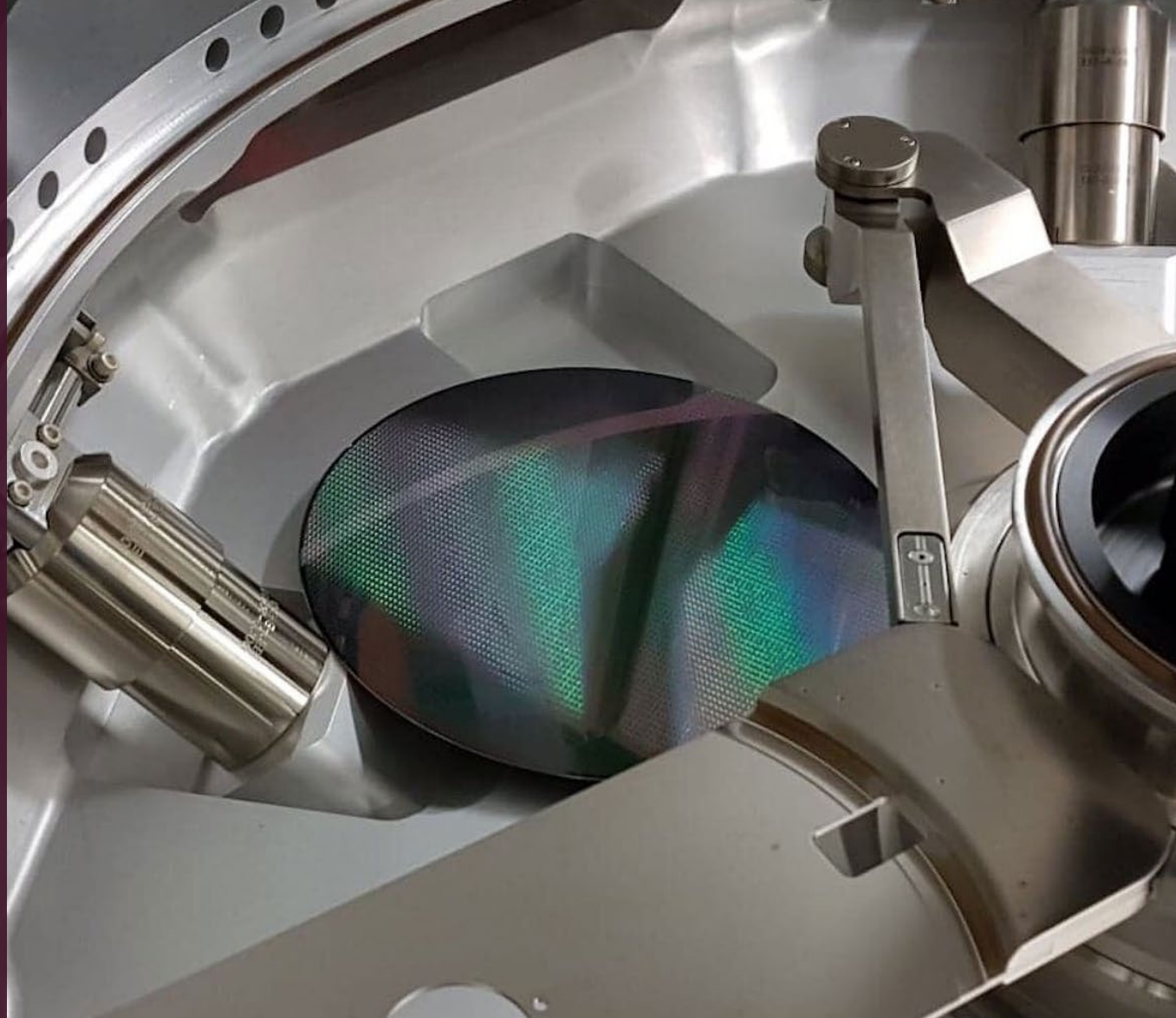


CUSTOMER CASE STUDY:
SEMICONDUCTOR
MANUFACTURER

FRACAS Automates
Reliability, Availability and
Maintainability Metrics for
Quality and Compliance



