New generation data acquisition units for wind turbine condition monitoring
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Abstract
Condition monitoring solutions have evolved immensely over the years. The vast amount of data acquired by the veteran condition monitoring system suppliers has proven to be a valuable catalyst for innovation. The comprehensive nature of today’s condition monitoring systems, which monitor more components using more measurement techniques, have become much more effective compared to earlier systems. Faults can be detected earlier and diagnostics and severity evaluation can be done more reliably and accurately.

What is not understood by many is that the data acquisition system concept and technology is considered as a critical part of an effective condition monitoring strategy.

Seamless Integration
With more processing power and embedded intelligence in the system, the hardware should be able to perform various measurements and calculations required for effective monitoring of a wind turbine.

The need for effective monitoring often grows as more symptoms from various faults can be discovered and new techniques are continuously developed.

Flexible configuration for monitoring different turbine types
System flexibility is crucial with regards to monitoring different turbine types, detecting new potential failure modes and detecting existing faults as early as possible.

Upgrading and configuring monitoring strategy of a turbine type should be easily done by the user.

Remote updating with minimal service intervention is an important cost-saving factor.

Conclusions
The new generation data acquisition unit is no longer just a transmitter of raw data from the sensors. It plays a vital role in the comprehensive condition monitoring strategy, as does expertise service.

Design philosophy – Distribute intelligence and processing power
Embedding intelligence and processing power in the hardware opens up various benefits, e.g., reducing load on database servers, long period of “on board buffering”, adaptable monitoring strategy, etc.

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