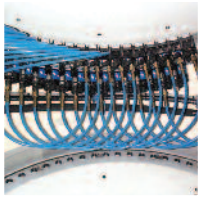


**hydratight**<sup>®</sup>

**WIND POWER SOLUTIONS**



# Who We Are

## One Company, Total Support, Complete Solutions

Over many years Hydratight has provided world-class bolted joint solutions and continues to set international standards in joint integrity for its customers on a global scale. By supplying a comprehensive range of products and services, supported by strong, experienced engineering teams, we apply global standards through our network of local operations, making Hydratight the preferred supplier to the wind industry's most demanding clients.

Hydratight works in partnership with the world's leading Original Equipment Manufacturers (OEMs). Using the latest computer technology and market leading development facilities, we continue to push back the boundaries of technology to provide fast, accurate and reliable solutions to critical assembly problems.

### One Company - Meets Standards

Totally committed to safety and quality, all Hydratight products and services are designed, manufactured and carried out within a management system in accordance with ISO 9001:2008 (Quality Management), ISO 14001:2004 (Environmental Management) and OHSAS 18001:2007 (Occupational Health and Safety).

### One Company

Our extensive engineering services include:

- Torque and tension bolting equipment
- Machining equipment
- Product sales, rental and technical support
- Product service and training



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INVESTOR IN PEOPLE

# What Makes Us Different

## One Company - A Multitude of Solutions

Hydratight plays a leading role within the complex and changing world of Power Generation; providing innovative engineering solutions and unique services to improve the cost effectiveness in this competitive industry. The core of our business is designing fast and highly accurate solutions to bolt tightening problems.

### Wind Power Solutions

Taking inspiration from global trends in power generation, Hydratight has consistently introduced engineered solutions for supporting the bolted joint needs of the onshore and offshore wind energy industry. Over the last 15 years, the Hydratight range of torque and tension bolting solutions has provided our customers with unrivalled performance and integrity through technology, experience and expertise.

Hydratight manufactures and supplies quality products, specifically designed to meet the requirements of the wind energy market. These products assist wind turbine manufacturers and contractors to meet the delivery demands placed upon them, by reducing bolting times and achieving accurate bolt loads every time.

#### A. Nacelle Bolting Solutions

Hydratight can provide an array of torque and tensioning tools for the safe assembly of blade and bearing bolted applications.

#### B. Tower Bolting Solutions

Hydratight has a vast range of torque and tension solutions for the onsite assembly of tower structures.

#### C. Foundation Bolting Solutions

Hydratight's range of safe and reliable foundation bolt tensioners will secure any type of bolt to any type of onshore or offshore surface.

