HIGH SENSITIVITY DYNAMIC SENSORS FOR SEMICONDUCTOR MANUFACTURING APPLICATIONS

PCB PIEZOTRONICS
AN AMPHENOL COMPANY

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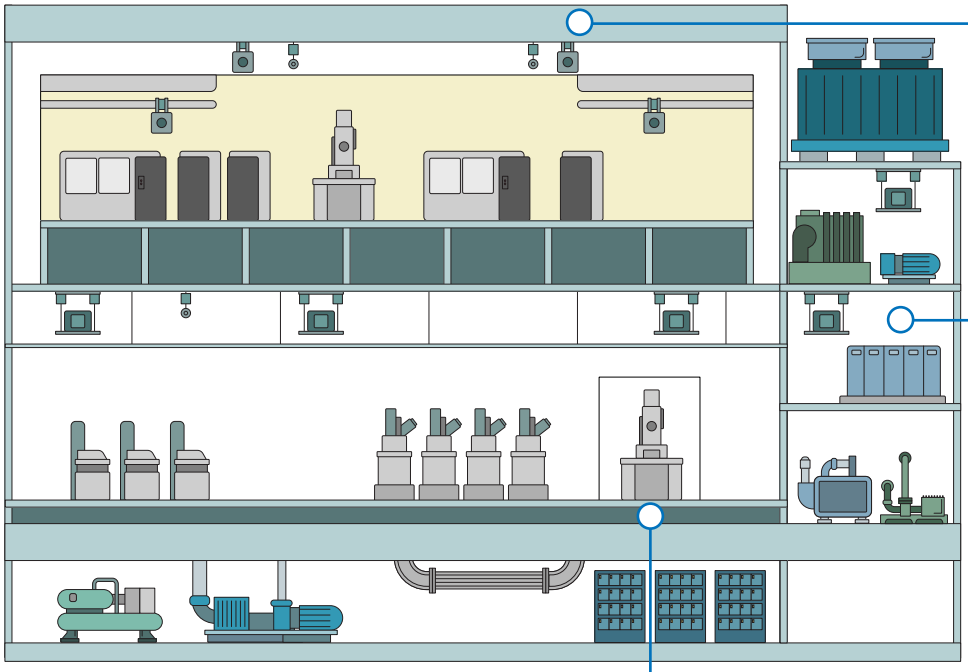
Advanced semiconductor manufacturing processes are extremely complex and rapidly evolving. As consumer demand for smaller sizes and more advanced capabilities continues to grow, it becomes more challenging to avoid manufacturing errors at the nanometer scale. Additional demands for increased throughput require faster-moving manufacturing and inspection machinery, making semiconductors susceptible to higher vibrations during production. These vibrations can corrupt the patterns deposited on the semiconductors, leading to circuit failures in the finished parts.

The patterns on a chip layer are measured in the tens of nanometers, and because the vibrations that can cause manufacturing errors are minuscule (in the millionths of g's), accelerometers typically used for process monitoring simply aren't capable of measuring the tiny deflections that can jeopardize semiconductor quality. Fortunately, high sensitivity accelerometers known for seismic vibration measurement can also detect nanometer-scale deflections, making them a vital tool for advanced semiconductor manufacturing and inspection.

APPLICATIONS IN THE FAB



PREDICTIVE MAINTENANCE

Monitoring vibration of rotating machines in and outside of clean room, pumps, fans, HVAC

