



# TOP7<sup>®</sup>

**MAKING DRONES SMARTER.**

**Your software and technology expert**

for visual inspection and contactless lightning protection measurement of wind turbines



recognized by insurance companies



by TÜV SÜD



Patent  
EP 3 596 570  
DE 10.2020.210.618



Patent  
US 11,397,371  
US 11,435,650



DIN EN  
ISO 9001  
certified

# TOPseven enables you to perform inspections independently.

TOPseven places you the customer in a position to independently perform closerange visual inspections and contactless lightning protection measurements on wind turbines.



## Empowerment

A short theoretical and practical training session will empower your employees to perform inspections independently. TOPseven provides you with extensive documentation and training material.



## Evaluation

Evaluate and review the corresponding missions using the TOPseven Inspector software. The data is available for you to access in the TOPseven Cloud at all times and remains your property. An industry standard inspection report is created automatically.



## Execution

You plan your missions and execute them independently. You determine the time of deployment. Specialized software and hardware from TOPseven guarantees a speedy and comprehensive inspection.



## Pricing

Simple and transparent pricing: customers are only invoiced for missions that are actually performed on a wind turbine – the visual inspection of the rotor blades, the tower and/or the contactless lightning protection measurement.



# TOPseven – MAKING DRONES SMARTER.

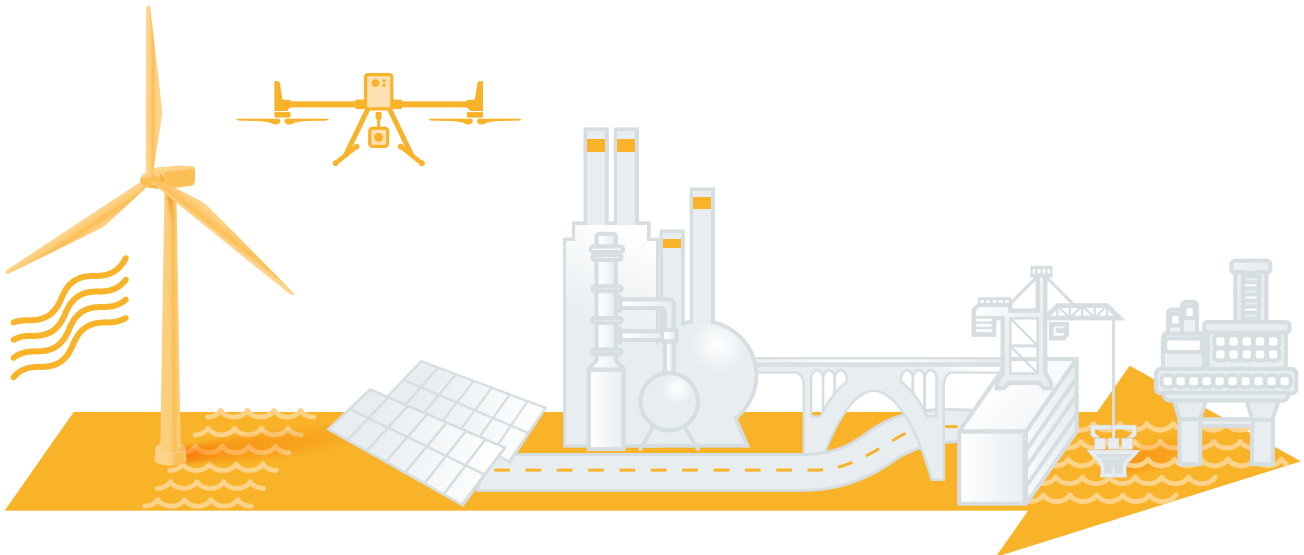
**TOPseven is a software and technology developer specialised in drone programming, cloud computing and artificial intelligence.**

This solution guarantees highly automated use thanks to the development of AI-based control software for flying drones, the globally patented solution for contactless lightning protection measurement and cloud-based application software for wind turbines. After a short training period, you will be in a position to perform inspections independently. The drone-based system

from TOPseven is successfully deployed in the wind industry. For the future, TOPseven has set itself the goal of facilitating regular and comprehensive inspections of even hard-to-access infrastructure of all kinds. This will make it possible to recognise early the progress and development of damages thus minimizing the future damage and to increase the lifespan of your asset.

