

The Benefits of IoT Analytics for Renewable Energy: ParStream helps Envision Energy improve wind turbine productivity by 15%

EXECUTIVE SUMMARY

Envision Energy is one of the world's ten largest wind turbine companies and the largest Chinese offshore wind turbine supplier. Founded in 2007, Envision is a privately owned renewable energy company in the wind power space that also wants to become the dominant software company in the smart energy market. Instead of just focusing on producing wind turbines, they also have a software business, which manages 13GW of renewable energy assets globally.



THE CHALLENGE

Renewable energy companies have experienced strong growth, but face pressure to improve profitability and productivity as the industry scales globally. To that end, Envision realized that the energy business can no longer be differentiated just by mechanical engineering, but by their ability to monitor and maintain high performance over time.

That's why each of Envision's wind turbines are built with over 150 advanced sensors that continually assess acceleration, temperature and vibration. Extracting data from their wind turbine sensors lets them see trends and create predictions for performance optimization to increase productivity and predictive maintenance to minimize downtime.

The company's network of 20,000 wind turbines is one of Envision's best competitive advantages, but managing massive amounts of real-time data and continuous monitoring of their vast wind turbine network is a cumbersome task. Envision is currently analyzing over 20TB of historical data at a time. However, data is growing at over 50% annually as Envision continues to collect more

data, more frequently from each of their wind turbines. To complicate things even further, the wind farms which house their turbines, are geographically dispersed.

THE SOLUTION

Envision realized that there are measurable business benefits in analyzing turbine sensor data with greater granularity. As such, they have moved from analyzing turbine data every ten minutes to every minute, and then on to every few seconds. By immediately analyzing real-time sensor data from their wind turbines, Envision is able to quickly identify actionable insights with significant business benefits. Two key use-cases for Envision include Performance Optimization and Predictive Maintenance, which combined, help to deliver an overall 15% improvement in productivity.

Performance Optimization: Envision uses sensor data to make smart decisions about altering the angle and speed of the turbine blades in order to optimize performance at any given time, based on changing environmental conditions. According to Dr. Guido Jouret, President of Envision Digital Innovation Center, “through the use of real-time sensor data, we can boost a customer’s total energy output by up to 15% from their wind farms.”

Predictive Maintenance: Envision’s sensor technology checks for any irregularities in operational performance for their 20,000 wind turbines, which allows Envision to predict potential failures before they happen. They match real-time data against historical data to determine which parts need adjustments or replacements, significantly reducing downtime.

“ParStream’s unique ability to analyze terabytes of data with sub-second response times further improves our ability to generate significant value from our IoT applications.”

- Dr. Guido Jouret, President, Envision Digital Innovation Center

RESULTS

Envision needed an analytics solution, which allowed them to handle terabytes of data with sub-second response time, along with the capability to run distributed queries/edge analytics closer to the source of data.

Envision wanted an integrated platform to continuously import and store large amounts of real-time sensor data with the ability to run fast and flexible queries. They also wanted the ability to run queries at any given time, whether in their own data center, in the cloud, or in customer locations.

With so many moving parts, Envision needed a big data analytics provider that could be nimble enough to run queries across huge data sets, while also being reliable enough to protect their critical IoT investments.

According to Dr. Jouret, ParStream was the only technology that could easily handle more than 20 terabytes of data at such high ingestion rates for immediate analysis, thus minimizing latency. ParStream's capability to support massive sizes of data (e.g. over 100TB), helps "future-proof Envision's applications, where data continues to grow at 50% annually."

Dr. Jouret added, "Envision views information as a competitive advantage." ParStream is supporting that vision by helping Envision turn their real-time sensor data into actionable insights, which creates business value.



ABOUT PARSTREAM

ParStream is the industry's leading IoT analytics platform company. The ParStream analytics platform was purpose-built for scale to handle the massive volumes and high velocity of IoT data. ParStream's platform delivers a new breed of analytics for the enterprise, such as Geo-Distributed Analytics, which enables analytics at the edge. ParStream has earned multiple accolades including the M2M Evolution IoT Excellence Award, CIO Magazine #1 Big Data Startup, and Gartner Cool Vendor. ParStream is based in Silicon Valley, online at <http://www.parstream.com/> and on Twitter @ParStream.

ABOUT THE INDUSTRIAL INTERNET CONSORTIUM

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