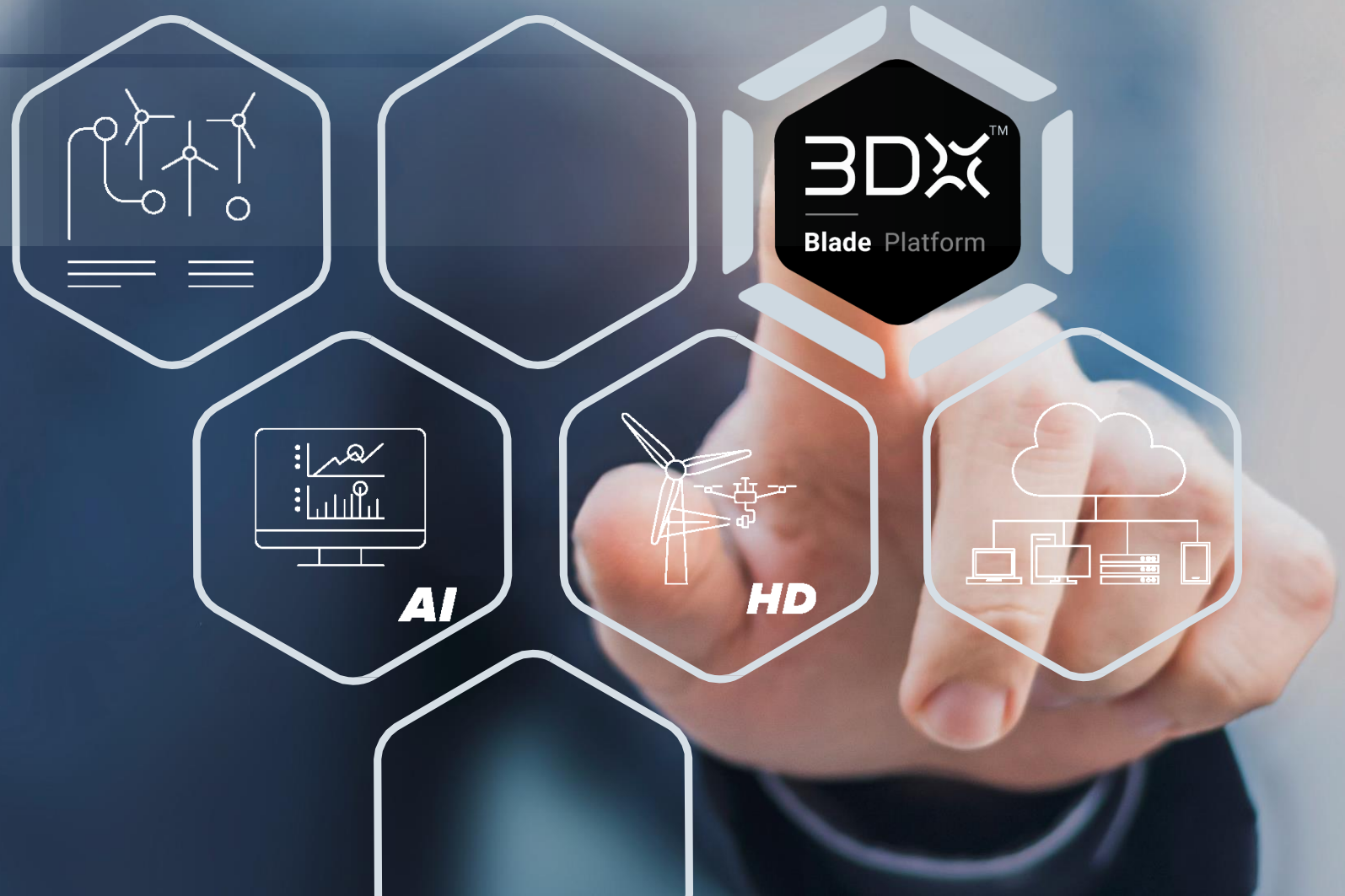
Welcome to Sulzer Schmid

Marc Hoffmann
Global Head of Sales & Marketing

BWE Firmenwebinar
21. Juli 2022



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