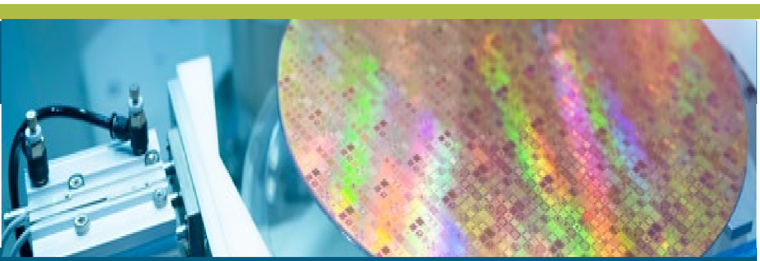
Process Insights
Premium Insights Into Process

Tiger Optics

# Analytical and Process Solutions for the Semiconductor Industry

## High-Performance UHP Gas Analyzers and Integrated Systems



## Electronic Gas

**Capabilities:**

- Continuous trace impurity monitoring in electronic bulk gases
- All critical impurities covered using CRDS & APIMS technologies
- Laser-based Cavity Ring-Down Spectroscopy (CRDS) and Atmospheric Pressure Ionization Mass Spectrometry (APIMS)

CRDS for ppt-Level
$H_2O$, $CH_4$, and $NH_3$
**HALO KA Max™**

CRDS for Pre-Purifier Measurement
for $H_2O$, $CH_4$, CO, $CO_2$, and $C_2H_2$
**Spark™**

Atmospheric Pressure Ionization Mass Spectrometers
for Real-Time, ppt-Level, Multi-Impurity Analysis
**VeraSpec™ APIMS**

CRDS Trace Gas Analyzer for $O_2$
**HALO OK™**

ppt-Level CRDS for CO and $CO_2$
**HALO Max QCL™**

## Specialty Gas

**Capabilities:**

- Trace $H_2O$ analysis in UHP ammonia for HB LED production
- Quality monitoring for process specialty gases, including HCl, $Cl_2$, $CO_2$, $N_2O$, $NF_3$, CxFy, Xe, and more
- Dynamic gas blending monitoring
- Corrosion-resistant versions available

Aluminum Oxide Dew Point Meters for
Portable/Fixed/Loop-Powered Applications
**XDT™ / XPDM™ / LPDT™ / LPDT2™**

Mass spectrometer
for pure & blended
specialty gases
**MAX300-LG™**

CRDS for Corrosive, Rare,
and Fluorinated Gases
**HALO 3 / KA™**

CRDS for single-digit
ppb level $H_2O$ in $NH_3$
**ALOHA+ $H_2O$™**

## Process Tools

**Capabilities:**

- Tool monitoring for trace $H_2O$, $O_2$ and HF
- Low pressure, low temperature EPI, ALD, MOCVD process monitoring
- Real-time moisture measurement in load lock, transfer, and process chambers
- Monitor cleaning solutions in wafer manufacturing process

Aluminum Oxide Dew Point Meters for Portable/Fixed/ Loop-Powered Applications
**XDT™ / XPDM™ / LPDT™ / LPDT2™**

Mass Spectrometer for Real-Time, ppb-Level Analysis
**MAX300-LG™**

CRDS Trace-Level, Low-Pressure Moisture Analyzer
**HALO QRP™**

Electrochemical / ZrO analyzers for trace O2
**3520 Series / ZrO2000**

## Airborne Molecular Contaminants

**Capabilities:**

- Continuous AMC monitoring for ambient HCl, HF,and $NH_3$ in semiconductor clean rooms
- FOUP Monitoring Tools, Reticle Nests, Process & Sub-Fab Environments
- Mobile & stationary integrated solutions

### T-I Max Family of Products

CRDS Analyzers for Monitoring ppt-Level HCl, $NH_3$, and HF in Clean Room Air
**T-I Max HCl™ | T-I Max NH3™ | T-I Max HF™**

Trace Contaminant Analyzer for Continuous AMC Monitoring
**T-I Max X3™ AMC Monitoring Solution**

Mobile Solution for AMC Monitoring
**GO-Cart™**

AMC Stationary Sampling System
**Multi-Max™**
**AMC Monitoring Solution**

## Life Safety

**Capabilities:**

- Air monitoring
- $O_2$ deficiency and toxic chemicals
- Worker safety
- Early detection of chemical releases

Trace to Percent Oxygen Monitors
for Portable and Fixed Applications
**Series 1300™** and **OXY-SEN™**

Powerful Quadrupole Mass Spectrometer
for Toxic Gas Ambient Air Monitoring
**MAX300-TGM™**

