

Lowering wind turbine maintenance cost in Brazil by implementation of a SCADA-data based analysis mechanism

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Abstract

The rising consciousness about the anthropogenic induced climate change has led to the international motivation to reduce greenhouse gas emissions and raise the share of renewable energy generation plants in the global energy matrix.

Due to its geographical size, resources and ecological structure, Brazil is presented as an important contributor to these climate goals. Wind turbines are recognized as fast growing technology with a dynamically developing market consisting of multinational manufacturers and service contractors. With the expansion of renewable energy technologies, operational efficiency and reliability are shown to become a significant issue. The claim of reliable, sustainable and competitive power generation makes a lowering of energy production costs necessary. The northeastern region of Brazil is examined for its potential of wind turbine installations and its deficits. It is discovered, that favorable wind resources and sufficient land area promote wind turbine installations, however unavailability of industrial services and the unconsolidated supply chain result in elevated O&M cost, particularly when unplanned component failures occur and cause downtime.

To lower O&M costs, a broad SCADA-data driven analysis mechanism is proposed. Historic turbine data is analyzed to show how operational data analysis may help monitor the main components behavior and identify premature deterioration, allowing planning and optimizing of maintenance actions. A methodology developed by a German research institute serves as example how broad collection and analysis of data and market competition can be approached properly. Conclusively it is discussed, how technology transfer regarding O&M information technologies can help pursue international and industrial interests.