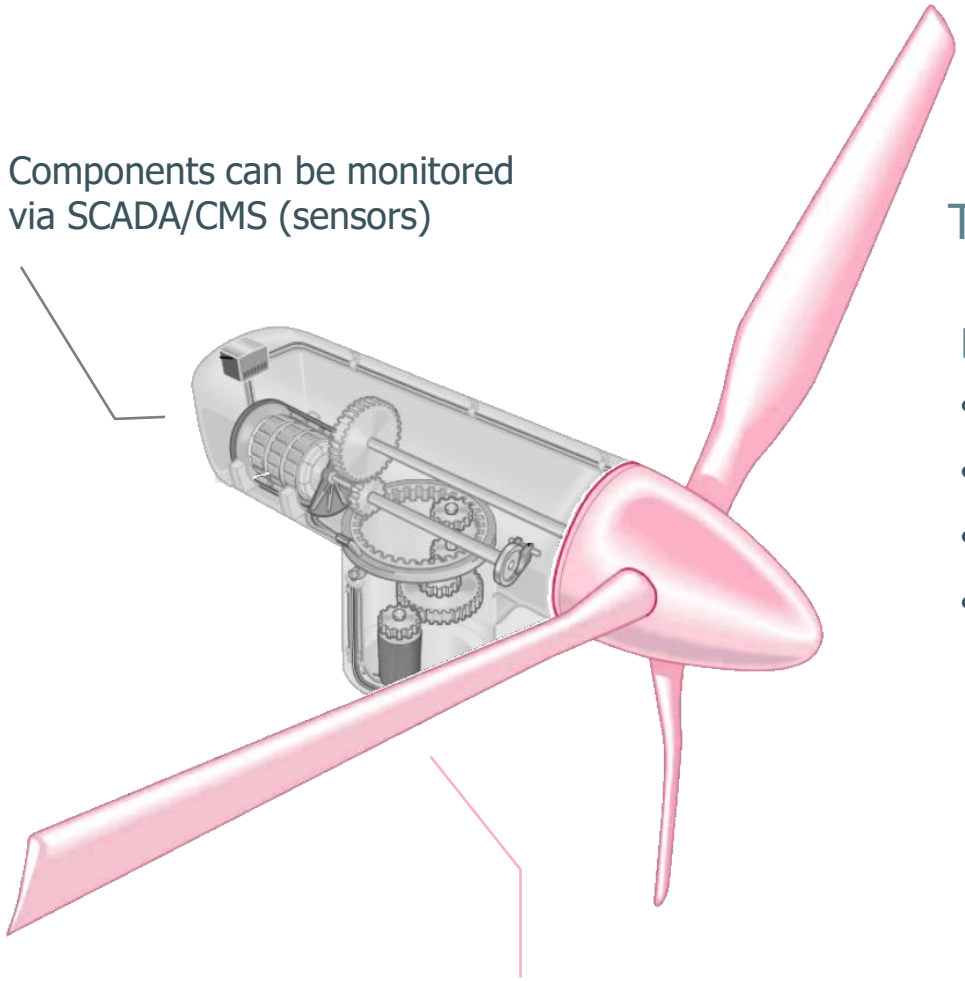
DIGITAL ASSET MONITORING

The Missing Piece for Rotor Blades

Components can be monitored via SCADA/CMS (sensors)



