SECURE Energy Services
Optimizing heavy equipment resources with real-time data

In 2011 when SECURE Energy Services bought the PI System™ for its liquids facilities, the company outlined a roadmap of future applications and target projects for the PI System. The roadmap included everything from creating management dashboards, to training, to process optimization. As part of its most recent roadmap project, SECURE began focusing on heavy equipment optimization in its Processing, Recovery and Disposal division through a pilot project at its landfills. The objective was to improve dozer operations and reduce the cost per ton to process waste.

"Data is an asset. It has a dollar value. We need to own that data."
– David Bellmont, Manager Operations Analytics, SECURE Energy Services

Situation

Founded in 2007, SECURE Energy Services provides safe and environmentally responsible fluids and solids solutions to the oil and gas industry. The Processing, Recovery and Disposal division, made up of 38 facilities, manages the treatment and disposal of oilfield byproducts. Just three years after its foundation, SECURE went public and today has nearly 1,500 employees.

SECURE's Processing, Recovery and Disposal division includes 120 heavy equipment assets and encompasses everything from skid steers to loaders, excavators, dozers, and articulating trucks. Like most oil and gas service companies, SECURE's fleet includes equipment from multiple vendors such as Caterpillar, Komatsu, CASE, and John Deere. While most equipment manufacturers provide some tools to access equipment data, typically only limited data is available, and often, it is pre-processed and served up in inflexible reports.

SECURE knew that if a more comprehensive set of high fidelity equipment data was readily available in the field and the front office, the data could have broader impacts on overall operational efficiency and costs. Equipment data could then be leveraged to optimize not only equipment performance and maintenance but also planning, production, safety, and training.

With the downturn in oil prices, lowering costs by optimizing operations has become even more important. "We pulled utilization together for a group of assets. One particular dozer was showing around 60% utilization in 2013. We put that information back in the field's hands. A year later when they were looking to justify a new dozer, we pulled the number again. They'd already increased efficiency to 83%, and that was just based on static analysis," says David Bellmont, Manager Operations Analytics at SECURE Energy Services.

SECURE believed that by collecting heavy equipment data in real-time and making that data available to the field, it would be able to reduce costs in its Processing, Recovery and Disposal division. With dozers being the highest cost per ton asset at the landfill, SECURE focused its heavy equipment optimization pilot project on its dozers.

Solution

An OSIsoft partner, Symboticware, was selected to integrate SECURE's equipment data with the PI System. A SymBot® was installed on each dozer to collect engine parameters, location, speed, accelerometer, and other key data from the dozers. The SymBot transmits the raw dat to its SymView server when a wi-fi connection is available. The SymView server then maps the data and sends it to the PI Server™. In addition, GPS-based location services and a weather station were implemented to improve data context. PI Server data is available to the field in real time through PI Coresight™[1] and, in the future, Esri® ArcGIS®.

Benefits

From the start of the project, making data available to field has been the primary goal. "The best ideas originate on our front line and in the field. The PI System is crucial in enabling this process," says Todd Sauvé, GM Operations Support at SECURE Energy Services.

While still in its infancy, the pilot project is already delivering on the initial goal of making data more accessible to the field. "PI Coresight is a very simple way of putting information back in the field's hands. With fairly minimal training you can take a seasoned, sometimes technology-hesitant operations person and have them start optimizing processes," says Bellmont. "The PI System and PI Coresight are fundamental tools now in operations."

Given the rapid growth SECURE has been experiencing the last several years, PI System data has become a popular training resource. "The PI System has heavily become a training tool. With our company growing so fast, we have a hard time growing the people we need to fill the roles and the PI System has become crucial to that," says Bellmont. With the most recent addition of dozer data to the PI System, SECURE expects the role of the PI System as a training tool to expand and play a critical role in correcting harmful equipment habits such as high speed reverse in dozers. SECURE also believes the combination of equipment data and location data will help them analyze and review facility design to improve operations and efficiency.

SECURE expects a 31% IRR for its heavy equipment optimization pilot which will save the company about $38,000 per year based on one pilot landfill which includes 1 dozer, 1 weather station, and one leachate collection system. As the pilot project is expanded to other equipment, SECURE expects further savings and ultimately a lower cost per ton to process waste throughout the Processing, Recovery and Disposal division.

Business Challenge

- Heavy equipment data is valuable for broad-reaching applications including planning, training, safety, and production.
- Most vendors provide limited, static, equipment data.
- SECURE wanted to uniformly collect all the data from its equipment and make that data available, in real-time, to field personnel.

Solution

- SymBot was installed on the dozers to collect data which it automatically transmits when a wi-fi connection is available.
- GPS location services were enabled and a weather station was installed to improve data context.
- Equipment data is stored in the PI Server and available to the field through PI Coresight and, in the future, Esri ArcGiS.

Customer Results

- Rig operators now have intuitive access to real-time equipment data from the dozers.
- PI System data is being leveraged throughout SECURE as a training resource to quickly onboard new employees.
- Expected IRR for the pilot heavy equipment optimization project is 31% which translate to roughly $38,000 in savings per year.

[1] PI Coresight was renamed to PI Vision in 2017