



Revolutionising wind turbine maintenance

Battery powered tools are transforming wind turbine construction and maintenance. It's a timely development. Larger turbines, more sophisticated sensors and monitoring, and rising offshore costs are putting the efficiency of bolting, maintenance, and repair operations under scrutiny as never before. According to Erik Roos, Director Wind Industry Products & Solutions (EMEA) at Enerpac, new developments in battery operated tools are rising to the challenge with higher levels of efficiency and safety.

Time is of the essence when working offshore. Equipping the engineer with the tools they need to perform jobs more quickly while maintaining accuracy is where battery powered tools are coming into their own. Such tools are emerging as key solutions in this area, offering higher efficiency, portability, and safety compared to traditional alternatives. If the amount of equipment needed to be transported offshore can be reduced, then not only is it more efficient, but safety is enhanced too, by eliminating the need for extension cords, reducing trip hazards, and the necessity of heavy, noisy generators.

Until now, the use of battery powered tools has been hampered by the lack of power and battery life. Nowadays, the benefits of cordless tools can't be overstated as significant advancements impact offshore environments. By removing the need for extension cords, cable trip risks are eliminated. Moreover, heavy, noisy and emission producing generators are no longer needed, thereby reducing environmental health and safety concerns. Instead, maintenance pods now contain more

fully charged battery packs, providing a lighter alternative.

The Enerpac XC2-Series Cordless Battery Pumps are a good example of the performance that offshore contractors can expect from battery powered hydraulic pumps. Along with higher speeds, the portable pumps have longer battery run times and greater oil capacity, allowing larger tool and multiple cylinder applications to be undertaken on a single charge. Powered by a high capacity 54 Volt battery, the XC2-Series matches the speed of a 0.37 kW electric pump with the added benefit of cordless convenience. Moreover, managing cable trip risks is eliminated and environmental health and safety concerns are significantly reduced.

Battery powered pumps are redefining reliability with their robust performance, offering consistent power, longer run times, and the durability needed to tackle the toughest offshore maintenance challenges. The XC2-Series brushless motor provides twice the life of brushed motors and high flow rates for increased productivity. In addition to increasing engineer efficiency,

It also enables a more flexible approach to completing projects. Available in either two or four litres oil capacity, the four litre XC2-Series pump can be used with larger and multiple cylinders, for example up to four 50 ton cylinders, two 75 ton cylinders, or a single 100 ton cylinder. The pump's manual valve models also include a variable speed trigger enabling greater control of tool or cylinder movement. The pump's bladder reservoir design reduces the risk of contamination and allows pump use in any position; ideal for projects where access and working space are limited.

The XC2-Series 54 Volt fast battery charger significantly reduces downtime with its rapid 1.5 hour charge cycle, keeping your operations running smoothly and efficiently. With its LED display showing charge status, over temperature alerts, and damaged battery indicators, the XC2-Series ensures optimal performance and prevents unexpected downtime by keeping you informed and proactive.

With longer battery run times and increased oil capacity, the XC2-Series enables larger tool and multiple cylinder applications to be completed on a single charge, an essential advancement for maintenance teams handling gearbox changeouts that require multiple hydraulic cylinders.

The heavy duty pendants used to operate Enerpac XC2-Series pumps are designed with the user in mind. They're easy to connect and disconnect, featuring large buttons for effortless operation, a comfortable over moulded grip, and convenient attachment options like a lanyard loop and hanger magnet. With IP64 environmental protection, these pendants ensure reliable performance even in tough conditions. Plus, in tight spaces where cords are a hassle, the pendant can be quickly detached, allowing the pump to be controlled directly by the trigger for seamless operation.

For bolting applications, the XC2-Series Cordless Torque Wrench Pump offers user friendly features like an adjustable pressure relief valve that locks in your desired pressure. Compatible with various torque wrenches, it includes a 100 mm glycerine filled pressure gauge for clear visibility and a six metre detachable pendant control for easy manoeuvrability.

Portable, powerful bolting combo

Portable, battery powered pumps address height and accessibility challenges, but the DSX-Series Aluminium Square Drive Hydraulic Torque Wrenches take user benefits to the next level. These lightweight, high strength wrenches enhance safety by reducing the risk of serious injury from dropped tools, featuring a working at height tether point and a retained reaction arm.



The fully enclosed drive and ergonomic handle ensure operator safety and comfort, while ATEX approval provides peace of mind in explosive environments. The aluminium construction keeps the tool light without sacrificing durability, and the 360 x 180 degree high flow stainless steel swivel simplifies hose management. Additionally, the fine tooth ratchet prevents the common issue of wrenches 'locking on,' ensuring smooth and efficient operation. Available in square drive sizes from 19 mm to 63 mm, these wrenches offer quick push button retention and release for added convenience and safety.

While the battery powered pump and torque wrench duo is highly effective for many wind energy bolting tasks, certain situations demand a different approach. Advances in battery technology and torque wrench design have culminated in the Enerpac BTW-Series Battery Torque Wrench, the most precise and fastest battery powered wrench available for wind turbine assembly and maintenance. This tool allows operators to swiftly transition between bolting jobs while delivering exceptional torque accuracy, thanks to its industry leading preprogramming and calibration process.

Weighing from just 4.7 kg including reaction arm and battery, the BTW-Series is equipped with an integrated digital motor vectoring system delivering accurate and repeatable

torque up to 8130 Nm. Available for ¾" to 1 ½" square drive sizes, the BTW-Series Torque Wrench can be used for most bolting scenarios, providing a versatile solution for turbine assembly and maintenance.

Compared with conventional bolting operations that demand multiple operators, along with air or electric powered hydraulic pumps, hoses, and torque wrenches, the BTW-Series requires just a single operator. Ease of use and compact, handheld, battery powered design makes it ideal for difficult to reach applications or where physical space is limited. By streamlining the bolting workflow, the BTW-Series has the potential to double the productivity of two man bolting teams.

Tightening requirements, torque specifications and the complexity of turbine structures and components mean there are significant variations in bolt types, sizes, and torque and tensioning requirements. Confidence in the precision of the torque wrench is fundamental to record keeping across a full range of maintenance cycles. In recognition of the growing reliance on data keeping, BTW-Series torque wrenches can achieve pinpoint torquing precision with a +/- 5% accuracy across their entire torque range.

To achieve pinpoint torquing precision, Enerpac puts every BTW-Series Torque Wrench through a 60 point calibration process, far beyond the standard seven

points of competing products. As a result, BTW-Series Torque Wrenches achieve a +/- 5% accuracy across their entire operational range. Using the tool's intuitive LCD, the required torque in Nm or ft. lbs is set at the touch of a button.

As standard, the BTW-Series is supplied with two Enerpac 18v 5.5 Ah Lithium-ion batteries and a 60 minute fast charger, enabling high efficiency brushless motor bolting applications, even in remote or hard to reach areas. For added flexibility, the BTW-Series Torque Wrench will work with any compatible Cordless Alliance System (CAS) battery. The BTW-Series also features an antislip pistol grip and a trigger for sturdy control and operator comfort. As well as a low maintenance brushless motor that runs cooler and maximises productivity, the torque wrench uses a patented planetary gear with optimum tooth design for smooth and consistent torque.

Wind turbine construction and maintenance tools have come a long way since the first offshore wind turbines were deployed. Making tools more portable, battery powered, and self-contained are only the latest Enerpac developments in the ongoing drive to align bolting and maintenance tools with the service and budgetary pressures facing offshore contractors.

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