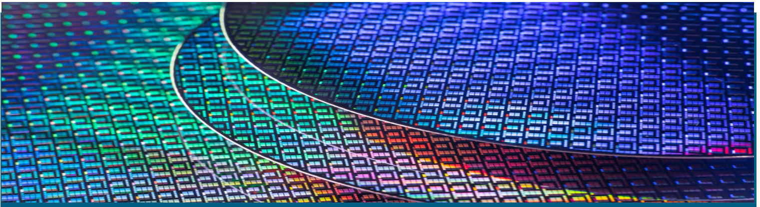
## Systems Integration

**Capabilities:**

- Real-time monitoring of all critical impurities in a single integrated solution for $N_2$, Ar, He, $H_2$, $O_2$ and xCDA
- Gas cycling options - monitor all bulk gases in a single system
- Bulk gas and AMC monitoring

Mass spectrometer for
continuous, ppt-level
impurity analysis
**VeraSpec™ APIMS**

Total solution for gas analysis -
dedicated or gas-cycling options
**CQC / IQC Cabinet**



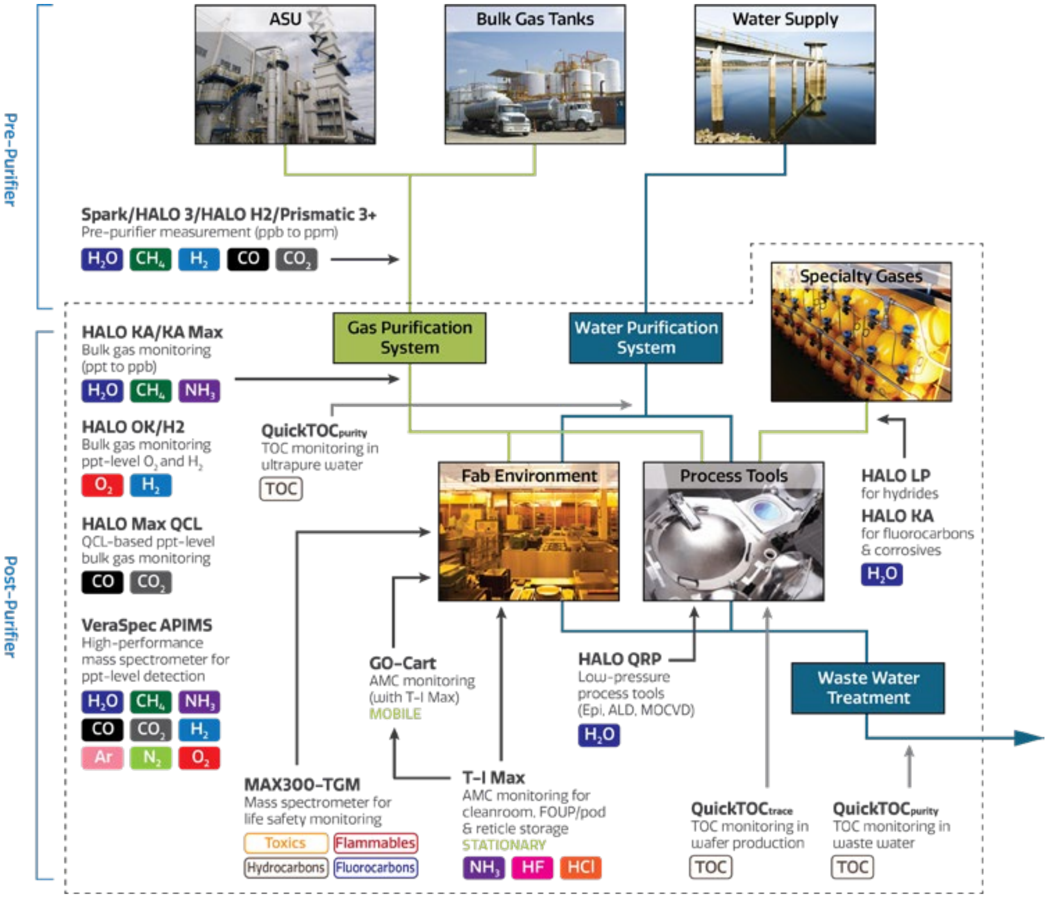
# Chemical Analysis for Blending and Wafer Cleaning

## Capabilities:

- Measure gases & liquids composition, metals contamination
- Continuous online measurement in seconds
- Extractive or inline sample probes
- Multichannel - One instrument can measure up to 12 process streams
- Compatible with corrosive and toxic samples
- Fiber optics w/ probes allow analyzer to be located 100 meters away
- Low Consumables & Low Maintenance

Optical Absorption Spectrometer
for gas & liquid monitoring
**ClearView® db**

## Total Solutions for the Semiconductor Industry



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