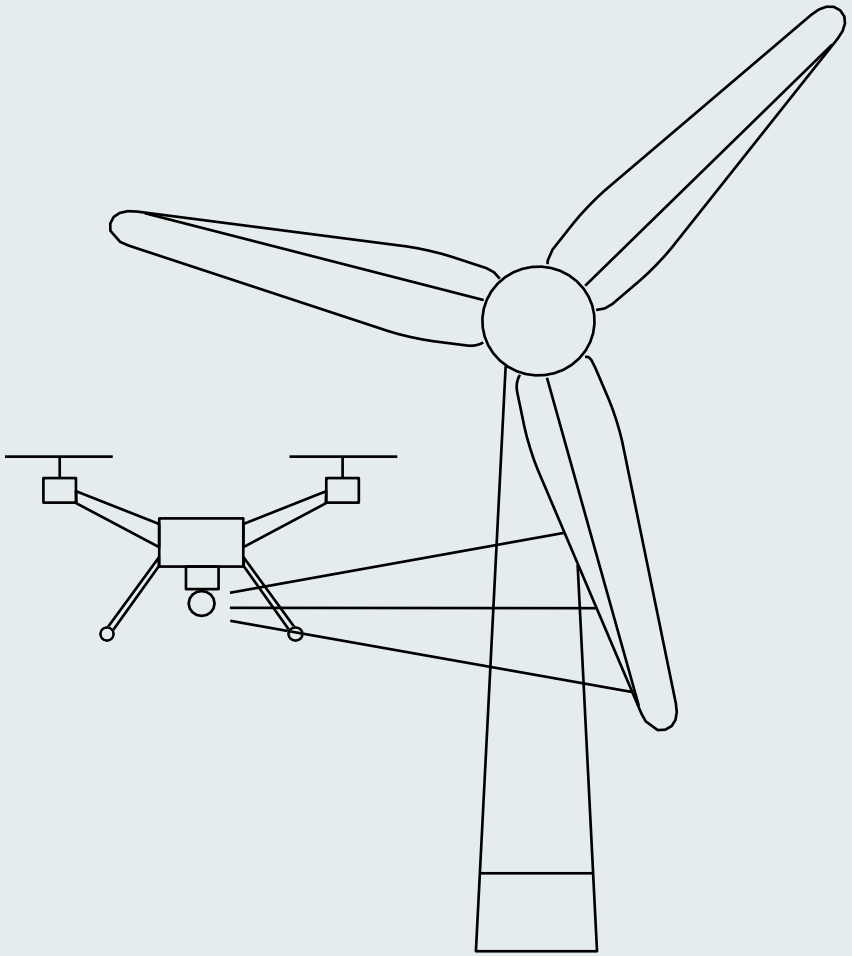
Blades cannot be monitored with sensors

The Missing Piece is our Solution

Rotor blades turn wind into kinetic energy and

- are the most critical components of a wind turbine
- make up 20% to 30% of the monetary value of a WTG
- cannot be monitored with sensors
- need to be inspected in order to assess their condition

Sulzer Schmid by the numbers



35+
countries

+10
Service providers

Up to 18
Inspections per day and system

17
Wind turbine manufacturers

15-30
Minutes downtime per inspection

500k
Annotations

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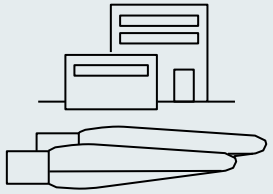
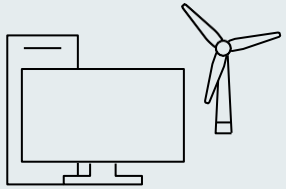
Clients and Collaborations

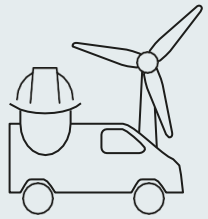
We work with the best



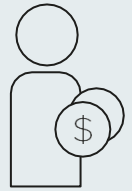
OEMS



OPERATORS



SERVICE PROVIDERS



INVESTORS

Vestas

acciona

BKW

GE

NORDEX

AES
we are the energy

ENERTRAG
Eine Energie voraus

bp

e·on

Microsoft

Southern Company

SIEMENS Gamesa
RENEWABLE ENERGY

AVANGRID

DNV·GL

Capital Power

Verbund

Technology Fund
GUARANTEES FOR INNOVATIVE CLIMATE PROTECTION

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Turning Data Into Value

We provide digital solutions for the monitoring and lifetime documentation of rotor blades

