TECHNOLOGIES TO TRANSFORM WIND POWER BUSINESS

Insight on the latest disruptive technologies for wind power investors, developers and operators

Industrial Internet of Things revolutionizes the industry, but additional surprise technologies appear

This document represents an expert view from future emerging technologies within the wind energy sector considering their potential, challenges, applications and technology readiness and how they might evolve in the next five years

Against this backdrop, respondents to Wind Energy Science Technology Innovation Survey ranked Industrial Internet of Things (IIoT) as the top driver of the wind power business transformation over the next five years.

This result comes as no surprise given how broad and far reaching the category of this technology is. From advanced management and visualization software to smart grids, everything feels "intelligent" these days and is linked with a myriad of devices and applications to build a highly intelligent eco-system.

Integrating existing plant IT with "intelligent" and connected physical assets is the foundation of the Industry 4.0 movement. Increased automation to reduce operational risks and control costs is one reason IIoT makes sense for manufacturers and wind plant operators. For wind operators, Industry 4.0 means obtaining specific and critical operational data incredibly data and much more reliable. The IIoT ranked as the most important technology among the responders, surpassing Artificial Intelligence.

This importance makes security even more imperative. Failure to secure IoT devices and their connected ecosystem could prevent a company from delivering services, protecting sensitive data, or even keeping the wind energy plant perform well. Few companies know how to get started even though they recognize the need for a comprehensive IIoT transformation. Many industrial systems were designed without considerations of connectivity. Therefore, they must rely on extremely secure, perimeter-based systems to protect assets from intrusions and attacks, which provide a high level of analytics.

A dominant characteristic of the Wind Energy Technology Innovation Survey is that while the top technologies was essentially the same among other similar surveys over the last two years, the order this year changed dramatically. Big Data and Intelligence-Automatic remote monitoring both jumped up significantly in this year's ranking.

Responses to the 2019 Wind Energy Technology Innovation Survey yielded the following technologies that are perceived by wind energy industry leaders as having the greatest potential to drive wind power business transformation and establish a long-term value.

Technology	2019 Rank	2018 Rank
Industrial Internet of Things (IoT)	1	1
Artificial Intelligence (machine learning)	2	5
Big Data	3	2
Advanced Power Electronics	4	8
Robotics and automation (including autonomous vehicles)	5	3
Smart Grids	6	4
Automated Value Chain & IoT	7	6
Social networking, collaboration technologies	8	7

Source: Wind Energy Technology Innovation Survey 2019