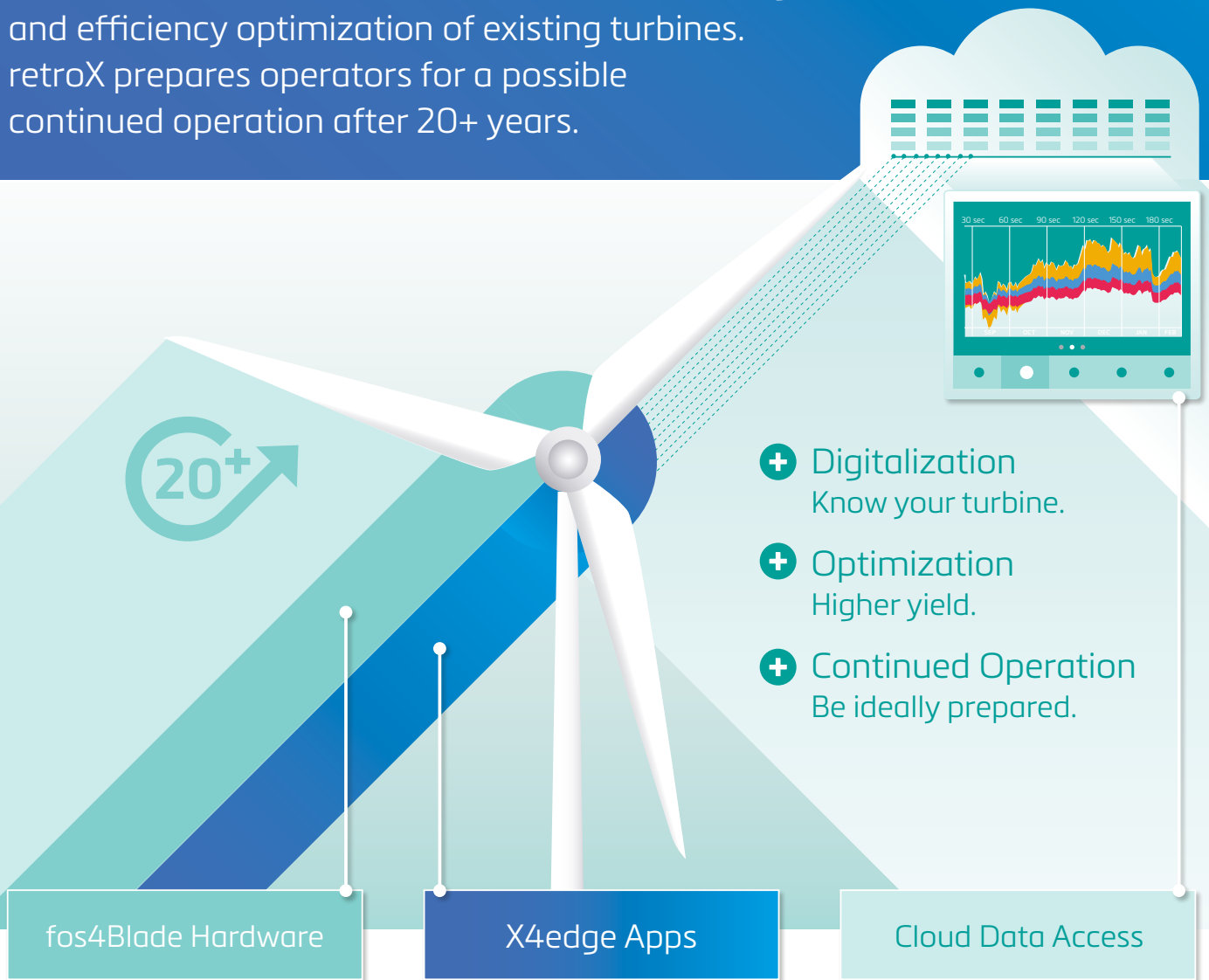


retroX - Digital Backbone for Existing Turbines

retroX offers a stand-alone retrofit solution for digitalization and efficiency optimization of existing turbines. retroX prepares operators for a possible continued operation after 20+ years.



