News release
AIMEX Korea 2006

RENISHAW
apply innovation™

Latest position feedback encoders to be shown at Korean automation show

Renishaw is highlighting its new range of encoder and calibration solutions at Korea's International Automation, Instrumentation and Control System Exhibition (AIMEX), being held at the COEX exhibition and convention centre, Seoul, from 8th to 11th March 2006.

The show, covering some 18,000 square metres, was formerly known as KOFA, and in 2005 attracted over 30,000 visitors and 350 exhibitors. Renishaw will be located in the Pacific Hall, stand number C73, and will be supported by staff from Renishaw (Korea) Ltd, which also has its offices in Seoul.

As well as position feedback encoder systems, other Renishaw products of interest to AIMEX visitors will include Renishaw's new QuickView™ motion analysis software demonstrated in conjunction with the ML10 laser interferometer measurement system for machine calibration.

The focus for encoder systems will be a new robust high accuracy linear encoder, a range of high-performance ultra-high-vacuum (UHV) encoders, and high resolution laser interferometer encoders. These further consolidate Renishaw's position as a global leader in micron, nanometer and picometer position feedback systems for many applications from lab and medical instruments, and semiconductor manufacturing equipment, to machine tools, metrology systems, and massive aerospace assembly machines.

At AIMEX, Renishaw will exhibit three different advanced technologies for precision positioning - optical, magnetic and laser interferometer - each providing special solutions to difficult applications. All feature exceptional compactness and installation ease, providing tremendous design flexibility and application range.

A new SiGNUM™ family of rotary and linear encoders continues Renishaw's reputation for delivering encoders that offer ruggedness and precision, resulting in levels of performance previously possible only from fine-pitch systems too delicate for many industrial roles.

The new SiGNUM™ encoder range offers high accuracy, resolution and repeatability with high speed, high operating temperatures, ultra-low cyclic error (typically <±40 nm) and innovative *IN-TRAC*™ optical reference mark, which remains phased over the entire speed and temperature specification. The system offers intelligent signal processing, ensuring excellent reliability, whilst comprehensive SiGNUM™ software enables optimum set-up and real-time system diagnostics via a PC's USB port.

The SiGNUM™ RELM high accuracy linear encoder comprises the SR readhead, Si interface and 20 micron RELM scale, which is offered in defined lengths. Initially available in Invar, which provides a low thermal expansion of 1.4 micron/m/degrees C, the RELM scale is offered with a choice of *IN-TRAC*™ reference mark positions and dual optical limits. Together with the robust, yet highly precise 20 micron spars, this enables the RELM to offer accuracy to ±1 micron and resolution to 20 nm, satisfying the most demanding precision motion requirements.

The SiGNUM™ RESM angle encoder is a one-piece stainless steel ring with 20 micron scale marked directly on the periphery. It features the *IN-TRAC*™ optical reference mark, which repeats, regardless of direction, at operational speeds of over 4,500 rev/min (52 mm diameter) and up to 85 °C.

A powerful component of Renishaw's new SiGNUM™ family of rotary and linear encoders is the PC-based SiGNUM™ software that provides comprehensive calibration, set-up

optimisation and real-time diagnostics. The result is both simplified installation of the encoder system and on-going system maintenance, further enhancing a rugged encoder range that delivers levels of performance previously possible only from fine-pitch systems too delicate for many industrial roles.

The SiGNUM™ Si interface with USB connection, offers a range of features and benefits, including real time signal monitoring, readhead pitch adjustment, calibration of the encoder reference mark and incremental signals, remote system monitoring, advanced error logging and system configuration analysis.

Meeting demand for reliable, low-cost, high-speed rotary encoders, Renishaw's miniature magnetic rotary encoders provide class-leading performance along with 'tough-guy' ruggedness and durability. AIMEX visitors will see that the magnetic encoders are available in component, modular and packaged shaft-style models. The RM family of magnetic encoders offers up to 4,096-count positioning resolution, accuracy to 0.3 degrees, and operating speeds to over 30,000 rev/min.

Non-contact magnetic design eliminates seals, bearings and moving parts for lifetime reliability. Standard models provide excellent shock and vibration resistance, while optional sealed models allow application in harsh environments and even immersion. Low cost, compact size and design simplicity enable use in a wide range of industries.

Renishaw's unique RLE fiber optic laser interferometer encoders deliver interferometer-based nanometer positioning accuracy from a remote laser source - even to two axes. New detector head choices (six in all) allow careful matching to a wide range of application requirements, including capability for picometer-level resolutions.

Fiberoptic beam delivery greatly reduces optical path complexity, saves space on miniature machines, and keeps heat of the laser from affecting measurement axes. Simple 'bolt down/dial in' laser alignment enables ease of installation comparable to traditional tape- or glass-based encoders.

Applications include X-Y stages, fiberoptic alignment machines, glass grinding machines, photomask machines, and other precision motion systems. An optional real-time compensation system enables positional accuracy of 1 ppm (1 micron/m) in a wide range of environmental conditions.

Renishaw's ML10 laser interferometer measurement system is used by some of the largest OEMs and end users in industries such as metal cutting, semiconductor processing, flat panel display production and biotechnology. The ML10's unique properties ensure that the system provides a linear position reading resolution of just 1.24 nm, a range of up to 40 m and accuracy better than 1 ppm. This combination of resolution, accuracy and range makes the laser interferometer an ideal tool for characterising the performance of motion systems, both large and small.

Visitors to AIMEX requiring a precision motion analysis system should also evaluate QuickView™, a new software package from Renishaw designed to make the ML10 laser calibration system an even more flexible and powerful analysis tool. For years, electronic engineers have relied on oscilloscopes to study high-speed variations in voltage or current. Now, QuickView™ software provides mechanical engineers with a similar capability, allowing them to study minute variations in linear or angular displacement, velocity or acceleration. With a simple graphical interface QuickView™ allows very flexible operation, avoiding the need for predefined measurement targets and sequences - just point and measure, ideal for ad-hoc system investigations.

AIMEX 2006 will cover a wide range of exhibits for industrial automation, instrumentation and control, including automation software, factory automation, hydraulic and pneumatic components, industrial robotics, logistics automation, ID systems, access control, facility management and industrial energy.