Inspection Data

Data-driven SaaS solutions

Value Creation

Building powerful data-driven solutions to drive down LCoE of wind power

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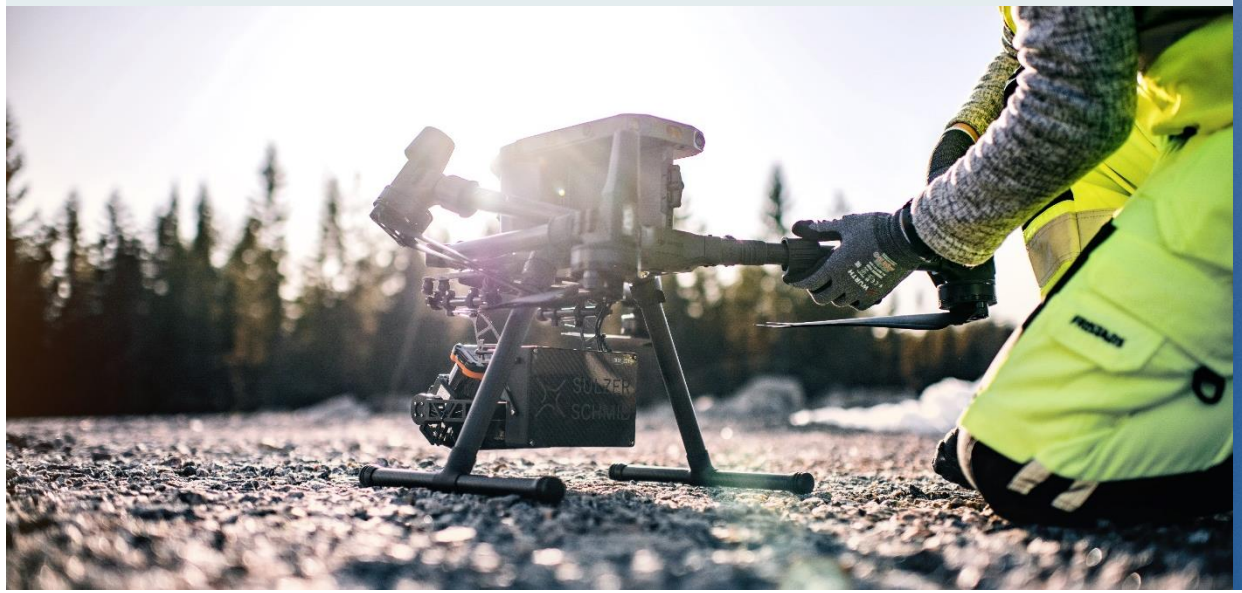
3DX™ Data Capture Technology

Automation enables consistency



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3DX™ AutoPilot for high-volume blade inspections

High quality, fully-automated and maximum through-put

Streamlined, single stop process

- Fully automated
- Fast, efficient and accurate
- No manual intervention

Repeatable with perfect image framing

- Precise damage location and sizing
- Immediate image quality assurance in the field

Fastest turnaround-time on the market

- 5 days from capture to report
- Highly customizable analytical framework

Different operational models

- From full service to self-performed inspections

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3DX™ SmartPilot for highly flexible blade inspections

Ultra-portable, semi-autonomous and flexible deployment

Inspections out of a backpack

- Compact design and easy setup
- Compatible with compact, easy-to-deploy drones
- Perfect for remote locations and adhoc inspections

Automated

- Software ensures optimal flight paths and data consistency
- Minimized manual piloting

Data management in 3DX™ Blade Platform

- Review and analyze data in our platform
- No compromise on data quality and smart analytics

Ultra-portable and flexible deployment

- Cost efficient data capture in function of location and site-specific conditions

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Sulzer Schmid Case Study: Vestas NCE 2021

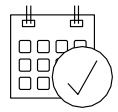
Gigawatt inspection campaigns in Northern and Central Europe

Sulzer Schmid's drone-based solution met the high-quality standards and demanding time frame for this campaign.

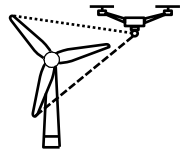
	2019	2020	2021
Countries	2	4	15
Inspected turbines	1,179	1,501	4,000
Inspected turbine types	7	11	17
Number of inspection teams	5	11	19
Downtime per WTG	60 min	45 min	30 min
Record inspections per day	up to 11	up to 13	up to 18
Largest rotor diameter	136 m	150 m	162 m

