



Process Analyzer for Gases

Process Analyzer G: Sensitive, Real-Time Analyzer for Monitoring and Control in Critical Semiconductor Applications



Semicon Process Solutions are fully integrated process characterization and monitoring systems. Using electron ionization time-of-flight mass spectrometry, all precursors, byproducts, and trace species are simultaneously detected to guide immediate process control action and to inform analytics and process intelligence for deposition, etching, and lithography.

Uniquely positioned to address challenging process requirements, Process Analyzer Solutions provide fast, non-intrusive detection of process deviations, in real time.

The Process Analyzer G is best suited for the analysis and monitoring of neutral gas phase species present in semiconductor processes with ppm sensitivity and millisecond sampling rates.

TOFWERK
semicon

tofwerk.com

sales@tofwerk.com



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Features

Fully integrated solution for process characterization and monitoring

Reactor health state (RHS) monitoring, end-point detection, plasma diagnostics and process optimization

Fast and sensitive mass spectrometric monitoring

Time of flight mass analyzer enables real-time monitoring all process gas species with isotopic mass resolution at sub-second refresh rates

Large dynamic range

Simultaneous detection of all precursors, byproducts and trace species in semiconductor processes

Robust and mobile

Rugged, flexible configuration allows precision in harsh environments and portability for non-invasive detection

Long-term stability

Accurate and reproducible response

Powerful software

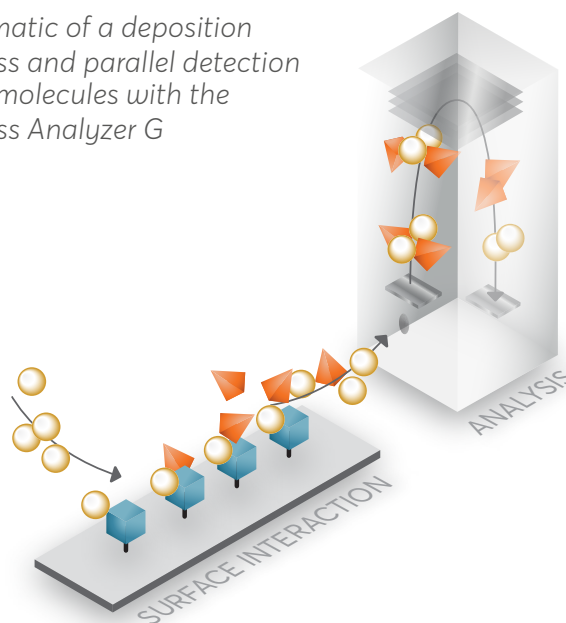
Simple control interface with a fully documented API for system integration

Accessories

- Manifold valve for cluster applications or similar
- Inlet manifold for measurements at different process pressure ranges
- Operatable in any position

Application Example

Schematic of a deposition process and parallel detection of all molecules with the Process Analyzer G



Systems Specifications

Mass Resolving Power	From 500 to 8 000 Th/Th
Mass Range	> 1 000 Th
Mass Accuracy	Down to 5 ppm
Limits of Detection	1.50E-12 mbar (\leq 0.3 ppb) sensitivity for most elements @ 1 kHz acquisition rate
Dynamic Range	> 10 ⁵
Max Spectra Rate/TOF extraction Rate	1 kHz/> 30 kHz
Corrosion Resistant	Yes

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