Monitoring for Quality in Semiconductor Manufacturing

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In the **Semiconductor Industry**, two driving forces, Six Sigma Manufacturing and Yield Improvement, remain at the forefront of all equipment and facility decision making processes. AMC (Airborne Molecular Contamination) and ESD (Electrostatic Discharge) continue to be leading concerns for Semiconductor Fabs worldwide.

**Six Sigma** is a methodology and toolset that will enable a manufacturing facility to analyze processes and achieve breakthrough improvement.

**The Goal:**

*Reduce waste and cycle times while increasing the level of quality.*

Finding and analyzing the root causes related to any variations through a data-driven approach help improve yield, reduce cost and increase profits.

**Yield** in the Semiconductor Industry refers to a percentage of good product achieved during the manufacturing process.

Three components affecting yield in production include:

- Performance Enhancement,
- Production Efficiency
- Defect Reduction

By far the greatest benefit and most cost effective method for successfully increasing yield is implementation of a robust real-time monitoring system to monitor each manufacturing step.
The **Semiconductor** manufacturing process consists of more than one hundred steps during which particle contamination should be monitored against previously established, well-defined baseline data.

As linewidths continue to shrink, monitoring for particles and static charge are critical in helping to increase yield.

**Typical Semiconductor Manufacturing Process:**

![Typical Semiconductor Manufacturing Process](image)

**Lighthouse Worldwide Solutions** offers online Contamination Monitoring System solutions for continuous monitoring of each critical stage to help improve yield and process control.

**What we monitor:** (need a better graphic)

- Airborne Particles
- Liquid Particles
- Particles in High Pressure Gases
- Temperature & Humidity
- Differential Pressure
- Air Velocity
- Door Switches
- ESD (Electrostatic Charge)
How we monitor: (need a better graphic)

Lighthouse Software Packages
- LMS Pro
- LMS Express
- LMS Express RT
- Output to Customer BMS

Lighthouse Worldwide Solutions Real-time Monitoring Systems are designed for implementation into Semiconductor Six Sigma and Yield Improvement programs offering the following benefits:

- View all conditions of all cleanrooms in real-time via computer software, tablet or smartphone
- Immediately provides visual, audible, electronic or pager notifications to engineers and operators
- Analyze and measure cleanroom performance against current baseline and historical data
- Highlight contamination problems
- Correlate problems to other parameters and yields
- Identify trends and provide early warnings
- Reduce failure analysis time
- Assist in post-mortem analyses
- Aids in more efficient facility shutdowns and re-starts

Need a New Photo of Lighthouse Worldwide Solutions Family of Semiconductor Products