15 COUNTRIES

4 MONTHS

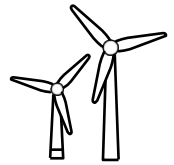


4000 WIND TURBINES

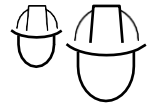


30 MIN ON AVERAGE PER WTG

17 TURBINE TYPES



19 TEAMS



UP TO **18** INSPECTIONS PER PILOT/DAY

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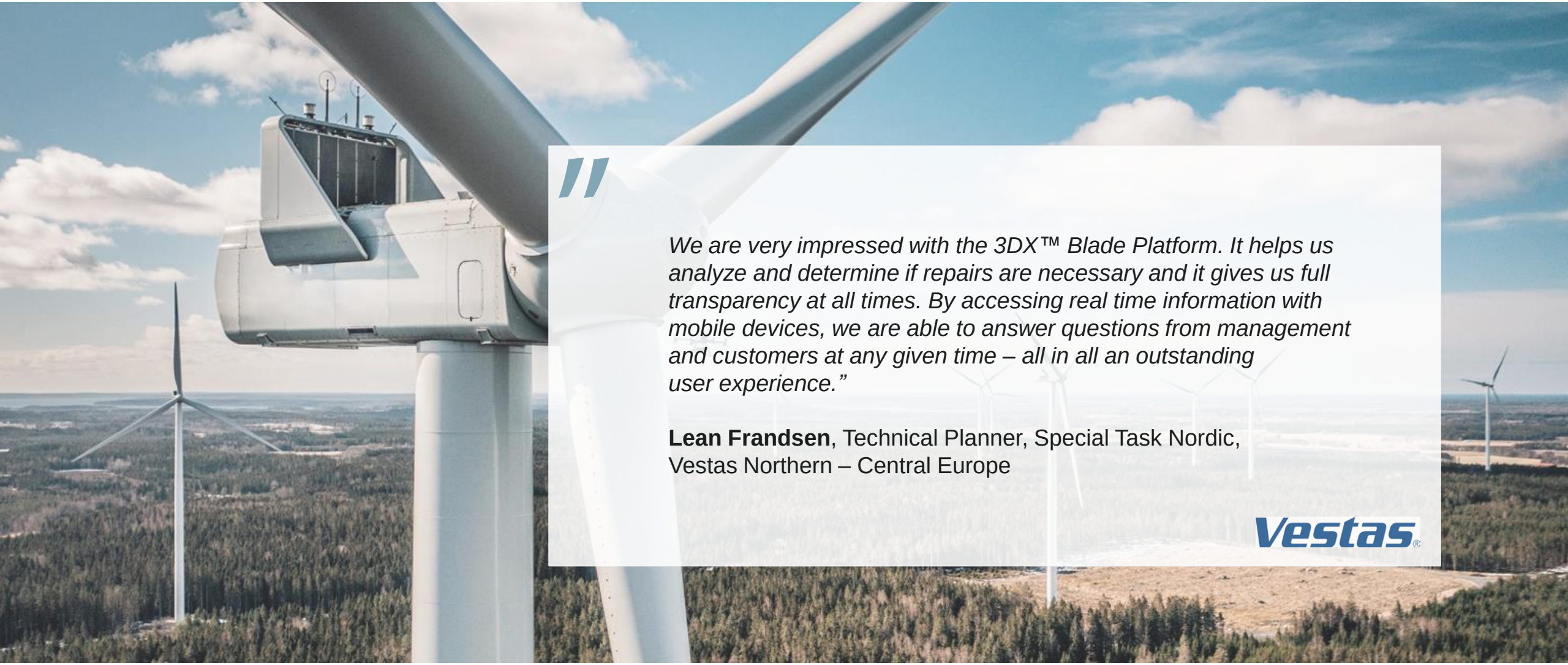
A satisfied customer

Sulzer Schmid excels with its customer focus in challenging conditions



We are very impressed with the 3DX™ Blade Platform. It helps us analyze and determine if repairs are necessary and it gives us full transparency at all times. By accessing real time information with mobile devices, we are able to answer questions from management and customers at any given time – all in all an outstanding user experience."

Lean Frandsen, Technical Planner, Special Task Nordic,
Vestas Northern – Central Europe

Vestas

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Are you looking for a software platform that helps process and analyze visual inspection data with minimum effort and without compromising on reliability?

