



## CUSTOMER CASE STUDY

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# The PI System™ helps Stedin create a smart grid that meets international standards

Stedin - [www.stedingroep.nl](http://www.stedingroep.nl)  
Industry - Power generation

## Goals

- Improve asset visibility and move toward real-time performance management

## Challenge

- Modernize data collection and consumption processes to prepare for increasing customer demand

## Solution

- PI Connector

## Result

- Linking the existing PI System to new substations

Stedin provides power to the largest cities in the Netherlands, serving more than 4 million customers. Like many energy companies, it wanted to increase efficiency without compromising sustainability. Stedin accomplished that goal by adopting the International Electrotechnical Commission's standard 61850, which establishes an Ethernet-based international standard for communication in power generation facilities and substations. Stedin used the PI System and a custom PI Connector to connect its infrastructure with substations that received the upgrades needed for 61850 compliance. As a result, the company met the international standards while improving its asset visibility and moving toward its goal of real-time asset management.

## Meeting a new standard

Looking at consumer demand and future trends, Stedin anticipated an increase in consumer demand for electricity as a heat source as customers move away from gas. The company operates 185 substations, some of which date back to the 1920s and include equipment that's at least 40 to 50 years old. The combination of aging assets and increasing demand meant that Stedin needed to change and adapt. The company adopted IEC 61850 as a way to modernize data collection and consumption across its substations.

Adopting 61850 pushed the company toward predictive maintenance, but Stedin knew that in order to fully support the transition, it would need to move away from paper-based inspection records and improve the quality of its SCADA data. "You're only as good as the information you're getting from your SCADA historian," said Anne van der Molen, grid strategist at Stedin. "And, if you want to change that, you need to change... basically the interface from the substations or the equipment in the field to your SCADA."

## The power of connection

Stedin adopted IEC 61850 in 2007 with the goal of achieving compliance of at least 90 percent by 2030. As of 2017, more than 60 of its substations had done so, with the goal to convert 15-20 more each year. As those conversions keep happening, Stedin implements remote inspections and predictive maintenance. The next step: connecting its 61850-compliant substations to its legacy information infrastructure. Stedin uses a custom-built 61850 connector to plug its substations directly into the PI System. The PI Connector allows Stedin to collect asset information in real time and store it centrally in the PI System.

With the PI Connector in place, Stedin then adopted PI Vision and Asset Framework to gain greater visibility into system performance. These changes brought even greater efficiency and cost savings as the company saw a more holistic picture of its energy grid and the substations within it. "When you have the data, you can use PI Vision to visualize this data and actually get some value from it," said Alex Meeuwisse, solution architect at Stedin.

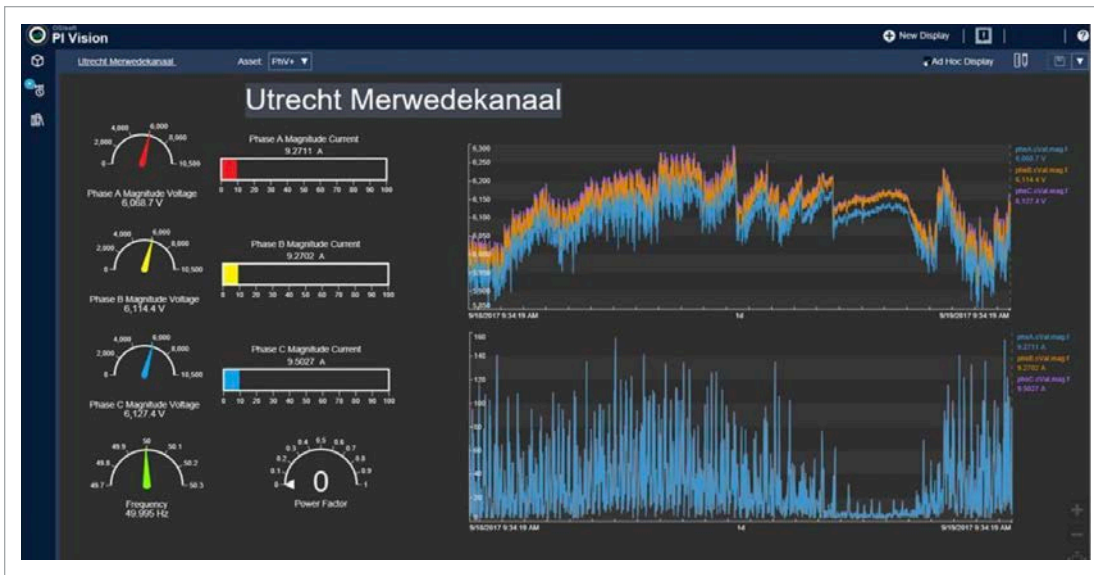
## Making the most of maintenance

Stedin immediately saw the value from the PI System and the 61850 connector. For example, the company noticed that its tap chargers were switching 30 times per day – nearly double the industry standard of 16. Maintenance occurs after 30,000 switches, which means the faulty chargers received service twice as much as the assets that functioned properly. Armed with data from the PI System, Stedin corrected the issue and moved toward proactive, not reactive, maintenance.

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Alex Meeuwisse,  
Grid Strategist at Stedin



Stedin immediately noticed peaks in energy usage, which were attributed to nearby trains accelerating away from the train station.

The PI System's dashboards also provided increased context for how an activity such as trains moving through its substations impacted overall energy use. The SCADA environment showed peaks in energy usage; the PI System provided additional resolution to

pinpoint the source of those peaks. Moving forward, Stedin plans to expand its use of the PI System even more to perform fully remote inspections across its substations.

For more information about Stedin and the PI System, [watch the full presentation here.](#)