Electronics Manufacturing Services Company

Sets Up Smart Manufacturing Line in Nine Weeks

A multinational electronics manufacturing services (EMS) company urgently needed to set up a new production line to test a client’s miniature IoT chipset. The manufacturer was on a tight schedule with strict budgetary requirements that demanded operational costs be kept to a minimum. These requirements were critical to ensure the manufacturer could accelerate its client’s time to market.

Adding further to the urgency, the manufacturer wanted to upgrade its factory as a way to improve the quality and efficiency of its overall test process. To answer these challenges, the company turned to Keysight Technologies hoping to identify a turnkey solution for its smart production line.

Company:
- Multinational electronics manufacturing services company

Key issues:
- Needed to quickly set up Industry 4.0 manufacturing line
- Keep overall operational cost to a minimum

Solutions:
- Keysight I3070 ICT Test Platform

Results:
- Full manufacturing line setup in 9 weeks
- 25% Improvement in manufacturing quality and efficiency
- 30% speed improvement in manufacturing line setup and time to market
Trend watch: Shrinking IoT devices

According to IoT Analytics, the number of IoT devices that are active is expected to grow to 10 billion by 2020 and 22 billion by 2025. As more connected devices are connected over the internet each day, electronics design engineers face numerous challenges. Gone are the days when design engineers have extra space to lay out tracks or components. With IoT devices, many functions are loaded onto something that can be surgically implanted into the body or attached to clothing. Manufacturers face the new challenge of testing smaller Printed Circuit Board Assemblies (PCBAs) while improving their test efficiency to cater to the increasing demand for IoT devices.

Keysight and Cobot Maximize Efficiency

After evaluating the manufacturer’s needs, Keysight’s team of experts made two recommendations:

- Use the Keysight i3070 In-Circuit Test (ICT) platform and an industrial automation collaborative robot (Cobot)
- Integrate the two solutions

Robotic arms are extremely popular in manufacturing today thanks to their ability to improve the quality and efficiency of tasks on the production line, while also reducing dependency on human operators.

Keysight’s i3070 ICT platform features both embedded machine-to-machine (M2M) connectivity and smart sensors, making it easy to meet the manufacturer’s requirement for Industry 4.0-ready test equipment. An easy-to-use graphical operator and debug interface significantly reduces the setup time and learning curve for test engineers who may be new to the tool.

The Cobot solution the manufacturer selected delivers a built-in force sensing capability for precision handling and placement of miniature IoT chipsets precisely (± 0.1 mm). It provides high-performance automation while offering flexibility, safety, and affordability — all critical considerations for the manufacturer.
The Cobot solution has a manufacturing test communication channel that enables it to communicate to third-party solutions through TCP/IP. However, Keysight offered a simpler approach to solving the integration challenge. Keysight engineers developed a light server (client) program named “ClientServerNetwork.exe” that can be accessed directly from the i3070 command line or called from another program. Using this capability, the manufacturer was able to easily and conveniently deploy the Cobot with the i3070 solution. Keysight engineers also developed another wrapper dynamic link library (DLL) file named “SendReceiveWrapper.dll” to ease the integration with i3070 through dllcall in the i3070 test plan.
A Record-Breaking Setup Time

Keysight experts integrated the Cobot solution and the i3070 ICT Test platform within nine weeks, which exceeded the client’s expectations. This translates to a 30% speed improvement in manufacturing setup and a significant reduction in time-to-market. The EMS company also appreciated Keysight’s fast, efficient test solution, which enabled a 25% improvement in manufacturing quality and efficiency. This was proven through the test data and data collected from the smart i3070. In addition, the EMS company met its client’s overall operational cost goal.

For more details on how to integrate a Cobot with Keysight’s i3070 ICT test platform, refer to this application note: **Integrate Collaborative Robot (Cobot) with i3017 ICT Platform, 5992-2973EN**, or go to [Keysight’s Industrial IoT solutions](http://www.keysight.com) webpage to learn more about other solution in the Industrial Internet of Things (IIoT) space.

Reference

1. IoT Analytics Research 2018, *State of the IoT 2018: Number of IoT devices now at 7B – Market accelerating*

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