

Achieved a 500% Boost in Predictive Performance

CASE STUDY

AT A GLANCE

DATA LANDSCAPE

- Disparate
- Heterogeneous
- Terabytes

BEFORE

- Unpredictable hydro generator downtimes
- \$1 million per day loss per down hydro generator
- Negative customer sentiment & trust

AFTER

- 500% boost in predictive performance about the baseline
- More accurate and earlier detection of component failure

CHALLENGE

The Sira-Kvina power company is one of Norway's primary renewable energy power providers, producing approximately 5% of the country's power from seven hydropower plants. Sira-Kvina struggled to tie their data together from disparate and heterogeneous operational systems and thus could not make informed decisions. On average, one of the hydro generators going down creates a loss of approximately \$1 million per day, as well as negative customer sentiment and trust. Sira-Kvina needed a trusted data and analytics partner and engaged PS AI Labs & Devron to design and deploy predictive models to determine hydro generator component failure risk to enable preemptive maintenance operations and system monitoring.

SOLUTION

PS AI Labs' dedicated data science and engineering team worked hand-in-hand with Sira-Kvina leaders, operators, and stakeholders to design and build machine learning models using various operational and maintenance data sources. Using the Devron federated machine learning platform our team developed an abstract model of the generator systems that could be linked to key operational and sensor data systems. Our focused data discovery and exploration identified that the generator had moved into a damaged state eight power cycles earlier than had previously been observed by the Sira-Kvina maintenance team.

RESULT

PS AI Labs & Devron created a predictive model that was trained on the SCADA sensor data and achieved a 500% boost in predictive performance above the baseline. Thus, our models helped Sira-Kvina operators identify issues more accurately (less false positives and false negatives) and much earlier, allowing operators to strategically approach each maintenance issue in a cost-optimal fashion. Sensor metrics were reduced from hundreds to the ten that provided the best predictive performance, making the results easier to interpret and more actionable for the business.