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iVT

**INTERNATIONAL
INDUSTRIAL VEHICLE TECHNOLOGY**

OEM interview
**Paco Pérez Salinas,
AUSA**

Multi-axled machinery

**Building the perfect driveline –
for when two axles just won't do the job**

Case studies

Grove GMK5250L five-axled mobile crane

Vredo VT6018 tri-axled slurry spreader

Scheuerle 26-axled shipyard transporter

PLUS

Huddig's Tigon Technology backhoe loaders

Stroke of genius

THIS CLEVER HYDRAULIC CYLINDER STROKE-MEASURING SYSTEM BOASTS SEVERAL INGENUOUS INNOVATIONS, ELIMINATING THE NEED TO DRILL PISTONS AND EVEN ALLOWING FOR USE IN TELESCOPIC CYLINDERS

Whether they're inside agricultural machinery, construction equipment or municipal vehicles, intelligent sensors have now become indispensable throughout the mobile machinery market. Accurately recording paths and angles is an integral component of intelligent operating concepts and functions. These functions improve not only the convenience, but also the safety of industrial vehicles. Using intelligent sensors also increases performance and efficiency, enabling repetitive work processes to be automated and therefore reducing the workload of machine operators at the same time.

Stroke measurement in cylinders

Because most motion sequences for mobile machines rely on hydraulic cylinders, one of the most important measurement tasks for sensor technology is precisely determining the stroke of the cylinder to enable measurement and monitoring of the motions to be carried out. This is why both machine and sensor manufacturers are always looking for new innovations in stroke measurement for hydraulic cylinders. Germany-based Siko has therefore developed its new and innovative SGH10 measuring system for direct stroke measurement following close collaboration and dialog with its customers and using its many years of experience in the area of path measurement technology. The cylinder stroke is measured precisely utilizing wire-actuated sensor technology installed directly in the cylinder. The high-quality plug ensures the system fulfills protection class IP69K.

Technologically speaking, the innovative SGH10 cylinder stroke measuring system pursues an entirely different technological approach. In contrast to other common measuring systems on the market, a wire-actuated mechanism installed directly in the cylinder is used to measure the stroke. The wire is mounted in the piston head. If the cylinder is extended, the wire, which is wound up in a wire drum, is pulled out. The rotation of the wire drum that is thereby created is detected without contact by the sensor electronics and used to calculate the linear travel. This makes it possible to detect the position of the cylinder precisely and completely at all times. The magnets that are used to detect the rotation are scanned by the electronics through the pressure-resistant base plate of the SGH10. The electronics are fully encapsulated

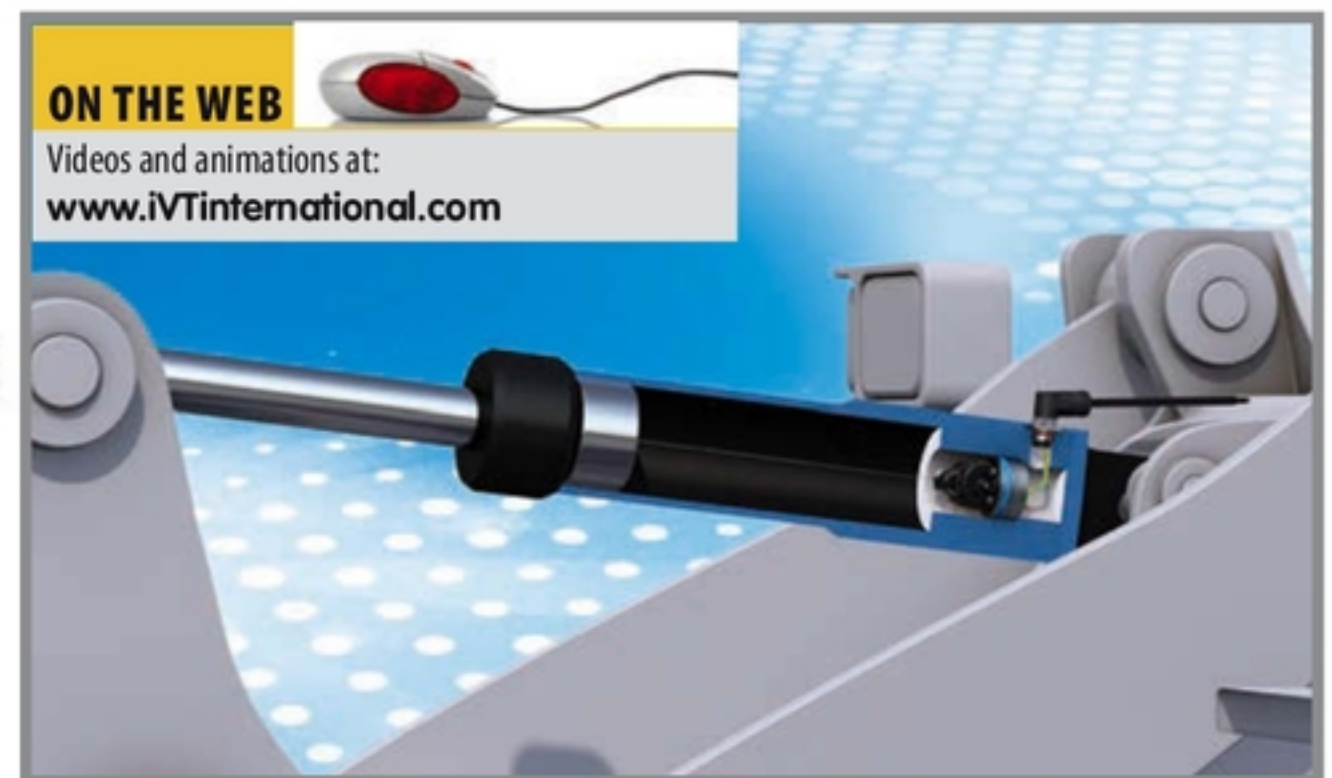


Sensor integration made easy and cost effective with protection class IP69K

on the unpressurized side of the system. This means the entire measuring system is built into the cylinder and is optimally protected from external environmental conditions. This offers a clear advantage: in contrast to an externally mounted measuring system, the sensor system cannot be influenced or damaged by loose parts or by environmental influences.

Revolutionary further

Another revolutionary aspect is the reduction of costs for integrating the system into the cylinder. This is because in previous measuring systems, the sensor rods had to be integrated into the piston over the entire measuring path; this often required long and highly precise bore holes in the piston. This is not only



expensive, but also weakens its structure. In the SGH10 stroke measuring system, just one small thread is needed in the piston to mount the cable. This enables the system to offer major potential cost savings, which affects production times and, ultimately, overall costs for hydraulic cylinders. The greater the stroke length, the greater the potential for monetary savings. Cylinder manufacturers, mechanical engineers and end-use customers benefit equally from this – a real win-win situation on all sides.

Another highlight is that, in contrast to the alternative measuring systems mentioned earlier, the SGH measuring technology can even be used in telescopic cylinders. It provides design engineers with entirely new options when developing forward-thinking assistance systems and supplemental functions in industrial vehicles.

At the SPS IPC Drives fair in November 2015, the company presented its wire-actuated encoder SGH10, a global Siko innovation. With its innovative technology and the new function, the encoder attracted a great deal of attention. And this wasn't all – it also received the i-NOVO Tech Award, presented by the DirectIndustry online industry portal at the fair. This is given for products that stand out due to their innovative applications, for example, the development of a new technology, or a technological innovation in the manufacturing process. **iVT**

Mathias Roth is branch manager of mobile automation for Siko GmbH

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