

How a semiconductor manufacturer improved asset utilization to avoid a major capital expenditure.

This leading designer and manufacturer of semiconductor products for the telecommunications and consumer electronics industries found itself between a rock and a hard place. In the midst of a prolonged economic downturn, the ever growing complexity of its products was requiring more sophisticated testing, resulting in increased cycle times and WIP.

During the previous two years, sales had declined 40% and short-term prospects still looked bleak. To improve those prospects by

meeting current and projected customer demand for more reliable products, the company felt it needed to make a major capital investment in additional testing equipment.

“We considered ourselves experts in technology,” said the worldwide director of assembly and test, “and spent a considerable amount of time looking for technical solutions. But after several fruitless attempts, we realized we had a series of problems that were not related to moving electrons around on a piece of silicon. That’s when we decided to seek outside assistance and engaged USC Consulting Group, a firm specializing in process improvement, to look into our wafer testing process.”

USCCG’s assignment was to improve utilization of the testing equipment. This meant determining how many wafers per day per tester could be probed before incremental testers had to be brought on line – at a cost of between \$250,000 and \$2.0 million apiece.

The consulting firm began by working with client personnel to develop real-time utilization measurements based on actual wafer processing times. Then they developed a web-based management system that accurately depicted when wafers should be completed so that front line managers would know when they were off schedule.



Key Metrics

Asset utilization improved	19%
WIP reduced	17%
Cycle time reduced	17%
Demonstrated reduction in changeover time	66%
Saved over \$3 million annually	

This USCCG-led engagement produced significant results in the wafer testing process.

Their next task was to develop visual staging procedures to ensure that material and hardware was available and properly staged.

Then USCCG went to work with the probe card planning, procurement and management function to assist in developing a tool that could better predict and match probe card requirements to demand.

Lastly, through a series of daily meetings and disciplined reviews of relevant performance metrics, USCCG was able to develop structure, visibility and coordination among and between the engineering, manufacturing, maintenance, and quality departments that enabled them to determine how they could improve schedule attainment by avoiding unnecessary delays.

This was anchored by a web-based real-time visual management system that allowed floor managers to quickly identify and remedy shortcomings in the wafer testing process, and installation of a unique “get help” protocol that reported problems much more quickly to the management or functional level necessary to resolve them.

When asked how he felt at the end of the engagement, the probe department manager said, “USCCG has really helped me get my business back under control. Now I feel like I have the tools and the visibility to really drive performance.”

“We knew we had a stable full of extremely intelligent and dedicated engineers and technicians but recognized that, to get the most out of them, we needed an infusion of fundamental manufacturing best practices,” said the worldwide director. “With USCCG’s help, that’s exactly what we got.”

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Probe Department Mgr.
*Semiconductor
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Principal Locations:

6200 Courtney Campbell Cswy, Tampa, FL 33607 (813) 636-4004

875 North Michigan Avenue, Chicago, IL 60611 (312) 944-5920

5925 Airport Road, Mississauga, ON L4V 1W1 (905) 673-2600

www.usccg.com

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