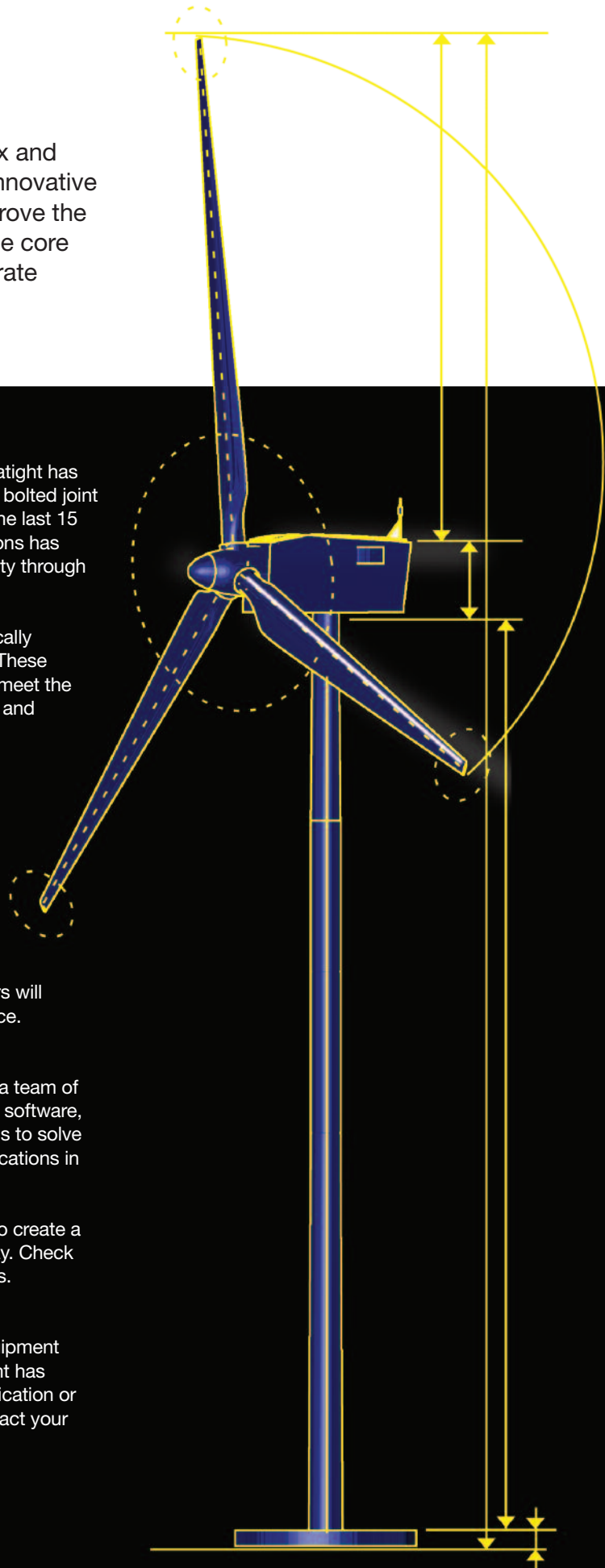
### Custom-Engineered Solutions

New bolting applications demand unique solutions that require a team of highly specialised engineers. Working with the latest CAD-CAM software, Hydratight's engineers have developed custom-engineered tools to solve some of the most demanding field, machining and bolting applications in the world.

When an off-the-shelf tool doesn't do the job, trust Hydratight to create a customised solution that saves time in a safe and controlled way. Check out our examples of solutions we've delivered for our customers.

### Maintenance Kits

In addition to the tensioners, torque wrenches and ancillary equipment necessary to perform all of your bolting requirements, Hydratight has developed a range of specialised maintenance kits for any application or make of turbine. To discuss your application in more detail contact your local representative.



## Nacelle Bolting Solutions

Hydratight can provide an array of torque and tensioning tools including the Micro Bolt Tensioner and RSL torque wrench for the safe assembly of blade and bearing bolted applications.



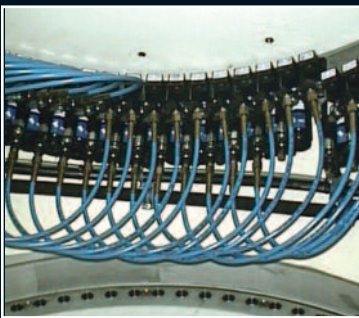
### Blade to Bearing and Bearing to Hub Tensioning Systems

Blade to Bearing and Bearing to Hub tensioning systems were originally developed to allow the OEM to quickly and accurately tension up to 100% of the fasteners in the joint simultaneously. The key benefit of this system is the flexibility to use any number of tools, pending the unique demands of the manufacturing factory and installation sites. The tools incorporate a spring return, double deck hydraulic chambers, positive stop and geared nut rotation.

### Nacelle Tensioning System

The hydraulic bolt tensioning system for wind turbine blade and bearing-to-hub joints is well established and the preferred standard for tightening bolts on these critical applications.

- Proven time savings of up to 65%
- Simple to operate
- Provides accurate and uniform bolt loading
- Improves performance and reliability



### Case Study

An OEM customer asked Hydratight to design a multi-stud tensioning device which was capable of simultaneously tensioning up to 88 bolts, to be used to connect a 38 metre long blade to a bearing slew ring.

Made up of four tool segments, the tools have a built-in gear drive for rapid nut run down, and incorporate Hydratight's patented vacuum retract mechanism which helps to speed up ram retraction and disassembly. The system and the bolted joint were checked using Hydratight's Bolt Scope II™ ultrasonic bolt stress measurement equipment, which confirmed the accuracy of the tensioning device.



The customer's wind turbine blade assembly time has been reduced by 65%, whilst bolt load accuracy and consistency have been improved. This results in better joint life, reduced maintenance and increased time savings.

### Torque Multiplier

The Hydratight range of hand operated low input/high output Torque Multipliers offers an efficient, safe and simple solution to bolting problems.

- Efficient
- Overload protection
- High power-to-weight ratio
- Reversible



## Tower Bolting Solutions

Hydratight has a vast range of torque and tension solutions for the onsite assembly of tower structures.



### Micro Bolt Tensioner

The Hydratight Micro Tensioner for Grade 10.9 bolts has been designed to maximise clamping forces and is available as a single deck tool for applications with a wider pitch between the bolts and a double deck tensioner for applications with a smaller pitch.

The tool has been designed for use with hexagon nuts and washers:

- Lightweight and compact
- Overload and over-stroke protection
- Geared nut rotation
- High cycle life



### RSL™ Hydraulic Torque Wrench

Hydratight's RSL Hydraulic Torque Wrenches provide a comprehensive range of interchangeable hexagon and square drive heads, ideal when working on a variety of tower flange applications.

