WNDRVR Studio

DEPLOY: DIGITAL TWIN

MAKING NEAR REAL-TIME OPERATIONAL ADJUSTMENTS TO REMOTE ENERGY DEVICES

THE CHALLENGE

A renewables energy company has built and deployed several hundred wind turbines in a coastal region. An energy services contractor manages the deployment and daily operations.

The turbines are currently performing at only 80% of capacity. The contractor would like to maximize the per-machine megawatt level, but this requires analyzing a number of environmental and usage factors and adjusting the turbines accordingly.

The turbine development team believes they can better optimize the machines by implementing small changes in sensors and blade angles. However, they don't have access to the machines in the field to run tests.

The contractor has been collecting operational data, including the direction and strength of winds, temperature, and other environmental forces. The team wants to use this information, along with statistical data related to weather patterns and materials degradation over time, to model different tuning scenarios. They believe they can use a digital twin of the turbine and its operational environment to quickly try new functional features and test deployed performance.

THE SOLUTION

Wind River® Studio includes digital twin and digital feedback loop capabilities to enable the energy company to simulate how the software and hardware work, using the data coming from a real turbine. A simulated model of the running system allows developers to progressively refine functionality, immediately see results, and then compare and contrast different scenarios to reach optimal productivity.

Developers can also safely test an implementation before pushing it to the field. Once changes are made in the turbines, the outcomes can be immediately analyzed to ensure efficiencies.

THE RESULTS

A digital twin using data from a live feedback loop from a deployed system gives developers the needed context to refine and innovate their product. It also provides unlimited flexibility to experiment with new features and functionality, without the risk of downtime or lost efficiencies.

With a digital twin, teams can deploy new capabilities faster, with better outcomes.
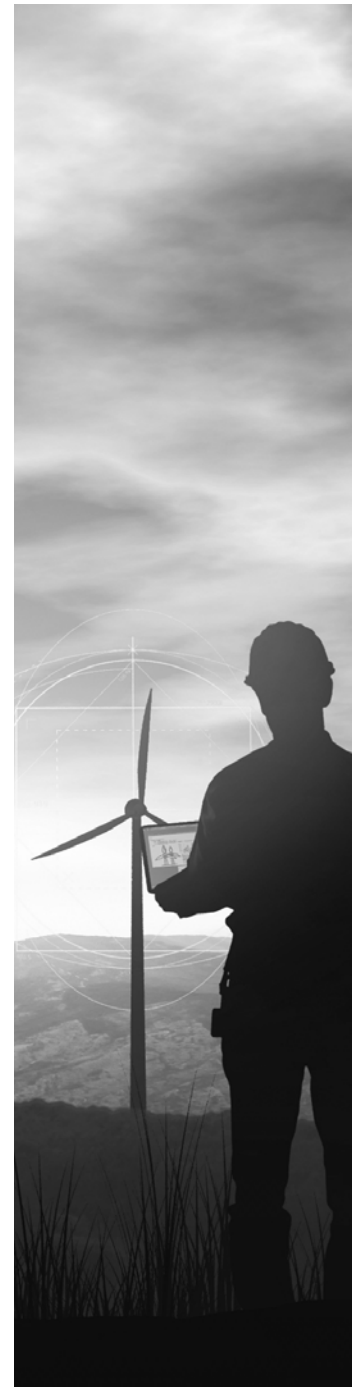
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