

3D measuring in the wind turbine industry

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Excellent service, professional technicians, and state-of-the-art equipment make Zebicon groundbreaking within remote sensing.





The measuring systems from GOM are all based on optical metrology and are thus ideal for remote sensing.

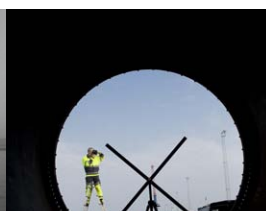
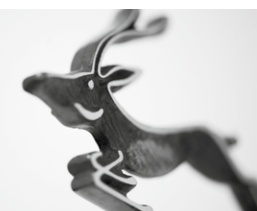
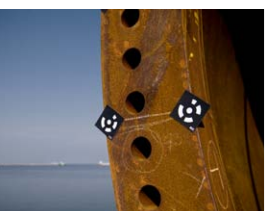
GOM is specialized in digital image acquisition and processing, 3D coordinate measurement techniques, and material and component testing.

We make 3D measuring available

Optical 3D measuring in the wind turbine industry offers a vast amount of opportunities within research and development as well as quality control. From coordinate measurement of tower flanges to complete 3D scanning and documentation of wing geometries.

Zebicon makes 3D measuring available. We offer the technology as a service to Danish and foreign companies, and ensure that you will gain maximum output. This means in-depth geometric analyses and intuitive measurement reports made by us. The results are delivered with free viewer software, which enables you to do further analysis and inspection of the data.

Over the past years, Zebicon has contributed to numerous quality controls and analyses within the wind turbine industry. The measurements are typically done on-site, in Denmark or abroad, using the latest equipment from GOM.





3D scanning

Blades, moulds, casts, machined parts etc. are very expensive components where high quality, precision and longevity are required. The flexible and mobile ATOS 3D scanner delivers supreme data quality and high resolution. This gives you an efficient and precise data acquisition and reporting for quality control and reverse engineering.

Fields of application:

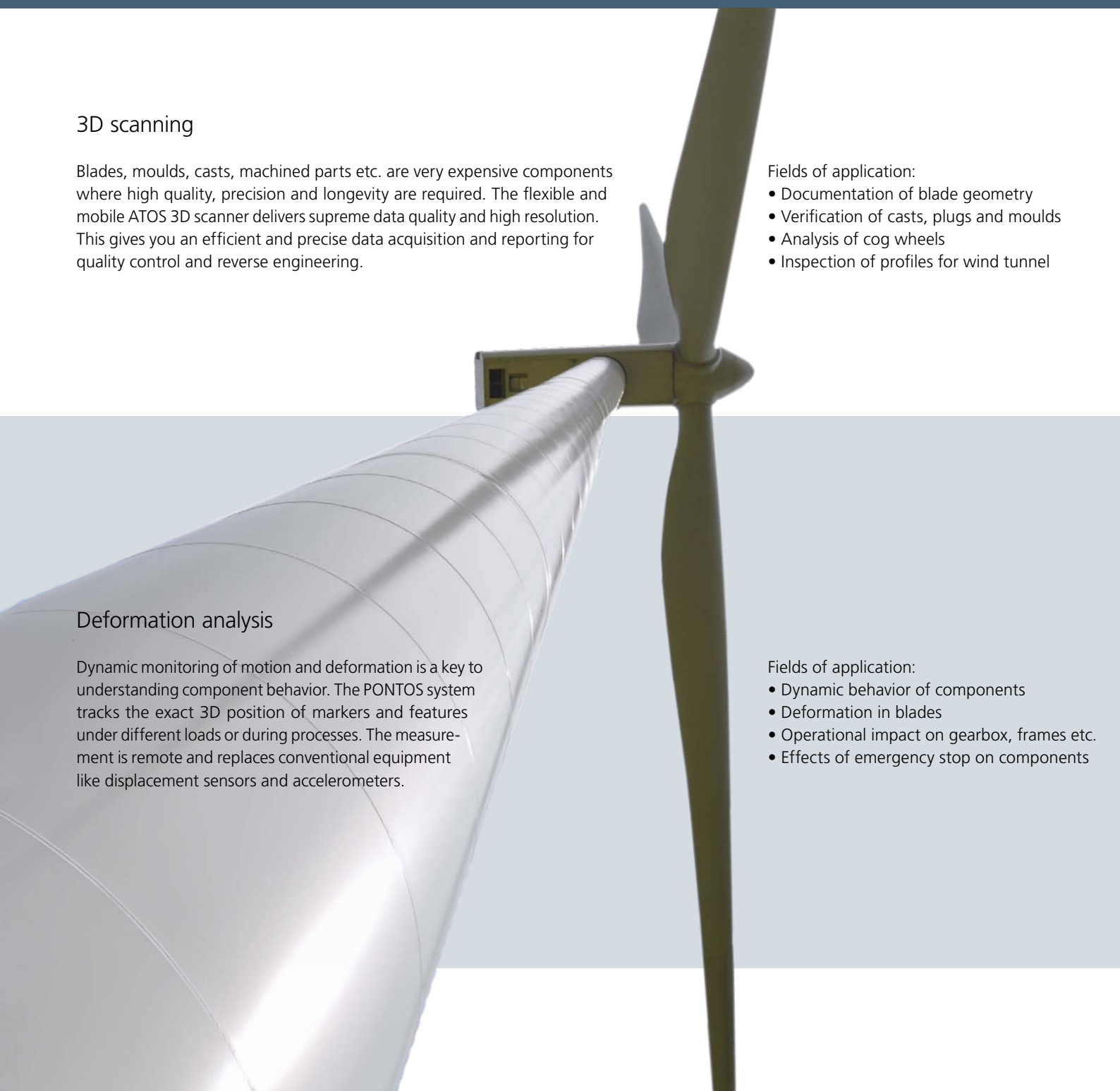
- Documentation of blade geometry
- Verification of casts, plugs and moulds
- Analysis of cog wheels
- Inspection of profiles for wind tunnel

