Seoho automates

Korea's Seoho Electric is currently engaged in several automation projects across Asia. Seoho has been involved with crane automation since 2003, when it automated five double cantilever machines at Pusan East Container Terminal (PECT). It later supplied crane automation for 36 twin cantilever automated RMGs at Hyundai Merchant Marine's (HMM) Hyundai Pusan New Port Terminal (HPNT).

Managing director Seung-Nam Kim said that more recently, Seoho has been involved in projects outside of Korea, including refurbishment of the overhead bridge cranes (OHBC) at PSA's Pasir Panjang terminal. Seoho refurbished two OHBCs with ABB drives in 2011, and completed two with GE drives earlier this year. It has another order to refurbish four further machines with ABB drives and will start on the first two this month.

Most recently, Seoho has won the contract to supply the drive and control systems for the latest 76 ASC cranes (also known as ARMGs in Singapore) that PSA Singapore has ordered from ZPMC for Pasir Panjang. These will be delivered with a control system engineered with Siemens components. The cranes will have Sick laser scanners for stack profile scanning and chassis positioning, and Arck Sirrah sensors for detecting headblock/spreader position and skew status. The cranes will also have absolute encoders for the hoist and gantry position and a linear encoder for the trolley.

Kim added that a complicating factor at the PSA project is the control system needs to be able to support the double stack trailers that PSA operates, something Seoho has worked with before for its manual RMG chassis positioning system. The cranes will be commissioned in batches starting from early next year, with the first units handed over in early May 2016.

Auto RTGs

Elsewhere in Asia, said Kim, there is a great deal of interest in crane automation, for both RMGs and RTGs. Some of the larger RTG operators refurbish RTGs every 10 years, and are now actively considering automation. These projects, he added, are much more challenging due to the cranes themselves, some of which are 8-wheel, chain-drive RTGs that are difficult to position, and are much more unstable than an RMG due to their large rubber tyres.

Ground conditions are also much more uneven at RTG terminals than at greenfield automation projects, which makes spreader positioning and container stacking more difficult. In this type of application, GPS technology has an advantage in terms of accuracy as it provides an absolute position in reference to the ground, whereas crane based sensors

Seoho supplied automation systems for 36 twin cantilever RMGs at HPNT in Busan

are affected by the tilt of a crane in relation to the stacks.

However, GPS satellite visibility is still a major issue, and for some terminals the number of satellites available is unacceptable. Furthermore, some Asian terminals had very unfavourable experiences with GPS systems previously and do not want to use this technology. As more GPS satellites become available Kim expects this will change.

Seoho is involved in one of HIT's RTG automation projects, where it will use a steel guide bar with RFID tags for steering and position reference requirements, coupled with laser sensors for stack profiling and spreader positioning. Where the structure moves a lot on rubber tyres, however, this is very challenging.

Seoho is currently testing Arck's SPI-CA series sensors, together with laser scanners on the spreader/headblock for skew control and spreader positioning. These are likely to be combined with another sensor for stack profiling to compensate for the crane movement.

Other projects at the tender stage now include retrofitting automation to RMGs, remote operation systems for STS cranes, and a smart anti collision system for cranes. □