STIFFNESS MEASUREMENT

Stiffness measurement for process optimization

Modal analysis for site surveys

EXTERNAL VIBRATION SOURCE DETECTION

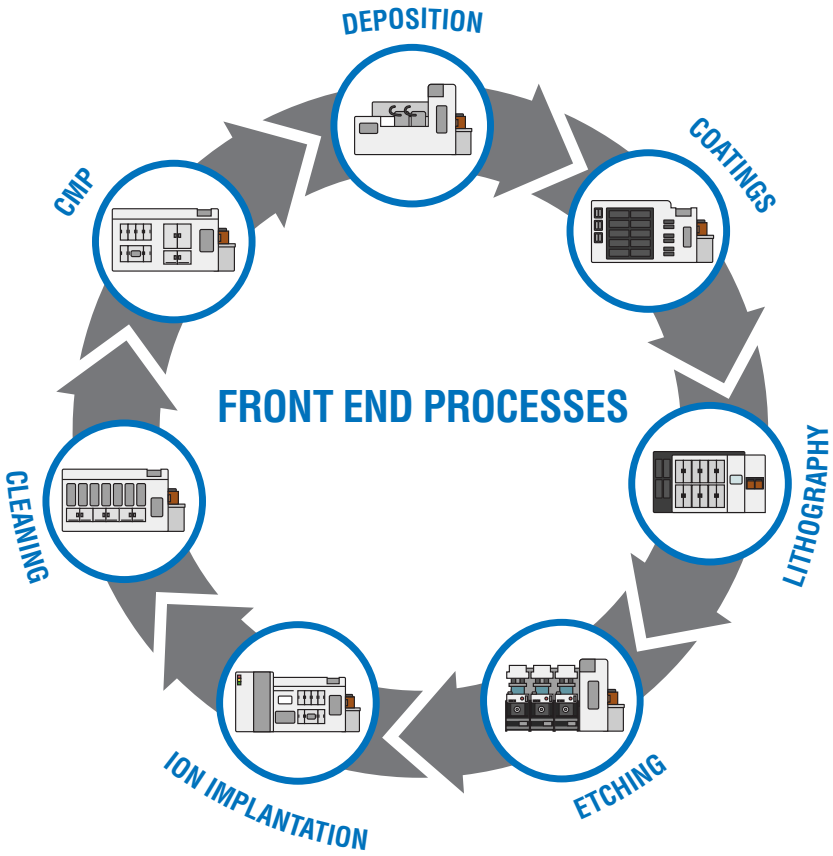
Measurement of vehicular traffic, railroad, construction, etc, outside of the FAB

MICROVIBRATION MEASUREMENT

Earthquake detection

Microvibration detection

FROM WAFER TO CHIP: WE MEASURE EVERY PROCESS



- **ULTRA-HIGH SENSITIVITY DYNAMIC SENSORS MEASURING:**

  Vibration Pressure
  Force Acoustics

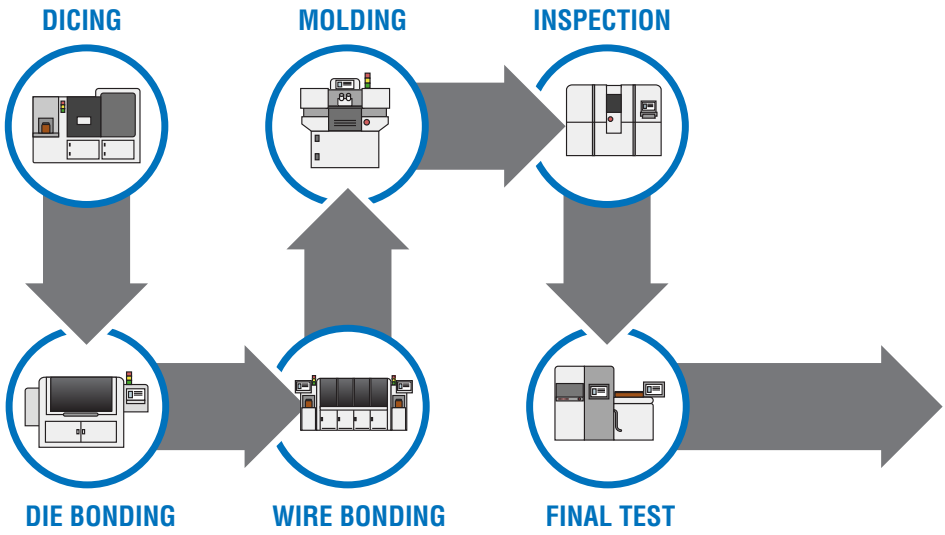
- **LOW OUTGASSING SENSORS, CABLES, AND FEED-THRUS**

- **LOW NOISE SEISMIC ACCELEROMETERS**

- **BROAD ARRAY OF PRODUCTS; WIDE RANGE OF SPECIFICATIONS**

  Cryogenic to High Temp
  0 Hz to 60 KHz
  Micro-g to 100,000 g

BACK END PROCESSES



ULTRA-HIGH SENSITIVITY, LOW OUTGASSING, LOW NOISE SENSORS FOR:

- Deposition
- Lithography
- Etching
- Cutting and Packaging
- Metrology and Inspection
- Wafer Transfer and Transport

Our global partnerships with leading data acquisition experts, system integrators, consultants, and engineering firms enable us to provide innovative solutions to the most challenging applications in the semiconductor industry.

- Micro-vibration measurement, monitoring, mitigation, and isolation
- Condition monitoring for predictive maintenance of critical equipment
- Seismic micro-vibration detection and monitoring at advanced fabs
- Vibration detection and stiffness verification for site surveys
- Modal analysis for vibration phase detection in production equipment and fab structures
- Cleaning and decontamination services
- Digital connectivity via Ethercat and IO-Link

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