Deformation analysis

Dynamic monitoring of motion and deformation is a key to understanding component behavior. The PONTOS system tracks the exact 3D position of markers and features under different loads or during processes. The measurement is remote and replaces conventional equipment like displacement sensors and accelerometers.

Fields of application:

- Dynamic behavior of components
- Deformation in blades
- Operational impact on gearbox, frames etc.
- Effects of emergency stop on components





Safety first! All Zebicon technicians have experience in working on-site in a wind turbine and have up-to-date courses within safety and security.



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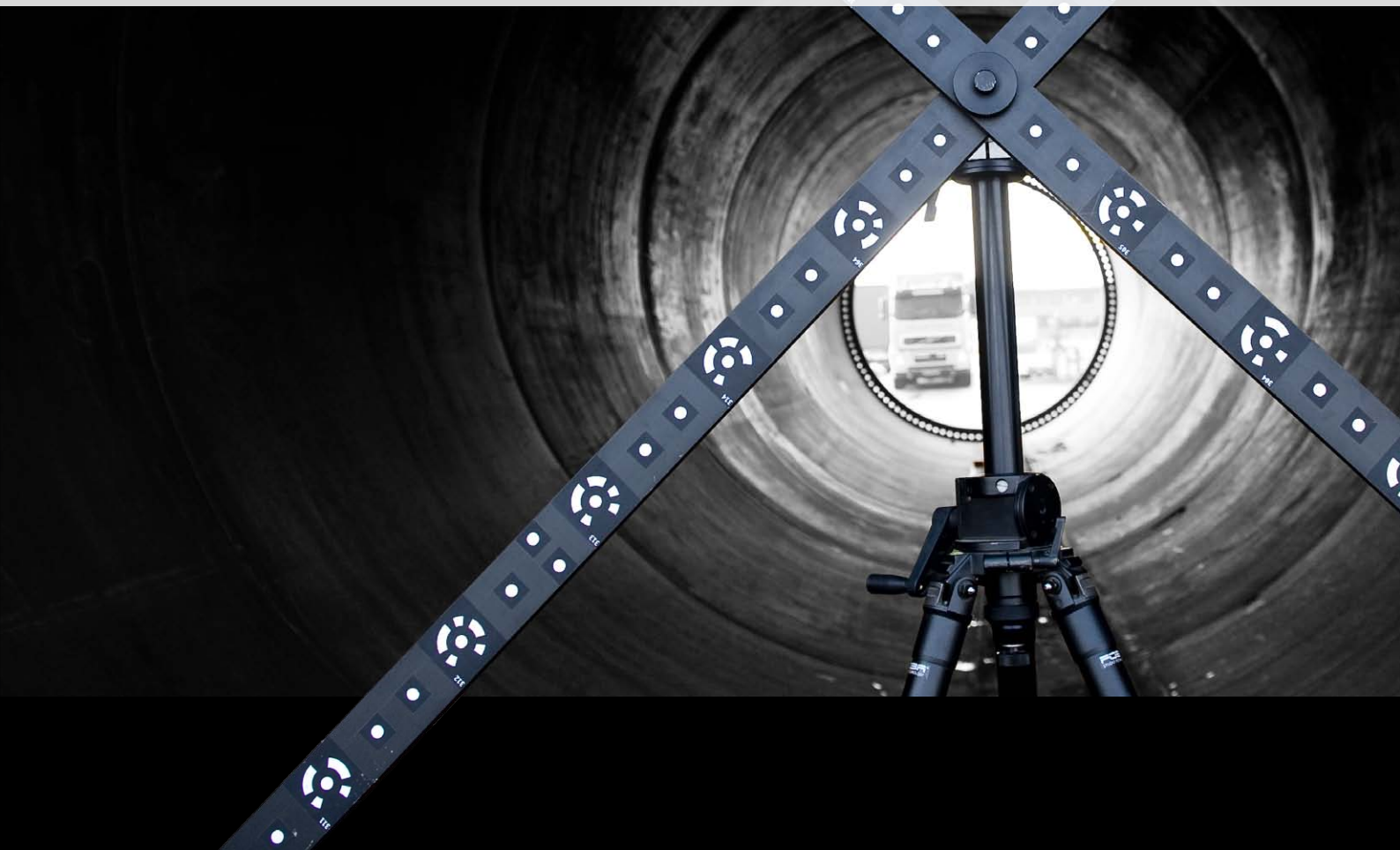
Coordinate measurement

