Smart maintenance for a sustainable future

In a first for PES Wind, we spent time speaking to Gregor Levold, Sales Director Offshore, Ship and Port Cranes at Liebherr, to find out how the company is helping with the heavy lifting involved in the industry. Recognising the huge potential in the wind energy market, how is the brand hoping to make an impact on a greener and sustainable future?

PES: I'm delighted to welcome you to PES Gregor. As it is the first time we have met, perhaps you wouldn't mind giving our readers a brief introduction to Liebherr and your involvement in the wind industry?

Gregor Levold: We are very happy to be here. We have been looking forward to making our first appearance in PES Wind. First of all, Liebherr is and remains a family-run company and values including quality mean a lot to us.

Liebherr Maritime Cranes is a division of the Liebherr Group, specialising in all kinds of solutions for ports, as well as for the shipping and offshore industries. Our products include ship to shore cranes, mobile harbour cranes, ship cranes, rubber tyre and rail mounted gantry cranes and, of course, offshore cranes. The latter are often used on various platforms. Increasingly, we are using them for the construction of offshore wind turbines, a big field for our offshore cranes. Liebherr recognizes the strong potential in the wind energy market and is keen to have an impact on a greener and sustainable future.

Furthermore, our cranes are 'tailor-made for market', so we offer solutions depending on the particular challenges customers are faced with. Liebherr in general has a very broad knowledge regarding wind and does more than just building cranes. For example, looking at wind turbine development, we've noticed the growing size of the installations, going from 11 megawatt in 2021 to 20 megawatt coming by 2030.

PES: As the industry develops, wind farms are increasingly being sited in offshore locations, making maintenance of all the necessary equipment a challenge. Do you think automated intelligence could be a solution and how is Liebherr responding to this, with LiMain in particular?

GL: Absolutely. We are utterly convinced that remote maintenance is key to the work in any offshore-related context. Most importantly, a smart system such as LiMain will allow platform owners to save immensely on resources. It paves the way for a higher crane availability at lower operational costs (OPEX) on manned or unmanned offshore platforms. So this fully digital, semi-automatic and remote maintenance system offers more independence of time, place and resources.

PES: Can you explain a little more about how the system works?

GL: The foundation of LiMain, which is short for Liebherr Intelligent Maintenance, is its modular system architecture consisting of four modules: Automatic Greasing, Condition Monitoring, Predictive Maintenance and Remote Maintenance

Gregor Levold

Cycle. The tailored package enables operators to determine the scope of intelligent maintenance that meets their particular needs.

The first module is Automatic Greasing, which will continuously check critical components, automatically lubricate them when needed, even in complex positions. Then there is Condition Monitoring. This benefits from sensor technology, giving detailed data about the crane as well as its components, monitored in real-time and delivering an unprecedented level of insight.

Thirdly, Predictive Maintenance puts ad-hoc data into context, building on decades of experience from the construction of over 1,000 offshore cranes. This module serves as the foundation for an optimised product and component lifecycle. Finally, Remote Maintenance Cycle represents the combination plus interconnection of all the aforementioned models. The crane is actively moved but semi-automatic maintenance and self-diagnosis is enabled.

With this method, up to 75% less mobilisation and up to 50 fewer man-days on platforms are possible. As a result, platform owners can save immensely on resources, whether personnel, material or transport. We have also created a video to show how this unique system works and how it looks. https://www.youtube.com/watch?v=vD7oh-t1Hn4

PES: An important concern for many platform operators is the need for access in combination with flexibility, rather than a one size fits all solution, because each site is different and will have varying requirements. How does the modularity of the packages available help with this?

GL: It is incredible that you can remain where you are or 'LiMain' where you are, if you like. Essentially, LiMain will enable anyone to maintain a crane on a platform entirely without having it in sight. It allows you to act whenever, wherever. Ideally, you have to visit your platform for service only once during an entire year, which is an outstanding business advantage, even less depending on platform type and usage. You basically work independently of time and space. This way, LiMain embodies the future workplace in a digitalised world.

Digitalisation is also always about security, which we have focussed on as well. Because of a VPN-encryption embedded into a tunnel solution, LiMain and the crane data is protected against access for third parties.

PES: So when all these modules are grouped together, do they cover every maintenance eventuality?

GL: I guess you can never 'fully cover' maintenance, because keeping up with solving machinery issues surely is a matter of reacting to circumstances. Some processes will always have to be done manually on site. Nevertheless, especially when looking at the module Predictive Maintenance, you know beforehand what to do and when you have to do it. Because no matter the industry or service, the economy is massively profiting from things like big data and will increasingly rely on it. Similarly, Predictive Maintenance can provide knowledge of decades of Liebherr crane construction, so the advantages are striking, especially when intertwined with live-data from Condition Monitoring.

I will give you a simple, everyday example. When an engineer flies to an installation to do a check-up, LiMain can also inform them if, for example, a part needs replacing. Thus, it ensures that all parts are available so that the machine has no unnecessary downtime, and additional travel and working time is not required. Also, with no such zigzag-movement the carbon footprint is lessened.

PES: In your opinion, what could be the coming adjustments and changes for personnel, especially platform workers or operators when it comes to their daily doings and the work they will do.