## The technology at a glance

Software solutions for drone supported, automated inspection



Onshore Wind | Offshore Wind | PV Systems | Industry | Infrastructure | Port Facilities | Floating Platforms

## Highlights

Your benefits

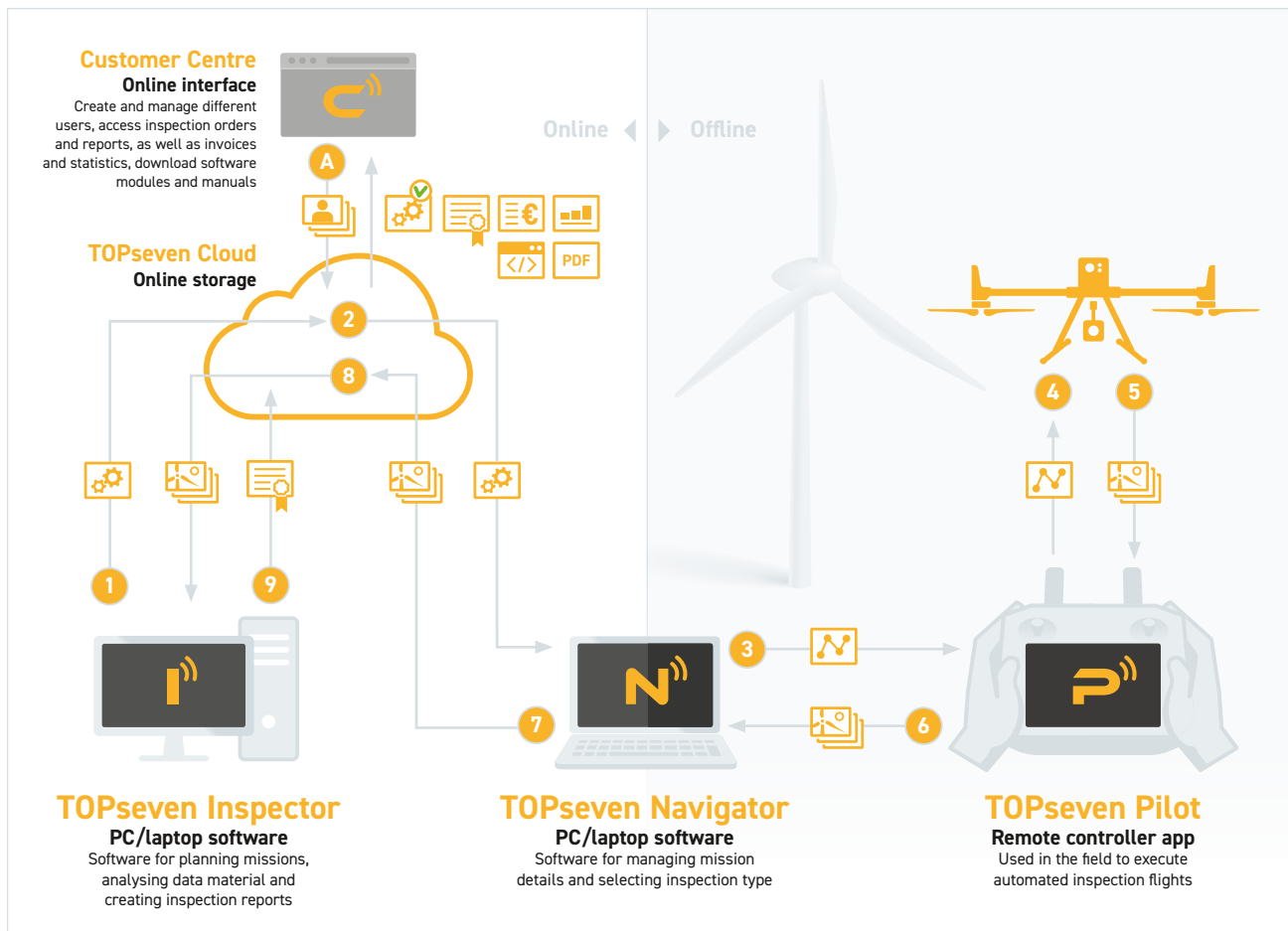
- Empower your employees for autonomous use
  - a short training period will suffice
- Autonomous drone flight
  - no need for a specialist pilot
- Visual inspection of rotor blades and tower
- Contactless, drone supported lightning protection measurement
- Precise localisation of damage
- Short downtimes for the wind turbine
- Efficient analysis with automated creation of inspection reports
- Graphical expert representation of inspection results

# TOPseven Ecosystem

The TOPseven Ecosystem consists of three software modules: the TOPseven Inspector, the TOPseven Navigator and the TOPseven Pilot. The browser-based TOPseven Customer Centre is your administration tool for decentralised management of all necessary data and users.