Blades, towers, and nacelles are all constructions where size and accessibility can hinder efficient quality control. Optical 3D coordinate measuring is possible in harsh environments using TRITOP CMM. The system defines the exact 3D (XYZ) positions of markers and visible features for inspection, analysis and quality control.

Multiple TRITOP measurements can be combined to create static deformation analysis. From the displacement of the markers and the features in different stages, the movement and deformation is calculated and displayed.

Fields of application:

- Documentation of blade cross-sections
- Verification of frames, beds etc.
- Analysis of temperature influence
- Deformation of blades in different stages
- Lasting deformation from emergency stop
- Static impact of long-term operation
- CMM inspection of plugs and moulds





The measuring equipment is robust, flexible and with high accuracy, which allow for precise measurements of large objects, even in extreme environments.

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3D scanning

A measurement report based on 3D scanning gives you a complete overview.

The scanning process results in a complete mesh of the object surface, which provides you with extensive opportunities for analyzing and checking the quality. The measurement results are presented by traditional 3D dimensioning, GD&T, comparison to CAD, 2D sections etc.

Using Zebicon for 3D scanning means comprehensive quality control and inspection of your products.

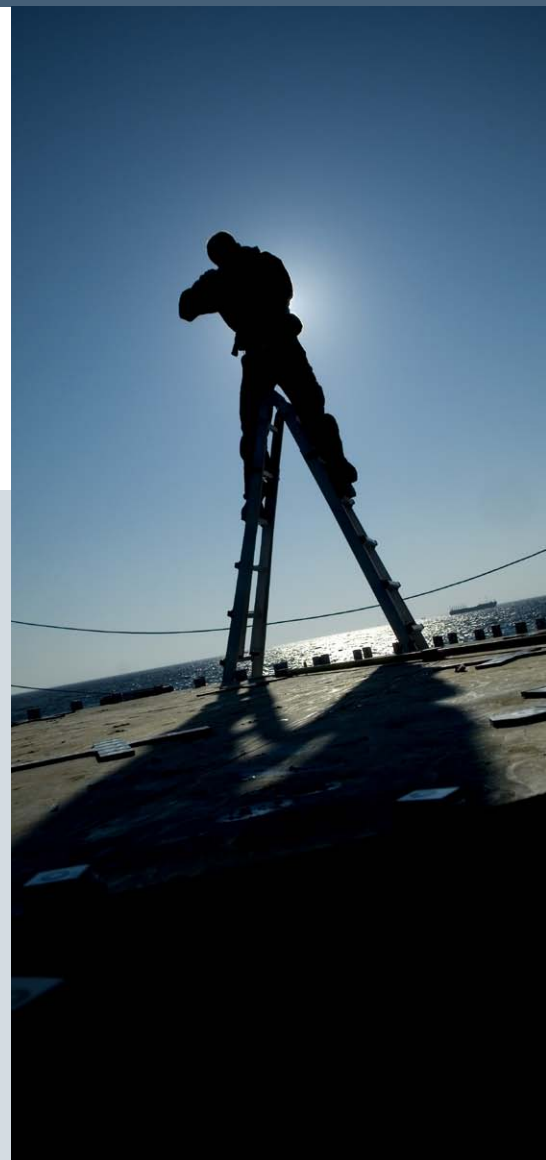
Coordinate measurement

Coordinate measurement is used where full surface data is not required. The optical coordinate measuring system used by Zebicon is portable and very flexible, and is equivalent to traditional coordinate measuring machines. The system works under normal as well as under 'not easily accessible' conditions.

Using Zebicon for coordinate measurement means precise on-site quality control of specified dimensions and geometries.

Deformation analysis

Dynamic and static deformation analyses are ideal for understanding component behavior and verifying theoretical models of calculations. The deformation measurements are done in real-time and present displacements by means of camera images combined with diagrams.



About Zebicon

Zebicon is a modern dynamic company specialized in 3D measuring and digitization. We have considerable technical expertise and deep knowledge of development and production processes within a variety of businesses.

The company's primary focus is quality control and inspection, where we conduct advanced measurements for a wide range of industries. From hearing aids to wind turbines. The measurements are done in Zebicon's laboratory or on-site if the assignment calls for it. Furthermore, Zebicon sells and supports 3D measurement systems.

Zebicon is unique within its field of business and is a professional and competent partner for your next measuring job.



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