

T2 SQUARE

UNLOCKING THE HIDDEN CAPACITY

Advanced Intelligence for Semiconductor Manufacturing

- Tool-to-Tool Matching with ML
- Process & Recipe Optimization
- Throughput Maximization
- Predictive Maintenance (PdM)

Why Hardware Isn't Enough?

State-of-the-art semiconductor equipment is excellent in itself, but performance variations inevitably occur depending on the operating environment. Many Fabs still struggle with the '**Matching Problem**', where identical equipment models demonstrate different yields and utilization rates.

Simply replacing parts cannot resolve these microscopic deviations. T2 Square does not sell hardware. Instead, we interpret thousands of sensor data points generated by your equipment to provide **intelligence that unlocks 100% of the tool's latent potential**.

**"We don't supply parts.
We supply Perfection & Predictability."**

Our Approach: Data-Driven Optimization

T2 Square's proprietary analysis algorithms analyze nanosecond (ns) data generated from Etch, CVD, and Epi processes. We transform areas previously reliant on engineer intuition into quantified data, realizing '**Zero Tool-to-Tool Variation**' and '**Minimized Downtime**'.

Traditional Way

Breakdown Maintenance, Reliance on Engineer Intuition, Iterative Chamber Tuning

T2 Square Way

Predictive Maintenance, Data-Driven Auto Matching, Optimal Recipe Proposals

6 Key Solutions

We provide 6 specialized, tailored modules to maximize the operational efficiency of your Fab.

01

Process & Clean Recipe Optimization

Beyond standard recipes. We link process results (CD, Thickness) with sensor data to propose optimal Process Recipes for maximum yield and Clean Recipes to restore chamber conditions.

02

Tool-to-Tool Matching (with ML)

Utilizing Machine Learning (ML) to learn the patterns of the 'Golden Tool' and automatically calibrating parameters of other equipment. Synchronizing all chambers to perform identically without engineer intervention.

03

Throughput Maximization

Precise analysis of non-processing idle times (transfer time, pumping time) to eliminate bottlenecks. Increase Wafers Per Hour (WPH) with the same equipment.

04

Defect Reduction

High-sensitivity sensor analysis to detect defect sources (Micro-Arcing, Particles) in real-time (FDC) and block them to prevent yield loss.

05

PM Recovery Optimization

Drastically reducing the time from PM (Preventive Maintenance) to Production readiness. Providing optimal Seasoning and Qualification guides.

06

Predictive Maintenance (PdM)

Predicting aging patterns of key components (Heaters, ESCs, MFCs) to notify optimal replacement timing before failure, preventing unexpected tool downtime.

Supported Platforms

T2 Square possesses deep understanding and analysis models for major 300mm equipment platforms from industry standards **AMAT** and **Lam Research**.

Maker	Process	Target Platforms (Models)
Lam Research	Etch (Conductor / Dielectric)	<ul style="list-style-type: none">Kiyo (F/G Series): Conductor EtchFlex (D/G Series): Dielectric EtchSense.i: Next-Gen PlatformVantex / Syndion (TSV)
	Deposition / Clean	<ul style="list-style-type: none">Vector (PECVD)SPEED (HDP-CVD)Altus (Tungsten Deposition)
Applied Materials (AMAT)	CVD / Epi (Deposition)	<ul style="list-style-type: none">Producer (GT/XP/V): PECVD Throughput MaxCentura: AP / Epi / High-Temp CVDOlympia (ALD)
	PVD / CMP	<ul style="list-style-type: none">Endura (PVD Standard)Reflexion (CMP)

Expected ROI

- ✓ **Availability:** Over 5% improvement by reducing PM Recovery time and preventing breakdowns.
- ✓ **Yield:** 2~3% improvement by eliminating tool-to-tool variation and reducing defects.
- ✓ **Cost:** Reduction in Dummy wafer usage and extension of component lifespan.

Ready to Optimize?

Contact us to diagnose the potential improvement achievable with your equipment data.

Project Workflow

T2 Square provides a systematic 10-step process to accurately diagnose client issues and deliver solid, data-driven solutions.

01 Inquiry & Intake

Receiving client needs via Web/Email and assigning a dedicated engineer.

02 Site Visit & Problem ID

Visiting the Fab site to listen to pain points and diagnose current equipment operations.

03 Data Check & Scoping

Reviewing sample data (Log, Metrology) to identify core solvable tasks.

04 Proposal (Cost/Roadmap)

Briefing on the proposal, including estimated costs, manpower, and overall project schedule.

05 Contract & Scope Align

Finalizing specific scope including Target Tools, Duration, and KPIs, followed by contract signing.

06 Data Collection

Securing deep data including tool sensors, process parameters, PM cycles, recipes, and inline metrology.

07 Technical Meetings (W/M)

Sharing analysis progress and discussing technical issues through weekly/monthly meetings.

08 Sample Run Test

Applying the optimized models (Recipe/Parameter) to actual equipment to test performance.

09 Quality Review

Final verification of whether target KPIs (Yield, Availability) have been achieved based on test results.

10 Closing & Handover

Delivery of the final report, solution transfer, and project termination.

**"We maintain your equipment in its most perfect state
through a systematic data analysis process."**