

# CASE STUDY



## SCRAP REDUCTION IN THE SEMICONDUCTOR INDUSTRY

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A global semiconductor manufacturer of integrated circuits (ICs) requested Shainin's assistance in solving a gate rupture failure. It was a Rolling Top 5® problem for the client and it could have tremendous leverage for the entire organization.

### THE PROBLEM

Shorts developed as the oxide in the gate was stressed during testing and catastrophically failed. Failures were confirmed through lab testing and failure analysis. The client's progress was limited by their measurement system of counting failures per wafer. They were able to identify a defective oxide but needed a new approach to progress further.

### THE APPROACH

Shainin helped them develop a new measurement system that would measure gate rupture voltage directly on a lab environment. The lab readings were confirmed (qualitatively) based on yield loss on two lots tested in the lab as compared to their wafer test losses for the problem. This new measurement system allowed the team to eliminate many process steps and converge on the poly-etch process. The Shainin team then leveraged a new strategy to ultimately discover sac gate etch hood as the source of the problem.

### BENEFITS

1. The actual projects savings were up to \$700,000 in scrap reduction.
2. New measurement system developed for future work.
3. Corrective action was applied to similar process steps.