After an inspection mission for each wind turbine has been planned in the TOPseven Inspector, the TOPseven Navigator is used to calculate the exact flight path for the respective turbine. Your employee can then start the autonomous drone flight – there is no need for a specialist pilot. The data generated during the automated inspection will be

stored safely in the TOPseven Cloud and can be evaluated by your employees in the TOPseven Inspector. Damage and interruptions to the lightning conductor system are precisely located and can be compared and documented during subsequent inspections. An inspection report is automatically generated in German or English once the damage has been marked.



## Functionality

The workflow of an inspection with the TOPseven software modules

- |                                                                 |                                                                                |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>A</b> Creation of a company account and user profiles        | <b>5</b> Data transferred from the drone to TOPseven Pilot                     |
| <b>1</b> Creation of inspection orders in TOPseven Inspector    | <b>6</b> Data transferred from TOPseven Pilot to TOPseven Navigator            |
| <b>2</b> Storage of the inspection order in TOPseven Cloud      | <b>7</b> Data transferred to TOPseven Cloud                                    |
| <b>3</b> Calculation of the flight path with TOPseven Navigator | <b>8</b> Data stored in TOPseven Cloud                                         |
| <b>4</b> Data recorded during the drone flight                  | <b>9</b> Evaluation of the data and creation of an automated inspection report |

# Inspection Hardware

In addition to the DJI Enterprise drone, the hardware required for the visual inspection and contactless lightning protection measurement consists of a laptop, the three TOPseven Signal Generators and a TOPseven E Field Sensor.

## Equipment

for visual inspection

### Drone

DJI Matrice 300 RTK



### RTK

DJI D-RTK 2 Mobile Station with tripod



### Laptop

with TOPseven Navigator software



### Remote controller

DJI SRC with TOPseven Pilot app



### Batteries

for DJI Matrice 300 RTK, DJI D-RTK 2 Mobile Station and DJI SRC



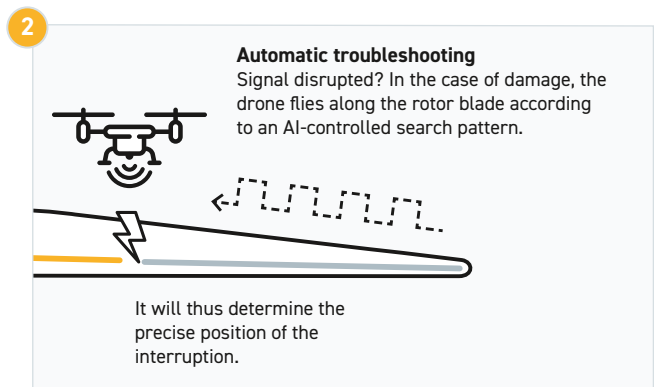
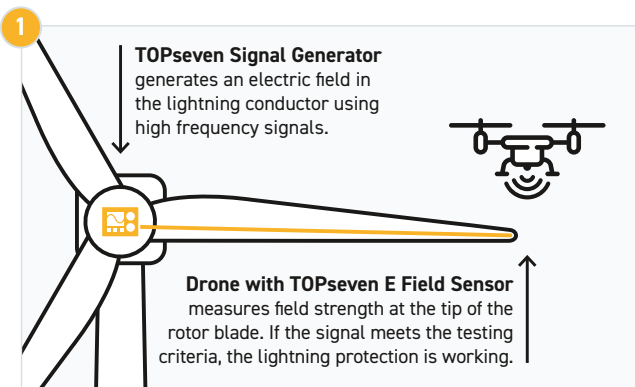
## TOPseven special hardware

for contactless lightning protection measurement

### TOPseven Signal Generators



### TOPseven E Field Sensor





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# TOP7<sup>®</sup>

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