Smart operations in Semiconductor Manufacturing

falkonry

➤ **Automated and scalable time series AI for continuous operational visibility**

Avoid events *before* they impact plant operations

Timely, understandable alerts
Discover and understand real-time operational issues in all plant systems and improve OEE

Flexible data connectivity
Secured data connectivity through Public or Private cloud and Air-gap deployment options

Effortless start-up & scale
Value from the moment you plug in, plus easy integration with existing data sources and OT devices
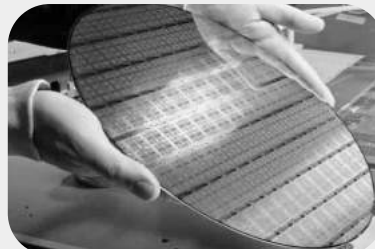
➤ **Use Cases across Semiconductor Manufacturing**

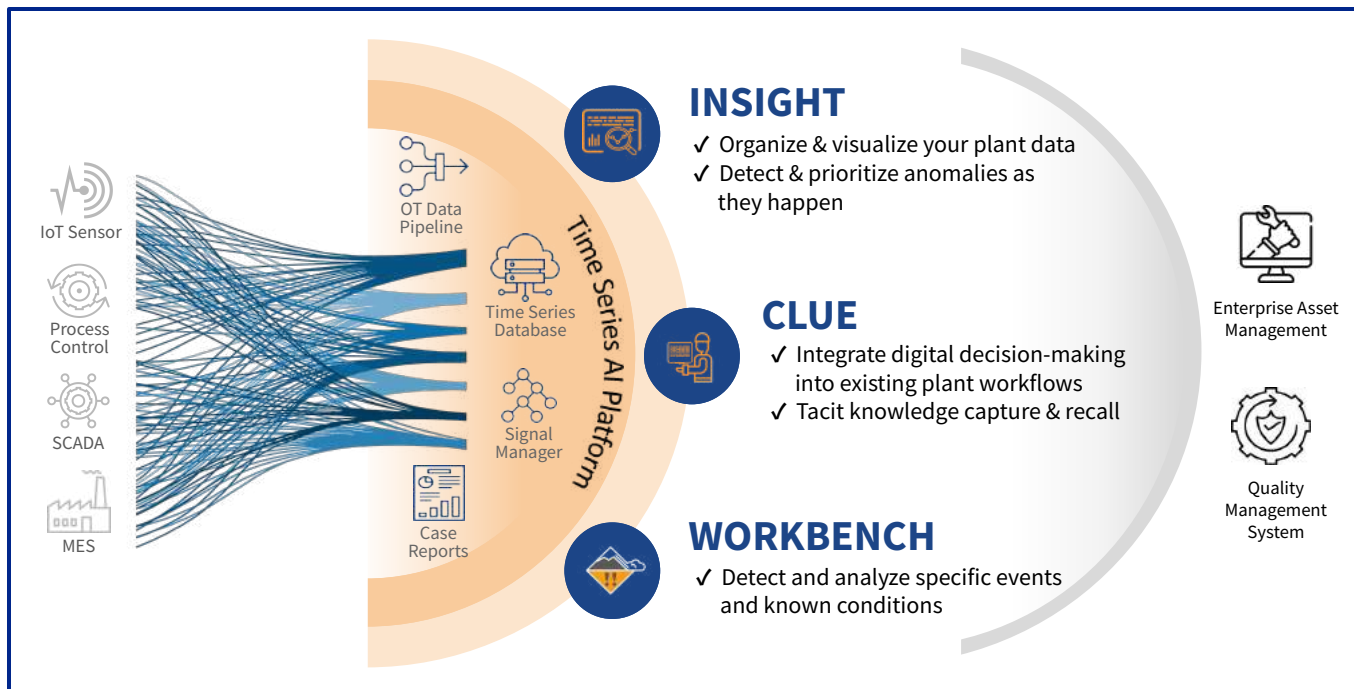|	**Dry Etching**	**Metrology Sampling**	**Delamination**
Problem:	MFCs used in Dry etchers may fail. This results in reduced yield and unscheduled downtime.	Quality defects might occur in wafer etching and cleaning. Defect inspection is an expensive process with inherent delays.	Running misprocessed wafers through the entire line results in a loss of potential throughput for the factory
Solution:	Falkonry Operational AI detects patterns of MFC behavior which indicated failure of the MFC up to a week in advance.	Classified wafers as per defectivity by using sensor data from a number of high and low defectivity lots measured post-etch	Use tool signals to detect and scrap bad wafers early and identify the top contributing signals to determine root cause
Benefit:	Prevents yield loss by reducing equipment running in poor state. Any unplanned system downtime can be avoided.	Preferential sampling of high defect density wafers decreasing total inspection rate and cost	Increased yield and throughput, ability to adjust process as per root-cause to reduce defects

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> *"Falkonry's AI software enables our manufacturing engineers to themselves build predictive models with a high degree of accuracy which is critical to deploy these solutions at scale."*
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> ***Head of Digitalization***
> ***Siemens Amberg***

➤ **Falkonry Time Series AI Suite**

➤ **Case study: Semiconductor Manufacturer**

Defect density analysis of Wafers

- Yield Loss from defect density is very critical for Wafer manufacturing companies.

- Falkonry's predictive analytics helps customer understand which wafers are likely to have a high defect density.

- Those wafers can be preferentially sampled thereby decreasing total inspection sampling rate and cost while maintaining low risk of missed defect excursions.

Identified correlations between sensor levels and defectivity

Unsupervised modeling using ~75 signals