AEP Increase



OpEx Reduction



Life Time Extension



Risk Mitigation



Asset Transparency as Key for Optimization

Increase performance transparency as well as condition transparency through real-time data access to enable the optimization potential of your turbine and wind farm. Find out more about retroX on www.fos4x.de/retroX

retroX - Customer Value & Investment

OpEx Reduction

- Get better transparency of asset with more and smarter data
- Automate recurring analyses and make informed decisions
- Improve maintenance planning and empower predictive approaches

Life Time Extension

- Improve commercial decision making for continued operation
- Use real load data to allow less conservative lifetime assessment
- Be able to trade life time for output or make better PPAs

AEP Increase

- Create turbine specific portfolio of initiatives for AEP optimization
- Tackle static performance issues (e.g. rotor imbalance)
- Reduce curtailments with additional apps (e.g. blade ice detection)

Risk Mitigation

- Detect premature structural damages early on
- Be informed about the structural pain points of your assets
- Improve risk reporting for management and owners

Basic Solution

Initial Investment

fos4Blade sensor platform

Proven series system, used in hundreds of turbines

Edge computer

DPU with real-time digital twin (basic version)

Connectivity

3G/4G connection and field bus/SCADA integration

Operation

Data transfer and storage

Buffer of dynamic data and continuous cloud transfer

IIoT cloud platform

Offline analysis, updates and device management

SCADA integration

3G/4G connection and field bus/SCADA integration

Upgrades

Performance Optimization

Performance & condition reports

Event-based or periodical load, performance and condition reports

Performance apps

fos4X and 3rd party software optimization products

Individual services

Automate specific analyses, deep-dives into your data

retroX - Digital Backbone for Existing Turbines

With retroX, fos4X offers a stand-alone retrofit solution for digitizing and improving the efficiency of existing turbines and supports operators for potential extended operation after the expiration of the EEG subsidy. retroX will be available for different turbine types (multi brand) from Q2 2019.

Transparency and Recommended Actions on Performance and Condition

retroX is a manufacturer-independent, stand-alone solution that works without direct integration into the turbine control system. Individual turbines as well as

„By transferring dynamic turbine data into our IIoT cloud and directly providing data, we provide transparency for our customers across all plants regarding the current performance and condition of their turbines.“

Dr. Lars Hoffmann, founder and CEO of fos4X GmbH

entire wind farms can be digitally integrated in a cloud-based IIoT environment. In addition to providing turbine data in the fos4X cloud platform, integration into existing management software is also possible.

Yield Optimization and OPEX Reduction - Fast Return on Investment

By using the standardized fos4Blade sensor platform, the initial investment for retroX is extremely low. Additional modular, digital optimization packages form a flexible and holistic solution. For the first time, an economically sensible retrofitting of existing turbines in their second decade of design-life is made possible.

Higher availability and more efficient operation of the turbine through retroX lead to a very fast amortization of the investment. At the same time, the real-time availability of operating and status data enables optimized maintenance and a reduction in operating costs.

Load Data for Decision on Continued Operation

retroX prepares operators of wind turbines optimally for the upcoming assessment of the extended service life of wind turbines. Through the long-term recording of load data and its extrapolation, a plant-specific load history is created over the entire operating life. Previous conservative load assumptions for the calculation of the remaining service life are supplemented by qualified and reliable data.

About fos4X GmbH

Founded in Munich in 2010, fos4X GmbH is a specialist for reliable, fiber optic measurement and sensor technology as well as for innovative data analysis. It develops IIoT and edge computing solutions and enables significant cost reductions and efficiency increases for the wind industry.

This technology is primarily used in wind turbine rotor blades. In addition, fiber-optic sensors and solutions are also used in the fields of electromobility, process measurement technology and railway technology.



Contact us for more information on retroX

www.fos4x.de
Thalkirchner Straße 210
81371 Munich
Germany

Contact person

Philipp Gerster
Business Development Manager
philipp.gerster@fos4x.de
+49 89 999542-6709