collected by the two metre long robot arm; and a neutron source will look for hydrogen in the ground. But what about the industrial technologies key to the rover itself?

Curiosity has a number of Maxon products on board. Maxon's MR Encoder technology is built into the electromechanical joints of the rover. The magnetic sensors are mounted on the drive shafts and are responsible for controlling the motors. In addition, Maxon development services for the drive systems have also played a part in the 900 kilogram rover being able to carry out its Mars Mission successfully. The reliability of the Maxon products is

attested by the fact that Curiosity's little brother Opportunity is still on its journey on Mars; for the past eight years the rover has been exploring Mars with the help of motors from Maxon.

For its part, Strainsert Company supplied over forty customised sensors that for the Curiosity project. Represented exclusively in the UK by Ixthus Instrumentation, Strainsert

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designed and manufactured mission critical sensors for various functions including the major spacecraft separations (cruise stage, heat shield, descent stage, ballast masts and rover), as well as the retention of the mobility (wheels), high gain antenna, camera mast, robotic arm and mechanisms retaining two spare drill bits.

Strainsert's standard and customised load cells, load pins and force sensors are used for many other demanding applications in research, testing, weighing and control in the aerospace, military, marine and automotive industries. The Company has worked closely with NASA over

several decades for major space programs and has developed patented transducer designs for many other challenging application areas that are made possible by an innovative internal strain gauging process where foil strain gauges are actually bonded and sealed inside small bore holes, as part of complete load bearing components.

Ixthus Instrumentation works closely with Strainsert, providing cost-effective solutions for tough load measurement applications where this internal or 'down-hole' strain gauging technique offers considerable protection benefits for high accuracy force measurement from 100N to 5MN.

Additional sensors for Curiosity were supplied by Futek, which was commissioned by NASA JPL a little over three years ago to develop two space/flight qualified cryogenic sensors. These are responsible for monitoring the force of the drill bit that will penetrate the Martian soil, as well as monitoring the manoeuvres of the rover's drilling arm itself. Futek's team of engineers, operators, quality assurance personnel, and technicians worked diligently to provide NASA JPL with the most reliable test and measurement feedback system.

www.maxonmotor.co.uk

www.ixthus.co.uk

www.futek.com

HK Technologies opens Mitsubishi demo centre

Rugby-based manufacturing solutions specialist, HK Technologies, has opened a UK demonstration centre housing market-leading models from the Mitsubishi Electric range of EDM machines. The move comes as HK celebrates ten years of serving Mitsubishi Electric as its sole UK agent for sales and support.

"While we have always undertaken trials and demonstrations on behalf of our Mitsubishi Electric customers, until now these have taken place at the European headquarters in Ratingen, near Düsseldorf in Germany," explains the company's sales director, Nigel Bunt. "Because our EDM business is expanding, the time is right to open a facility here in the UK. In addition, we have also recently increased our applications and support team in the UK due to the growth and demand for Mitsubishi Electric machines."

www.hktechnologies.com

Burkert UK launches design and manufacture service

Burkert UK has launched a new system service for designing, manufacturing and commissioning packaged batch control solutions for use in markets such as hygienic processing, water treatment, brewing, food and beverage, pharmaceutical, medical/biomedical, chemicals, and many more.

Burkert's batch control solutions offer the advantages of integrating a world class range of fluid control products, with third-party products - where required - in systems that are bespoke to customer requirements, fully optimised for maximum performance and designed to meet specific sector requirements regarding hygiene.

www.burkert.co.uk

Eplan adds cable harness software to its range

Solution provider Eplan has taken over the development and sales rights to Harness Expert, the established 3D/2D software for cable harness engineering. This extension to its range will allow Eplan to offer its customers even more comprehensive support for all aspects of cable project management.

The strategic purchase of the Harness Expert software will provide considerable potential in the domestic and international markets. It will allow Eplan to tackle new segments of industry, including apparatus engineering, rail and specialist vehicle technology, aviation, telecommunications and medical technology. This new software is the perfect complement to Eplan CAE package Electric P8.

www.eplan.co.uk

