

The industry's **leading big data FDC platform** - online control and offline analytics at scale.



Advanced FDC for Semiconductor Manufacturing

Exensio® Process Control is a **big data FDC platform** that collects, monitors, and analyzes tool sensor data with **real-time control and offline analytics** - reducing excursions, tightening **process distributions**, and improving **yield and tool availability**.

Problem with **Status Quo**

Legacy FDC tools rely on **siloed RDBMS** and manual model setup, requiring **5–10x more** engineering effort per tool while generating excessive **false alarms** without **yield-aware context** to prioritize action.

Solution Highlights

- Detect and **classify tool excursions** in **real time**
- Match chambers** and **qualify tools** across fabs
- Correlate process data** with **yield outcomes**

Components

- FDC Data Collection**
Collects **sensor trace data** at up to 100Hz via **SECS/GEM**, **HSMS**, and **EDA** interfaces.
- Fab & Semantic Data Model**
Alias Fab Model cuts setup effort and enables **cross-tool analysis** across sites.
- SPC & OCAP Engine**
Runs **SPC alarming** and **OCAP automation** to detect and contain **process excursions**.
- AI/ML Analytics**
Delivers **predictive maintenance**, **virtual metrology**, and **AI-driven FDC modeling**.



Use Cases

Control Yield Excursions

A foundry used Exensio® Process Control to deploy **SPC and OCAP across all process tools**, enabling automated excursion detection and real-time containment, and reducing yield tails in high-volume 28nm manufacturing.



Challenge

Process excursions and tool variation caused **high yield tails** with **no automated detection or containment**.



Result

Excursions cut **40%**; yield tail fell **below 5%**, recovering **\$1M+/year** in wafer production value.



Challenge

Tool-to-tool variation created **yield tails** and **inconsistent process performance** across chambers.



Result

Reduced yield tail **from 12% to ~5%** and improved median yield, generating millions in annual wafer value.

Improve Yield via Tool Matching

An IDM used **Exensio Process Control for trace-based tool and chamber matching**, identifying process variation across tools and aligning performance, improving yield consistency during advanced node ramp.

up to **40%**
reduction in excursions

results based on typical Exensio customers

up to **10×**
faster FDC setup

6 mo.
faster fab ramp

Contact Us



 **Corporate Headquarters**
PDF Solutions, Inc. 2858 De La Cruz Blvd
Santa Clara, CA 95050 USA

 www.pdf.com
 +1-408-280-7900



Exensio visualizations Powered by Spotfire®