The 8 most important considerations when selecting your next hydraulic torque wrench

Operating and maintaining a single generating station or wind farm and distributing that power in an ever changing and highly regulated market is an enormous challenge. Utility leaders are under constant pressure to meet rising demands, maintain regulatory compliance, shift to a diverse energy mix, and implement sustained cost reductions, without impact to quality and reliability. As their assets and workforce age, power generators recognize the need to innovate and partner with suppliers with the same priorities.

Wind is an important and growing source of energy around the globe. Consumer demand for cleaner, renewable energy, along with favorable prices has fueled increased investments in wind capacity installations. As onshore and offshore wind farms become commonplace, demand for specialized tools for the installation, maintenance or decommissioning of wind turbines.

A wind turbine can contain approximately 25,000 bolts, each of them under precise bolt load and up against a variety of forces in nature. Maintaining bolt integrity with Enerpac wind tower tensioners and torque wrenches uniquely supports both wind turbine manufacturers and wind farm operators alike with a broad set of proven tool technology and services.

Torque wrench basics

Hydraulic torque wrenches have come a long way since they were first introduced in the early 1960s. Advancements in technology have created countless options, features, and benefits to decipher – making it much harder to have confidence in your final tool selection.

Hydraulic torque wrenches create the exact torque output or torque load necessary to loosen or tighten the threads of a nut and bolt for a leak-free joint. A hydraulic torque wrench is comprised of two primary parts; square drive socket combination or hex cassette and a drive unit which is actuated by a hydraulic cylinder. A complete hydraulic torque wrench system includes a hydraulic pump with a coupler and hose. Actuating the pump advances the torque wrench.

If you are a seasoned bolting specialist, then you will know the must-have features needed to complete your specific bolting projects like a pro. However, if you are new to controlled bolting, selecting the right hydraulic torque wrench for your job requires understanding the choices available. The design and features of each series of torque wrenches are tailored to suit different applications. Below are key considerations when selecting a torque wrench for your unique job.

Consideration 1: square drive or low profile

A square drive hydraulic torque wrench shares the same principle as the torque wrench you might have in your garage. It works with different sized sockets to fit the nut to be tightened or loosened.

A low-profile torque wrench uses interchangeable cassettes (sometimes referred to as 'links'). This type of tool is commonly used in the oil and gas industry where clearance around the nut is often restricted. The low-profile models are also ideal for low clearance applications, for example, when bolts are positioned very close to each other. Many also include tether features for safer working at height – a must-have requirement when working on wind towers.

Consideration 2: versatility and general-purpose

If you want fewer tools that serve a wide range of applications, then consider a 2-in-1 general-purpose tool. When working on a wind tower, portability is important and battery-powered models fulfill this need by being easy to transport and suited to tight spaces. Pumps for hydraulic torque wrenches and tensioners are available in cordless, electric, and air-powered models.

Consideration 3: size and torque output

Will it be powerful enough and the right size to do the job? Each hydraulic torque wrench works with many different cassettes or sockets. But there are many different drive heads to choose from. Each has a different maximum torque output and is designed to cover a certain range of hex sizes. You should understand the minimum and maximum sizes you want to cover. Then check specifications on the manufacturer's website.

The right tools used for controlled bolting can make the difference between your job running efficiently or encountering costly delays. There are many application

considerations and choices. Should you need help with your torque wrench selection, browse the Enerpac Torque Wrench Buyer's Guide.

Consideration 4: how much do I need to invest in a hydraulic torque wrench?

Opinions vary. Are you thinking short term or long term?

If weighing up the total cost of ownership over the long term is your preferred approach, then build maintenance into your calculations. Higher quality products may be a slightly higher investment, but they will require much less maintenance and repair over time.

If you do not intend to use the tools frequently, then mid-market products may be a better solution. This category includes interchangeable and 2-in-1 modular designs – enabling you to cover a wide range of applications with fewer tools. Examples adopting this approach includes the Enerpac RSL Series. These models offer cost-effective compatibility with low profile to square drive, or vice versa, using the same drive unit.

Are you looking to upgrade your torque tools, but want to continue using your existing cassettes and drive units? Select a modular torque wrench design, such as the Enerpac HMT Series. These models use drive heads that are interchangeable with cassettes from a variety of leading brands.

Interchangeability works the other way around too. Buy an Enerpac HLP cassette and it will work with drive units from other many other brands.

Consideration 5: convenience, safety, and easy operation

It is important to understand how to easily operate your torque wrench for maximum safety and productivity. Features such as safety handles, swivel hoses, tether points, no-drop features, and quick-change cassettes provide improved usability and safety. Each of these can make a huge difference when working in challenging conditions offshore, or up high on a wind turbine tower.

As wind towers get repowered with bigger equipment, more exacting and reliable tools are required.

New features are available on torque wrenches that set a higher standard in safety, versatility, simplicity, and performance. For example, when it comes to safety, a built-in, work-at-height safety tether connection, such as that on the Enerpac DSX-Series aluminum torque wrenches, helps prevent injuries to workers below. Meanwhile, a fully enclosed square drive keeps technicians' hands protected from moving parts, and its optimized weight-to-output ratio and slim design help prevent operator fatigue.

Consideration 6: cassette choice

If you select a low-profile torque wrench model, you will need to choose cassettes to suit various A/F hex sizes (Across/Flats). For each drive head there are many available to suit both imperial and metric sizes. Note that different ranges of torque wrenches from the same manufacturer often have dedicated cassettes. Do not assume all are compatible with each other. But as mentioned earlier, the HMT Series is an exception and is compatible with cassettes from a variety of manufacturers.

By default, cassettes for low profile torque wrenches are designed for tight spaces. There are other more slimline models available. These are perfect for applications where flange nuts are positioned very close together.

Consideration 7: accessories

There are numerous accessories available for hydraulic torque wrenches. These add additional safety, certainty, convenience, and extend the number of applications.

Examples include sockets, back up spanners, different sized reaction arms, safety handles and reducers.

Consideration 8: torque wrench pumps

Given the number of bolts on a wind tower, for example, bolting pumps should have high flow, fast performance, and portability as key

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advantages. Cordless torque wrench pumps are available and can work well for wind tower maintenance. Pairing your hydraulic torque wrenches with the most compatible pump for your application will ensure optimal speed and performance. Choose from ATEX-certified air-driven, battery-powered or electric pumps all designed to meet the needs across a variety of controlled bolting applications. Your pump pairing is just as important as selecting your torque wrench.

Choosing a hydraulic torque wrench requires careful consideration. If you need any guidance, contact an Enerpac Bolting Specialist.

Why choose an Enerpac torque wrench?

Putting an Enerpac torque wrench to work for your bolting application is a sound choice. Choose from a full portfolio of solutions to meet your needs from the most demanding applications in the harshest environments to routine or occasional use.

For those unique applications, rely on a custom solution from a trusted brand that builds tools that are designed to perform every time. All Enerpac tools are fully supported by our application experts, calibration and maintenance services, no premium service contract required, rental programs and training.

Visit enerpac.com to view Enerpac controlled bolting solutions.