



Digitalisation: unlocking the door to predictive maintenance

"Digitalisation is moving on apace but putting it into practice requires a different way of working," says Mattias Årstadius of SKF. Here he outlines how bearing specialist SKF is applying the technology to reduce downtime and improve machine performance.

There has been much conversation about the Industrial Internet of Things and Industry 4.0, but the focus has generally been about the concept and the technology surrounding this revolution, rather than about the ways it can be put into practice. Here we look at why delivering customer value is so important and how digitalisation is beginning to transform business models and industrial partnerships.

Recent improvements in connectivity, control and analytical capabilities have unlocked the potential for significant improvements in the cost, quality and productivity of industrial operations. However the secret to truly successful digitalisation for manufacturing and production companies lies in putting the technology to use in such a way that it delivers real and measurable customer value.

The mistake that is often made is to focus on developing a system solution, rather than looking at the customer's specific needs. Digitalisation should be about improving customer performance. So, the first step needs to determine what value means to that specific company and what they consider to be their key performance indicators (KPIs).

For example, a key performance indicator for many operators is to improve output. In the past, SKF has begun the customisation process by talking about maintenance contracts and consultancy agreements. However what customers really want is to add to performance by minimising unplanned downtime – for many companies each hour of downtime can cost many hundreds or thousands of Euros.

With this in mind, the discussion shouldn't be centred on maintenance schedules but on maximising asset performance and availability for long-term resilience. It requires deep knowledge of the application conditions under which the company is operating. This knowledge then unlocks the door to a far more analytical approach to predictive maintenance and to the potential value that digitalisation of processes can create.

The digitalisation of predictive maintenance

SKF has been working with a large pulp & paper company in Sweden to deliver one of



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its KPI's – operational efficiency. To mitigate against high levels of unplanned stoppages, condition monitoring was introduced.

Not only has this move to predictive maintenance saved the paper mill several hundred thousand Euros in terms of downtime reduction, but the monitoring system is delivering real-time noise, temperature and vibration data to allow SKF to not only solve present issues but avoid future ones.

Thanks to the introduction of 4G and 5G real-time connectivity, the door is beginning to be opened to the next stage in predictive maintenance – the bigger picture. Although SKF's focus is on rotating shafts and bearings, thanks to digitalisation these data readings are increasingly being connected to those of air, pressure and other parameters, showing the health of the machine as a whole, rather than just its individual parts.

Real-time data is also opening the door to far greater integration across the supply chain. For example, in the very near future, component manufacturers will be able to access customer machine data so that they can manufacture replacement wear parts before the asset actually needs the replacement.

How digitalisation is transforming business models

Through condition monitoring and the digi-

talisation of industrial processes, traditional transactional models are increasingly being replaced by performance- and function-based contracts. SKF is beginning to see this shift, with more companies choosing one of these contract models.

The former is a base fee paid monthly, with a bonus performance payment added at longer intervals should the customer's KPI's be achieved. Function-based agreements, however, commit the provider to deliver in terms of functionality for an agreed fee. There are real advantages for both sides to these models and SKF believes they will continue to increase in popularity, as more companies begin to exploit the potential of digitalisation to create different ways of financing operational performance.

A case in point is a mining operation where SKF has placed 8 000 sensors on the production lines to monitor 2 400 critical assets such as pumps, fans, gearboxes and large rotating grinding mills. A continuous service agreement is in place with the mine owners and as a result of digitalisation, SKF has been able to document that the predictive maintenance measures being carried out are saving the company almost €8-million per year.

As mobile computing devices become smaller and more cost-effective, the ability to place sensors on minor as well as major

assets is also increasing. In fact SKF's IMx Multilog On-line System for early fault detection now has the ability to monitor eight signals or sensors (down from 32) – and even more cost-effective next generation versions will see many more single assets being monitored.

This however means the creation of vast amounts of data. To accommodate this, the company has turned to using intelligent data analysis patterns to enable engineers to work with big data and deal with critical alerts in a timely manner. This is one of the reasons why systems such as SKF's Enlight data capture and knowledge solution, are increasingly proving their worth.

How digitalisation is transforming industrial partnerships

As everyday operations increasingly become digitalised, connectivity is also happening at a supply chain level. End users, OEMs and suppliers such as SKF are beginning to work in even closer partnerships to take out costs, increase efficiencies and add more value. At present, SKF is working with a range of OEMs, helping them to incorporate SKF algorithms into monitoring tools, to help them work more closely with their customers.

In the coming years, the impact of digitalisation on industrial manufacturing and the benefits it can deliver will depend in part on the level of trust that is developed along the



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supply chain. The companies that will benefit most from the digitalisation process will be the ones who are prepared to go into long term relationships and are willing to rethink how they work together.

The technology is already there and will

only keep on getting better. The critical factor will be companies' willingness to share data and knowledge in an increasingly competitive global environment. □

BI launches Bauer multi-mount terminal boxes

Traditional cast iron electric motors only cater for top-mounted terminal boxes. This is now set to change with the industry's first multi-mount terminal box for cast iron motors available from leading supplier, BI.

The latest cast-iron Bauer electric motor range from BI can accommodate the terminal box on the top, left-hand or right-hand side. The major benefit for customers is that it reduces duplicate stockholding to accommodate different terminal box positions.

Traditionally, cast iron electric motors are available in a wide power range from 0.37 kW up to 400 kW, with BI only catering for top-mounted terminal boxes. "Some plants either have top, left-hand or right-hand terminal boxes, making it a complex and costly exercise to stock all three," explains BI Bauer Electric Motors product manager, Lewis Hiepner. BI itself ordered whichever variant was required ex-factory, with a normal lead time of about 14 weeks.

The Bauer motor range from BI is also available in various energy efficiency ratings, from IE1 as standard and IE2 high efficiency, all the way through to IE3 and even IE4. "We are standardising on IE1 motors, with the possibility of being able to offer IE2 as a standard option as well, although this is still in the pipeline," Hiepner reveals.

The multi-mount motor range, being cast iron, is particularly



BI Bauer Electric Motors product manager, Lewis Hiepner.

robust, and therefore ideal for the arduous operating conditions of mining operations. "We have received significant interest in the new Bauer multi-mount range, combined with its energy-saving potential," Hiepner says.

BI, a member of the Hudaco Group, is a leading distributor of bearings and power transmission products in Southern Africa. With its customer-focused approach, the company is committed to delivering value to all its stakeholders, while offering quality solutions that make a real difference to optimising plant availability and turnaround time.

"With over 60 years in the bearings and power transmission industry, BI puts its experience to good use by going great lengths to ensure their product range and services meet the changing needs of clients, industry and business," Hiepner concludes. □

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