AssurX Cloud-Based FRACAS Solution Accelerates Root Cause Analysis and Improves Output

A US-based manufacturer of microelectronics in the highly competitive semiconductor industry was focused on making digital improvements to increase efficiency, improve product quality and meet compliance requirements. The company needed to move to a virtual system for early data collection, failure reporting, analysis, and corrective actions (FRACAS) for fast and accurate root cause analysis.



The FRACAS solution resides in the AssurX Cloud. The enterprise-grade security and technology keeps the system fully available and eliminates the need for additional IT resources and capital expenditures.

THE NEED FOR DATA CONTROL AND EFFICIENCY

Prior to the change in ownership, the semiconductor manufacturer was collecting data on field service incidents in Microsoft® Word. As a short-term workaround to better collect data, the incident reports were moved to Excel workbooks and then imported into a SQL™ database, where SQL searches could be used to search records. The system architecture was still siloed which presented inefficiencies that made a new system a top priority:

Maintenance: Most SQL code required changes before being ported to different database systems.

Downtime: Changes and updates to the database were laborious and required system downtime that impacted access to data.

Remote Connectivity: The existing solution was not web-based, restricting the ability to access, gather, and process data remotely.

Root Cause Analysis: A system was needed to expedite root cause analysis to accelerate issue resolution.

Privacy Concerns: As in many industries, the semiconductor industry and its customers are very concerned about the privacy and security of reported data.

EVALUATING THE BEST SOFTWARE FOR FRACAS

The company and its consulting firm evaluated "out of the box" FRACAS process management software and other configurable/customizable software in the market based on a weighted scoring system.

Solutions were evaluated based on specific requirements and the complexity of implementing the requirements. The intensive up-front evaluation was designed to ensure best practices were implemented in a robust system. AssurX led the selection process based on several key ratings:

- The system offered ease of workflow configurability.
- The system would provide clearly defined Reliability, Availability and Maintainability (RAM) metrics.
- The system would be hosted in a secure cloud infrastructure.
- The vendor had extensive experience in industries with extreme requirements for data security.
- The system offered best-in-class workflows.

Within two months of implementing the FRACAS system, the customer fabricated more wafers in a single day than it used to move in a month.



"Our firm and the customer team from engineering, product management and customer support evaluated solutions based on a comprehensive list of requirements. AssurX can be configured to do nearly anything. The system is powerful in terms of configurability, ease of future integrations, and proven experience in industries with extreme requirements for data security."

- Principal Consultant

Evaluation criteria (continued):

- The system would support [HIPAA compliance](#).
- The system would enforce restrictions on data that is viewable by groups and users.
- The system offered dashboards and reporting for critical issue identification and performance tracking and trending.
- The system configuration would support all aspects of [SEMI E10 compliance](#).
- The vendor understood the unique needs of the semiconductor industry.
- The system would not require any custom code.

ASSURX SELECTED FOR FRACAS SOLUTION

The AssurX quality management platform for medical device manufacturers was selected as the core platform since its pre-configured workflows met or exceeded the specific configuration needs for building the FRACAS. Furthermore, the customer wanted a system that has performed consistently and effectively in high-risk industries. Medical device manufacturers are among the most heavily regulated since product failure can carry a high risk of injury or death when not manufactured to the highest standards of quality.

Root Cause Analysis and Continuous Improvement

The manufacturer invested millions of dollars in developing a modern system to test and validate reliability and performance. Two systems were dedicated to internal use for "marathon testing," designed to accelerate all the motions and functions of the new equipment to try to get them to fail. Finding pre-market failures in marathon testing accelerates the analysis of the root cause and if necessary, a corrective action is launched. AssurX collects the testing data and automates root cause analysis and corrective and preventive action (CAPA).