- Minimum maintenance; only three moving parts
- Safe and durable
- Compact and lightweight
- Fast and versatile



### On-Site Machining

The DL Ricci range of milling machines available from Hydratight will cover a large range of applications including keyway cutting, turbine bedplates and foundation pads. With the geniSYS 220 portable 3D CNC milling machine, large diameter surfaces can be levelled with a higher level of accuracy by utilising the laser levelling equipment.

Laser levelling equipment can be used to complement all Hydratight on-site machining where accuracy is essential when setting the equipment to existing datum's, or its orientation to mating equipment.

The equipment can be used to carry out surveys on items such as flange faces or pump bedplates, to identify the degree of distortion prior to a machine being installed. This can help reduce down time by identifying problem areas quickly.



## Foundation Bolting Solutions

Hydratight's range of safe and reliable foundation bolt tensioners will secure any type of bolt to any type of onshore or offshore surface.



### Foundation Bolt Tensioner

The Foundation Bolt Tensioner was originally developed by Hydratight for a specific application; fixing foundation bolt fasteners on wind turbine towers. Since its invention, the Foundation Bolt Tensioner has been successfully used at many locations throughout the world and is capable of tensioning all of the studs/bolts designed with a Williams, Dyson or similar form.

The Foundation Bolt Tensioner eliminates any potential thread fit problems by utilising the existing hex nut on the stressing bar in order to induce the required load.

- Simultaneous tensioning
- Lightweight and compact
- Up to 25mm one stop operation available
- Interchangeable

### Rock Anchor Tensioner

The Rock Anchor Tensioner was specially designed for work on smaller concrete wind turbine bases.

Based on the standard foundation bolt tensioner, the Rock Anchor is custom designed to fit the 2.5in diameter, 150-grade all-thread bar, used to anchor concrete wind turbine pads or bases to the ground.

### Elliptical Tensioner

This revolutionary new foundation bolt tensioner is perfect for all OEM tower base bolting. The Elliptical Tensioner was designed by Hydratight to meet a specific customer requirement where accessibility was an issue.

The tool has a 20% reduction in width, which allows fit on all applications including the limited clearance inner bolts. Hydratight's pioneering design enables the tool to work on both number 10 and 11 sized rebar. Safety and performance enhancements include asymmetric rams, spring-loaded sockets, spring retraction and a positive stop to prevent damage by misuse in the field.

- Asymmetric ram
- Spring retraction
- Spring loaded socket
- Fits number 10 or 11 Williams or Dyson base bolt
- Suits all applications including limited clearance inner bolts within tower
- Fits all OEM towers
- Utilisation of a positive stop eliminates damage risk to piston
- Light and compact

## Wind Industry Power Consoles

The wind energy sector puts very high demands on the power systems which operate torque and tension tools. Hydratight has developed a unique range of pumps which cater for these high demands; with special attention being given to speed, weight, continuous operation and extreme environments.



### **PowaPak Electrically Operated Torque Wrench Pump**

The PowaPak range of automatic and semi-automatic torque wrench pumps has been developed by Hydratight to meet the arduous and demanding needs of the high volume assembly wind energy market.



### **ZU4-AW Electrically Operated Torque Wrench Pump**

Hydratight has used the latest metallurgical, bearing and seal technologies to produce the ZU4-AW high pressure torque wrench pump specifically for bolting applications for the wind energy market.



### **PEPC6154600X Hydraulic Tensioner Pump**

Using the latest in pump technology Hydratight has produced a high pressure, electrically operated pump for tensioning applications. This pump will stay on the job longer and requires less maintenance, both of which will reduce service costs.

#### **Features**

- Compact design
- Fully programmable microprocessor control
- Digital display
- Automatic torque or pressure cycle

#### **Benefits**

- Ensures operators achieve target pressure each time
- Safe and easy to use
- Quick and efficient operation
- Small and compact



### **Bolt Load Monitoring - Bolt-Scope II™**

The Bolt-Scope II ultrasonic load monitor is ideal for effectively monitoring and recording bolt stresses to meet the wind energy industry's rigorous safety demands.

- 10,000 fastener capacity
- Easy to use interface
- Accurate
- Multilingual

#### **Training**

Hydratight's global training division leads the way in offering certified accredited training programmes in the safe and correct use of hydraulic torque and bolt tensioning equipment, and is accredited by the Engineering Construction Industry Training Board (ECITB), TECSkills Units and City and Guilds.

# hydratight®

*Global Standards Local Delivery*

Our global network means you can rely on the right people, products and services wherever you are in the world.

Email us at: [solutions@hydratight.com](mailto:solutions@hydratight.com)

Or find your local representative at:

[hydratight.com/contact](http://hydratight.com/contact)

