

## SERVICE PARTNER OF WIND POWER

### ALKITRONIC® CASE STUDY

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At wind power plants the safety-related bolted connections of the tower, in the turbine building and in the hub, is checked at regular intervals during the entire operating time of 10-20 years. For many years the modern torque multipliers of alkitronic® have been used world-wide, supporting the work of manufacturers and independent service companies.

### ENVIRONMENTALLY FRIENDLY ENERGY

Especially in Germany there is now a dense network of highly qualified companies such as Availon, Perle Industrieservice, DWT, Enertrag, Juwi, RES, Baju-Energie, SSC Wind, SeeBa Wind Service, RoSch Industrieservice (to name but a few). In the field of service and maintenance, they look after the value conservation of plants onshore and offshore nationwide.

Wind power plants have been shaping our landscape for more than 30 years. Set up individually or pooled in wind parks, in the countryside and now also offshore, they provide environmentally friendly energy in many countries throughout the world. To produce the required energy the plants must operate flawlessly over many years in wind and weather 24 hours each day, provided the necessary wind is blowing.



Figure 1: GE Wind 2.8MW

### MANUFACTURER REQUIREMENTS

In order to guarantee safety and operation of the elements in the plants, among other areas the bolted connections are repeatedly checked according to manufacturer's specifications. In their operating and maintenance manuals the manufacturers of the wind power plants give precise instructions on how to examine each bolt with which torque. Here the torque multipliers of alkitronic® are used.

## COMPANY PERLE INDUSTRIE-SERVICE

Our field service colleague and Key-Account-Manager Wind, Dipl.-Ing. Hans-Joachim v. Albedyll accompanied a team of company Perle Industrieservice of Emsbüren during work for one day. At a new 2.8 MW plant of manufacturer GE Wind Energy, as part of a so called first service, a 100 % bolt control was carried out, among other things. For this purpose the customer uses various alkitronic® torque multipliers.

## COMPACT AND ROBUST



Figure 2: alkitronic® AS-3 overhead on an azimuthal brak

For example the compact and strong hydraulic torque wrench alkitronic® AS-3. Due to its small dimensions, low weight, and high performance, it is not only used in the tower, but also in the turbine building, for example on the brakes, the bearing screws or the shaft-hub connection.



Figure 3: Hydraulic torque wrench AS-3 on pedestal bearing



Figure 4: alkitronic® Hydraulic torque wrench AS-3 on tower flange bolts M36- high tension

In the case of tower flanges over 100 bolts must be checked successively for precise torque. On larger connections the bigger hydraulic torque wrenches of the AS series are active and reliable partners.



Figure 5: alkitronic® Hydraulic torque wrench AS-15 on tower flange bolts M64- high tension

New is also the alkitronic® AS-15 with less weight and performance. With a max. torque range of 20 000 Nm it is able to check the largest tower bolts up to M64 – high tension.

## CASES DIFFICULT TO ACCESS

Also on connections with difficult access, for example on azimuth drives, alkitronic® improves the quality and safety.

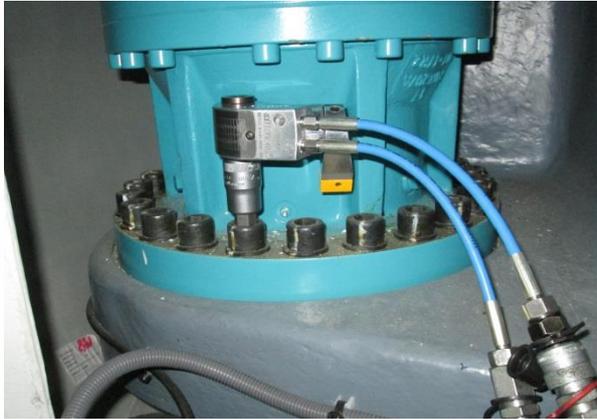


Figure 6: Hydraulic torque wrench AS-1 up to 1.100 Nm on azimuth drive

Due to its high performance in small spaces the new hydraulic wrench alkitronic® AS-1 is a reliable help in bolting checking on azimuth drives of all GE Wind plants, and of course also of other manufacturers.



Figure 7: alkitronic® Hydraulic torque wrench AX-1 up to 750 Nm on azimuth drive

## CLASSIC PRODUCT FOR THE TOWER

The energy independent manual torque multiplier alkitronic® HG. No hose, no cable, but high torque with compact design in combination with a strong and durable gear: These are the arguments of Perle Industrieservice and many companies at home and abroad to control tower bolts with the HG.



Figure 8: alkitronic® Manual torque multiplier HG 20 on tower bolts M36- high tension

Also at the transition to the nacelle and in the complete turbine building itself, the bolts need to be controlled. This adds up to several hundred screw joints!

**Accurate, safe and strong: the alkitronic® torque multipliers satisfy the high demands of the wind power industry.**

A glance at the hub: This is where every bolt of all three rotor blades is checked. The employees of manufacturer GE Wind Energy rely on bolting according to the torque/angle procedure. The bolts are first entered with small pre-torque, then with a given torque angle.

This bolting method ensures precise and repeatable tension forces in the bolts and is used in all plants of the ½ MW and 3 MW platforms.



Figure 9: alkitronic® EF 300plus on a rotor blade

The alkitronic® electric torque multipliers have been first choice worldwide for this application for more than 10 years, with the brushless motor and modern processor control these torque multipliers work with conventional torque and also with torque and torque angle procedure.

**alkitronic® torque multipliers are perfect with torque angle procedures.**

Continuous rotation with the strong 2000 W drive ensures high operating speed and accuracy. There are nearly 280 bolts which need to be tightened.



Figure 10: GE 2.8 on 140 m-hybrid tower

This day has again proven: The alkitronic® torque multipliers are reliable and essential partners for the maintenance of modern large plants.

## TECHNOLOGY FOR EVERY CASE

Whether it is continuous electric torque multipliers, compact hydraulic torque wrenches with modern automatic pumps or completely energy independent manual torque multipliers: alkitronic® provides for all screw connections the right solution and makes an important contribution to the cost-efficient and smooth process of maintenance.

To ensure that it stays that way, alki TECHNIK GmbH works closely with the wind energy.

## FURTHER INFORMATION

Should you know any further questions about the application concerning any plant, please contact us. Our employees at home and abroad will have customized solutions for you which will let you accomplish your tasks as securely, fast and reliably as the team of co. Perle Industrieservice did.