3DX™ Blade Platform

Condition monitoring and asset management for wind turbine rotor blades

Find the best trade-off between blade repair cost and aerodynamic performance of your blades!

Reviewing inspection data with **3DX™ Blade Station Online**

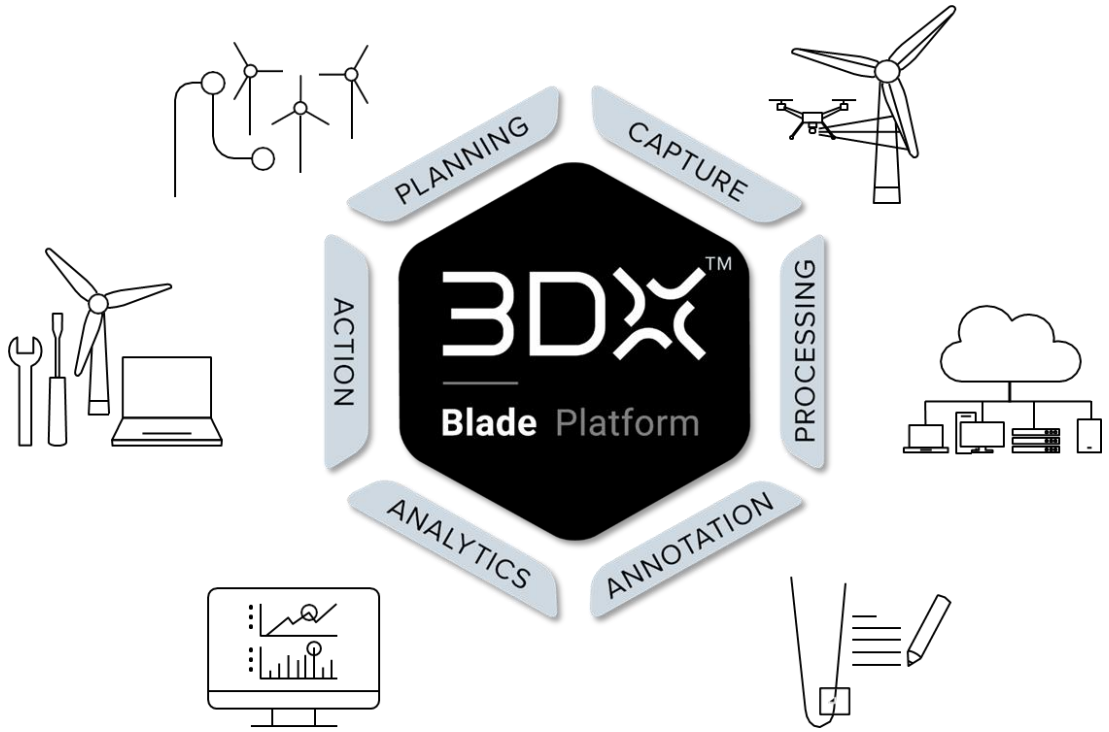
- View of **entire blade and/or single damages**
- Create links to **collaborate and share** data
- **Optimize single-WTG repair spend** based on actionable insight

3DX™ Data analytics

- Overview of health of entire fleet over time with **damage progression** analysis
- Drill down **from fleet to individual damage** level for detailed analysis
- Optimize fleet performance based on aggregated data

Deciding when to repair

- View inspection data over time, across inspections and **identify general trends**
- **Optimize repair** planning adding comments and tags and ensure quality control based on best-in-class inspection data
- **Optimize AEP** in function of recommended time to repair



