

Keysight Technologies' Data Analytics Solution Improves Manufacturer's Operational Equipment Effectiveness by 40%

EXECUTIVE SUMMARY

A manufacturer needed to quickly ramp up its production of smart electricity meters (eMeters) to meet the growing needs of its customers throughout Europe and Asia. As it did, issues with product quality, and manufacturing productivity and throughput surfaced. The challenge was finding a way to address these issues without driving up test time and cost. For an answer to that dilemma, the manufacturer turned to big data analytics via Keysight Technologies' PathWave Analytics software. Using PathWave Analytics, the manufacturer was able to identify and resolve its product quality issues and improve its overall equipment effectiveness (OEE) by eliminating false failures and unplanned downtime.

"Reliable product quality is a key requirement for our customers. Improved manufacturing productivity and throughput are required to increase our revenue. Keysight's solution allowed us to fully exploit the value of our data to quickly resolve our quality issue, optimize our manufacturing processes, and improve our OEE, while driving up our revenue."

- Senior Manufacturing Test Engineer

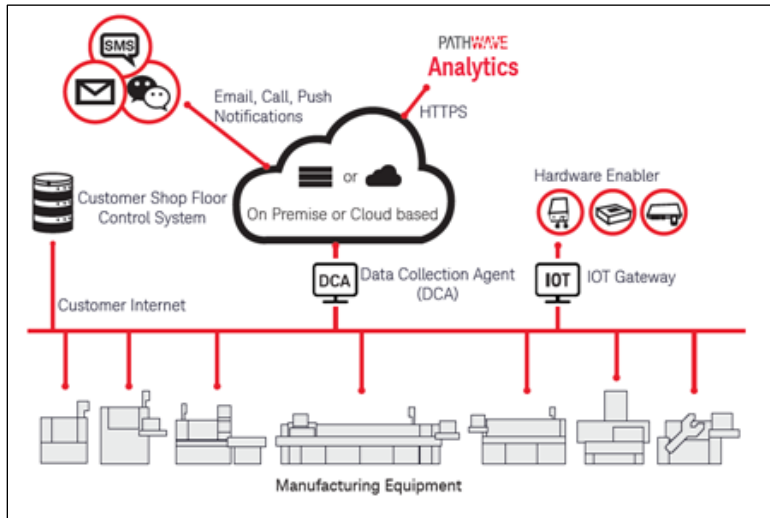
THE CHALLENGE

In smart grids around the world, eMeters serve as a critical component. They are often required to operate on a single battery for 15 years and must provide consistently accurate and reliable readings, regardless of environmental fluctuations. When eMeters don't perform as expected, consumers lose their ability to make smart energy choices and can be inadvertently overbilled for energy usage. Energy suppliers lose their ability to properly manage energy usage. As a result, exceptional eMeter product quality is imperative.

A large, global Internet of Things (IoT) manufacturer based in Europe was ramping up its eMeter production when it discovered several issues that negatively impacted its product quality. As its product volumes increased, the number of false failures due to component, process, and test variability started to rise, and product quality began to suffer. OEE, the industry standard

measure for manufacturing productivity, also suffered. The manufacturer experienced low first-pass yield, unplanned downtime, and inconsistent test times. The net result was lower efficiency and an increasingly significant revenue loss.

THE SOLUTION



PathWave Analytics is an Industry 4.0 ready solution that seamlessly integrates into existing manufacturing equipment or databases.

and efficiencies. The software seamlessly integrates into any existing equipment or database with minimal changes. The database can be configured on premise or in the cloud.

Using PathWave Analytics, the manufacturer collected data from multiple sources. One source was measurement data from every test in every step executed by in-circuit testers (ICTs). The data came from IoT sensors installed on the machines to monitor parameters like temperature, air flow, and vacuum pressure within each machine.

PathWave Analytics' powerful Trend detection and Anomaly detection algorithms were applied on the big data to find and isolate anomalies. Through software and the power of cloud computing, multi-dimensional analysis was then performed to quickly identify the root cause of the anomalies and alert appropriate engineers to their presence. This not only eliminated the manufacturer's future problems, but improved its process stability as well.

Because PathWave Analytics detected anomalous behaviors prior to any failure, the manufacturer was able to predict potential catastrophes that would have resulted in unplanned downtime and make informed decisions on how to mitigate these risks. Additionally, since PathWave Analytics collected data from multiple sites and regions, the manufacturer was able to perform yield and throughput analysis across its regions, in real time. By doing so, it became aware of variability in both its yield and test times at its different operations. It then took prompt action to investigate the variability and rectify the issues found in its assembly process.

RESULTS

With PathWave Analytics serving as the big data analytics solution on its manufacturing floor, the eMeter manufacturer was able to quickly identify and fix the root cause of its quality issue and identify process variations driving down its yield and throughput. The manufacturer quickly implemented changes to optimize its processes and realized a 30% increase in productivity and a 35% improvement in throughput. By making data-based decisions that led to better asset utilization, it also realized a 40% improvement in OEE.

ABOUT KEYSIGHT TECHNOLOGIES

Keysight Technologies, Inc. (NYSE: KEYS) is a leading technology company that helps enterprises, service providers, and governments accelerate innovation to connect and secure the world. Keysight's solutions optimize networks and bring electronic products to market faster and at a lower cost with offerings from design simulation, to prototype validation, to manufacturing test, to optimization in networks and cloud environments. Customers span the worldwide communications ecosystem, aerospace and defense, automotive, energy, semiconductor and general electronics end markets. Keysight generated revenues of \$3.2B in fiscal year 2017. In April 2017, Keysight acquired Ixia, a leader in network test, visibility, and security. More information is available at WWW.KEYSIGHT.COM

ABOUT THE INDUSTRIAL INTERNET CONSORTIUM

Keysight has been a member of the Industrial Internet Consortium since 2016. The Industrial Internet Consortium is the world's leading organization transforming business and society by accelerating the Industrial Internet of Things (IIoT). Our mission is to deliver a trustworthy IIoT in which the world's systems and devices are securely connected and controlled to deliver transformational outcomes. Founded in March 2014, the Industrial Internet Consortium catalyzes and coordinates the priorities and enabling technologies of the industrial internet. Visit www.iiconsortium.org