GL: Staff will be more comfortable working remotely, not having the crane in sight. Back in the early 2000s in the car industry, when the change from the mechanic to the mechatronic technician took place, people felt insecure in which way it would affect work life. However, more and better jobs were seen. Now, within the platform industry, trips to faraway places will occur less and for shorter periods. Jobs will be created, simply with a more technical approach. All in all, working life will improve.

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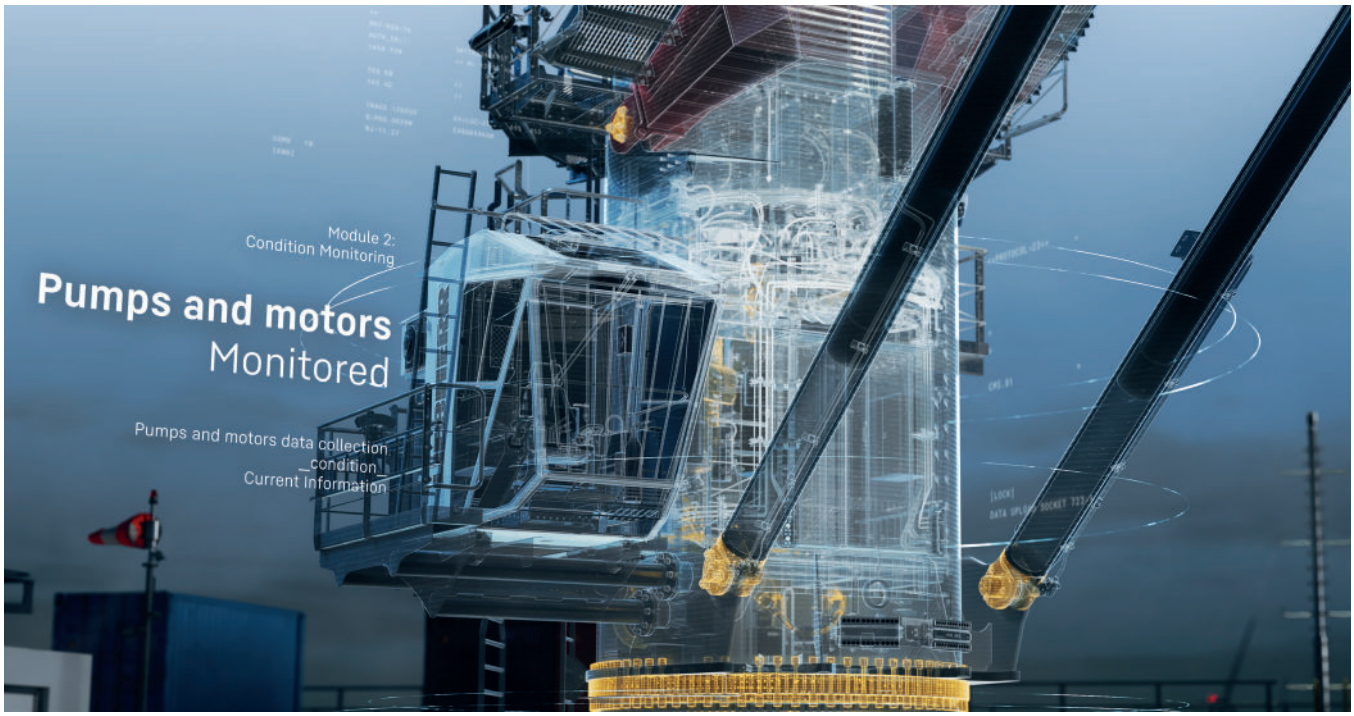

PES: With less need for mobilisation there must be other benefits to be had from this too, such as safety, reliability and time savings?

GL: Oh, absolutely! Coming back to the example with the platform worker, remember that we had no extra time and costs for transport. They didn’t have to spend valuable time in a helicopter. He or she could, as I like to express it, ‘LiMain’ where they were, in a more comfortable place than a platform far away. Of course, one will not lose the needed ‘hands-on-mentality’.

Crucially, LiMain reduces the need for service people on platforms, while shortening the time spent there. Therefore, recalling Liebherr’s knowledge combined with real-time information from the components, it will not only help to understand how components work most effectively. It will champion the development of building better components in years to come, as well as enhancing accuracy and safety when it comes to transport, customer care or interaction between parts and personnel. Maintenance will be simplified, made more comfortable and affordable.

PES: Do you think the requirement for remote access and maintenance has been accelerated by the global pandemic? Has it brought about a desire for new approaches to regular maintenance and new ways of working?

GL: Our innovation process started before Covid-19. We were simply delivering the right product at just the right time, resolving problems enforced by a global pandemic, and with an increasing demand from our customers. First and foremost, it will bring you more certainty for planning and organisation in terms of working and operating times, reliability, cost optimisation, manifested even further through improved health and safety.

PES: Is this just the beginning of using technology in this way and do you see things evolving for Liebherr in particular?

GL: The story of LiMain is just beginning and interest is rising. Generally speaking, looking at Liebherr’s long history of developing, improving and the drive and commitment of finding solutions for tomorrow’s challenges, we are always keen to ‘get better’.

We also see the need for change and invest in greener technologies, construct more eco-friendly machinery in the future and will build components that help install wind turbines. We will also support the decommissioning of the ‘old’ energy forms. Eventually, we can play a decisive role in the transition of the energy market.

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