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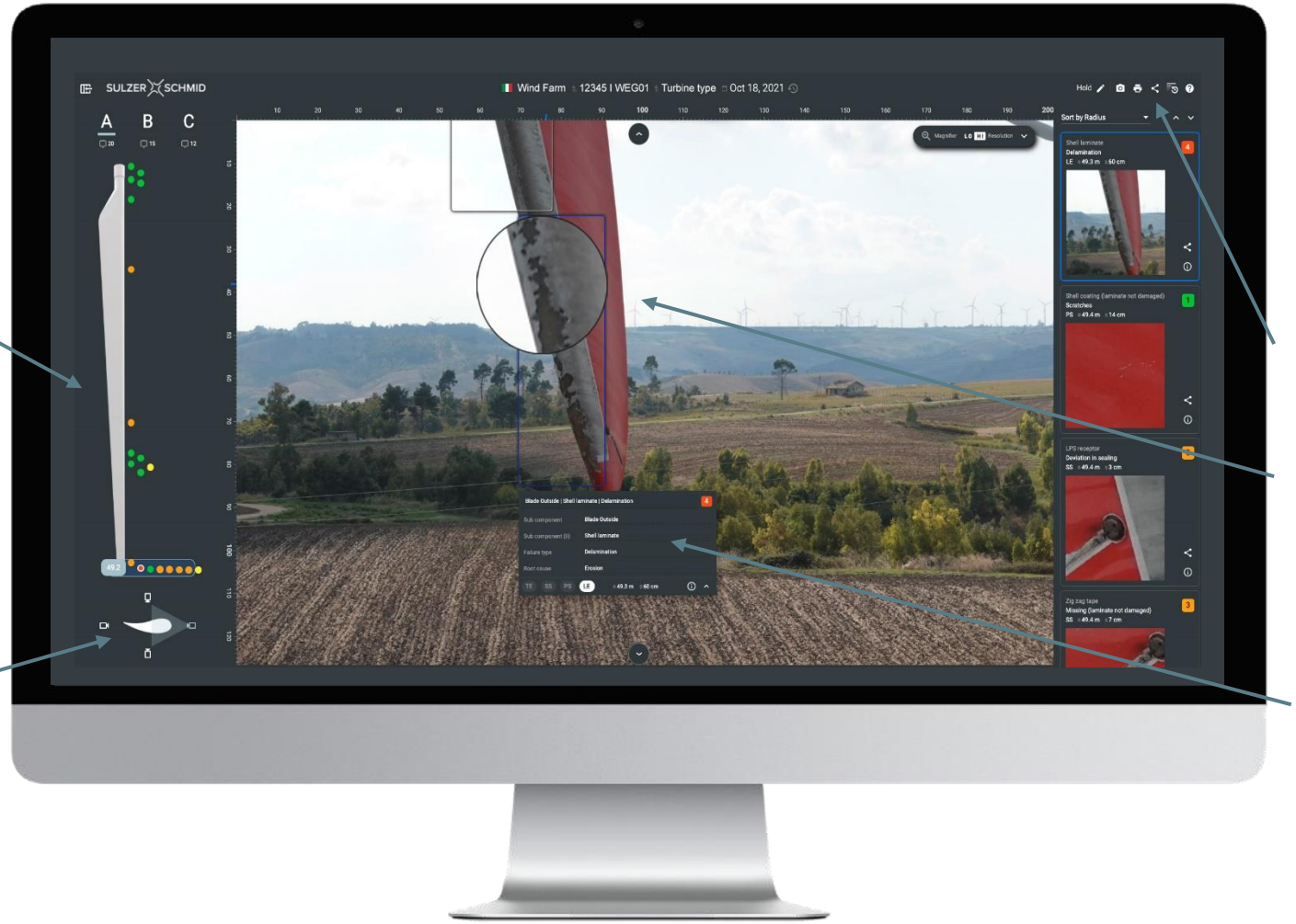
3DX™ Blade Station Online

The most easy-to-handle and efficient software for processing visual blade data

- View entire blade or pre-annotated images only (AI assisted)
- Optional view of damage time series (damage progression)
- Walk around the blade – view blade from all 4 angles



- Collaboration – invite partners and share link to evaluate damages
- Magnifying glass – max. resolution to take a closer look
- Customized damage classification – your terminology applied to annotations

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3DX™ Data Analytics

The blade health status of your fleet at your fingertips

From fleet view to individual damage

- **Fully customizable** fleet view for entire meta-data
  - Damage type
  - Severity class
  - Radius
  - Geography
  - WTG type
  - Blade type
- Set up for **damage progression** analysis
- View the **status of entire fleet** and **drill down to individual damage** annotation view

Know when to act

- Monitor damages over time
- See trends and increase your knowhow
- Optimize your repairs based on your insights
- Minimize cost and downtime

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