

IN REAL TIME, FOR THE FIRST TIME: KIMBALL USES THE PI SYSTEM TO CREATE A SMART PRODUCTION LINE

Two years ago, neither Josue Fernandez nor anyone else at Kimball Electronics, a leading contract manufacturer of electronic subassemblies, had heard of the PI System™. All Fernandez knew was that they had a problem. Kimball's Mexico facility had many disparate pieces of circuit-board printing equipment, each one with its own monitoring capabilities. But the plant didn't have a unified data repository where performance information from all assets could be shared and stored. Engineers had terabytes of information coming in from different systems, but struggled to manually extract value from their data.

After hearing another OSIsoft customer discuss their success with the PI System on the company's [YouTube channel](#), Kimball decided to give the real-time data infrastructure a try. "Normally, suppliers come knocking at your door trying to sell you stuff. This time, we went knocking on OSIsoft's door," Fernandez said during PI World San Francisco 2019. Within five months of launch, Kimball's pilot program with the PI System saved the facility between \$50,000 and \$100,000 by helping engineers get to the bottom of a mysterious component failure.

Fernandez is an IT Manager at Kimball's Mexico facility, the largest of eight facilities around the world where Kimball manufactures printed circuit board (PCB) assemblies for customers across the medical, industrial, automotive, and public safety industries. The facility houses more than 30 types of equipment used at different stages of production. Before Kimball's discovery of the PI System, the diversity of data sources meant that engineers had to

spend most of their time manually collecting data one asset at a time, leaving little time for analysis. This laborious process and the lack of a centralized data repository also made it difficult to ensure quality control.

OSIsoft's real-time data infrastructure provided Fernandez and his team with just the sort of central data repository they had been longing for. The PI System automatically collects data from every

CHALLENGE

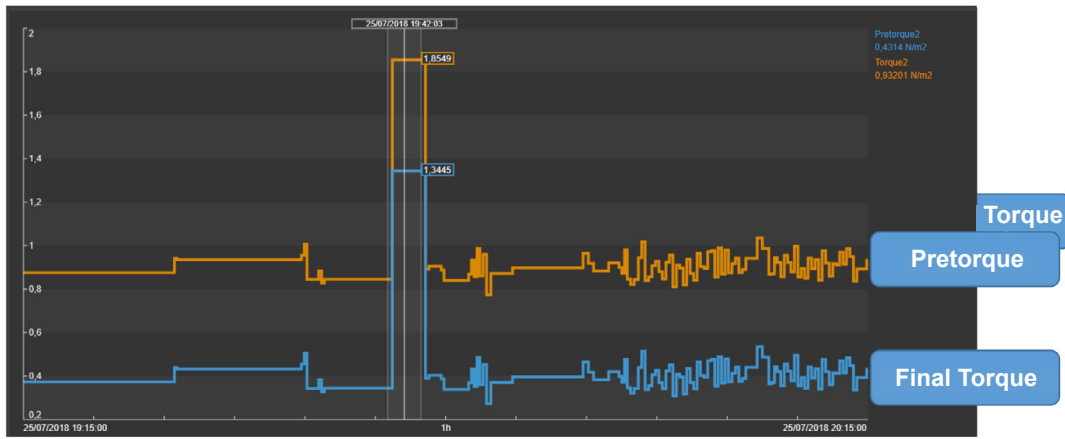
Disparate systems and no central repository for data, making analytics difficult and time consuming.

SOLUTION

PI System pulls data from a variety of sources into a single one-stop shop for data.

BENEFIT

Estimated savings of \$50-\$100k from a single component failure prevention during pilot.



PI System revealed previously undetected spike in torque values from automated screwdriver.

machine as well as from oversight sources like Kimball's SQL traceability database. "Once you have [the data] in one common system, all of the users can easily go in and start using it," Fernandez said. Within five months of launching the pilot, they would already have enough evidence of value to present their findings to executives.

The PI System allowed Kimball engineers to easily oversee process parameters like wave solder temperature and oxygen levels, conduct rate and yield monitoring across production lines and perform process capability and correlation analyses—all in real time. But in one use case in particular, the value of the PI System became truly undeniable.

Kimball often uses robotic screwdrivers in its production process. During the pilot project, management received a complaint from one of Kimball's customers about a broken connector made with one of these screwdrivers. Because of the labor and time required to diagnose any problem, each quality failure can cost Kimball up to \$200,000. When managers at Kimball's Mexico facility received the notice about the broken connector, they looked first to their traceability system, scouring the production history for the source of the failure. Nothing appeared amiss, and reports showed the processes had been completed normally. Engineers then turned to the PI System to look at historical data.

Using PI Vision displays to visualize PI System data, QA engineers dug into the screwdriver data from six months prior, revealing that there had been a simultaneous spike in both the pre-torque and final-torque values for one screwdriver. "With this data, we were able to identify that we were missing a control. We needed to add limits to prevent it from happening again," Fernandez said. Now, the facility uses automatic notifications for the screwdriver torque values. If a spike is identified, the PI System triggers a notification alert which is sent out to engineers.

Using the PI System to diagnose the failure saved Kimball both time and money—between \$50,000 and \$100,000 according to Fernandez' estimates. "We got the notification from the customer in the morning, and by noon we already knew what the root cause was," he said. Initially, Kimball had only implemented the PI System across one production line in the Mexico facility. By the end of the pilot, executives were so impressed with the PI System that Kimball is now looking to enter into an [Enterprise Agreement \(EA\)](#) with OSISOFT so that it can expand the PI System to cover all production lines in the rest of its facilities worldwide.

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



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— Josue Fernandez,
IT Manager,
Kimball Electronics



Watch this [2-minute video](#) to learn more about Kimball Electronics and the PI System.

Fernandez, Josue. "Integration & Transformation of Data for Analysis & Quality Control in Real Time (Kimball)."
<<https://www.osisoft.com/Presentations/Integration-and-Transformation-of-Data--for-Analysis-and-Quality-Control-in-Real-Time--Kimballx/>>