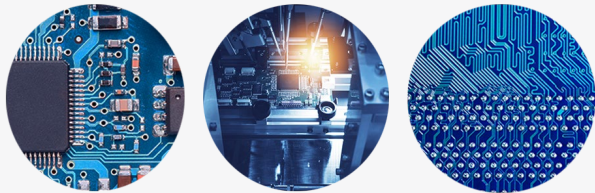
Furthermore, CAPAs may affect changes to the design file which ultimately leads to better products entering the market with a significant reduction in the risk of failure. In addition, in-market failure analysis can be expedited and compared against previous testing and reported issues, creating a cycle of continuous improvement.

Competitive Advantage and Customer Confidence

Without accurate RAM metrics as defined in SEMI E10 industry standards for reliability, availability, maintainability and utilization, it is a challenge to get customers to buy new equipment unproven in the market. Many semiconductor fabrication companies also require that vendors share their reliability program details, which must include failure analysis and corrective action programs.

The AssurX FRACAS meets customer requirements for alignment with SEMI E10 and reliability program documentation. The customer can sell products with an extreme degree of confidence because the claims are backed by hard data and documentation. Furthermore, the FRACAS provides SEMI E10 metrics by which customers can measure performance.

The AssurX FRACAS meets customer requirements for alignment with SEMI E10 and reliability program documentation as well as addressed all information privacy concerns.



AssurX provides accurate metrics to describe system performance that are aligned for compliance with current and future SEMI E10 regulations and are essential for quality and ISO certifications and audits.

SEE ASSURX IN ACTION.
Click to schedule a live online demonstration.

ISSUE MANAGEMENT WITH ACTIONABLE DATA

Within weeks of releasing the initial prototype, the customer had collected actionable data and started corrective actions to improve performance issues and problem areas.

- Dashboards with statistics at a glance allow system users to focus on only the data that is pertinent to the user's job function. Issues are ranked based on criticality. Therefore, high-risk issues are addressed first.
- The system provides detailed information from failure analysis and corrective actions to support reliability data analysis. Accurate metrics to describe system performance are aligned for **compliance with SEMI E10 regulations**—essential for quality and ISO certifications and audits.
- All data, signatures, access records, actions and changes are captured in a full audit trail. Report summaries of incidents and other quality data are used for reliability analysis and quality metrics.

THE RESULT: SECURITY, PRODUCTIVITY AND COMPLIANCE

The customer has significantly reduced time and effort through automation, establishing a formal process for the entire organization. Automating FRACAS for issue management has resulted in significant improvements in production, operations, and security:

- Within two months of implementing the FRACAS system, **the customer fabricated more wafers in a single day than it used to move in a month.**
- Data captured throughout the FRACAS process can be analyzed and prioritized to address any failures or deficiencies in a timely manner to improve product quality and reliability (and ultimately, customer satisfaction).
- Corrective actions are captured and verified to minimize the recurrence of failures.
- Customers are assured their data is protected by the HIPAA compliance capabilities of AssurX. Field service reports and other data are maintained in a secure environment, where individuals can only access data that they are required to have in order to perform their tasks.
- All information is centralized and accessible through a single system, minimizing effort and time to find, remediate and report customer as well as systemic issues.
- As the system continues to mature, long-term benefits will improve. In-depth failure reporting and corrective and preventive actions are expected to lead to better product design, reduction in warranty claims, and efficiencies in field service and customer support.

CONCLUSION

The AssurX FRACAS system built for semiconductor issue management provides a disciplined and aggressive closed-loop process for solving issues in all stages of manufacturing from design, development, and production through deployment. The automation of issue management provides a closed-loop system for streamlining incident reporting, managing corrective actions, maintaining compliance, and improving customer service and satisfaction. Wafer turn out was reduced from months to days with a quality system in place that drives continuous improvement and demonstrates a consistent return on investment.