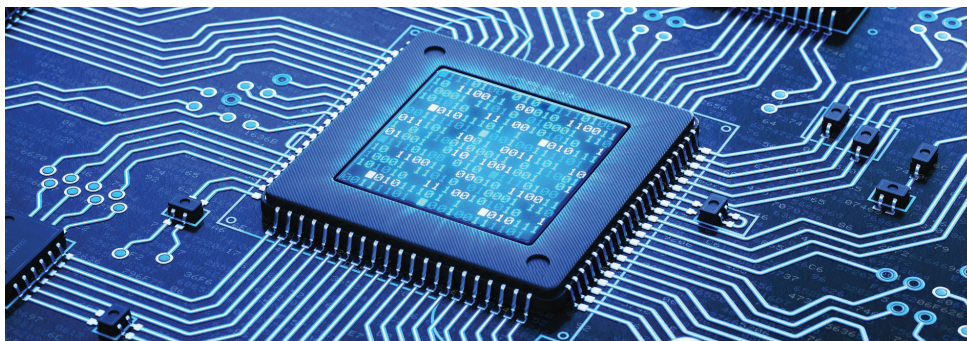


Semiconductor Producer and Testing Equipment Manufacturer Save a Combined \$720,201,600 per Year with Process-Critical Closed Loop Program



BACKGROUND

A semiconductor producer in the United States was implementing a new testing process to ensure its microchip circuitry meets design specifications. The producer utilizes microchip testers to complete the required testing for each microchip. Each tester is a complex piece of electronic equipment, featuring a water-cooled circuit to control the temperature of the synthetic coolant in the test head, wherein the microchip testing takes place. This circuit is constructed with copper piping and an aluminum heat exchanger. As part of the new testing process, the semiconductor producer procured 150 microchip testing units to support current production. Soon, the semiconductor producer discovered significant issues: Microbiological build-up and corrosion failures were happening in many of the units, causing unscheduled outages and interruptions to process (ITP) every two weeks. To combat the problem, the manufacturer of the microchip testers worked with a small water treatment company to design and deploy its

own water treatment solution. After two weeks, the testers were still experiencing catastrophic failures due to microbiological fouling and corrosion. When a testing unit failed, semiconductor production was negatively impacted while the unit's cooling system had to be cleaned and repaired. Each downtime incident cost the semiconductor producer \$200,000 per testing unit. The testing unit failures were costly to the tester manufacturer as well. Sending service technicians into the field to clean and repair the testing equipment cost \$8,400 per site visit, inclusive of labor and travel expenses.

SOLUTION

After engaging with a consultant to resolve a design-based corrosion problem, the tester manufacturer and the semiconductor producer called on Nalco Water to resolve the microbiological issues and prevent future corrosion challenges. Nalco Water assembled a cross-functional team, including staff from Sales, Research & Development, Technical Marketing, Industry Marketing, Applied Services, and Health, Safety & Environment, to respond.

ANNUAL SAVINGS

PRODUCTIVITY

Cut labor expenses by
\$129,600
annually

COSTS

Reduced travel costs by
\$72,000
annually

ASSETS

Improved MTBF by
1200%
annually

PROFITABILITY

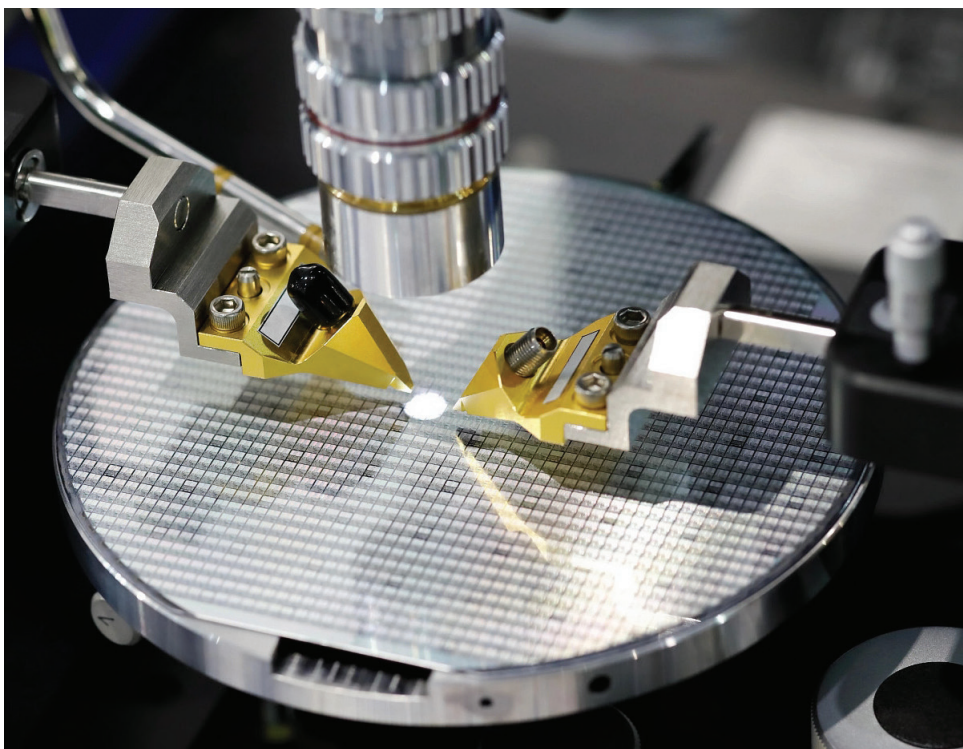
Reduced service, repair and
downtime costs by
\$720,000,000
annually

VALUE DELIVERED

\$720,201,600
ANNUALLY

The Nalco Water team presented a comprehensive solution combining a globally deployable water treatment program. Designed to extend and then maintain the MTBF (mean time between failure) of the testers, key deliverables of the package included:

- A complete system maintenance and chemistry control document
- Customized treatment chemistry designed specifically for their system needs
- A secure Nalco Water online portal containing SDS for all water-related chemistry
- Analytical support to identify some unknown organic contaminants in order to isolate an operational problem
- Immediate global deployment



RESULTS

The successful commissioning of the Nalco Water program provided an immediate economic return for both the tester manufacturer and the semiconductor producer. By simply reducing downtime due to corrosion and microbiological build-up, the semiconductor producer saw a 1,200% increase in MTBF, which then allowed them to achieve annual savings of \$720 million. The testing manufacturer also saw savings of \$201,600 per year related to the labor and travel costs incurred during on-site service of the cooling loops in the testers.

CONCLUSION

Working together to address microbiological fouling and corrosion concerns, the Nalco Water team delivered a comprehensive water treatment program that yielded major benefits for both the semiconductor producer and the testing equipment manufacturer. Both parties saw significant cost savings and enhanced productivity while protecting valuable equipment assets.

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