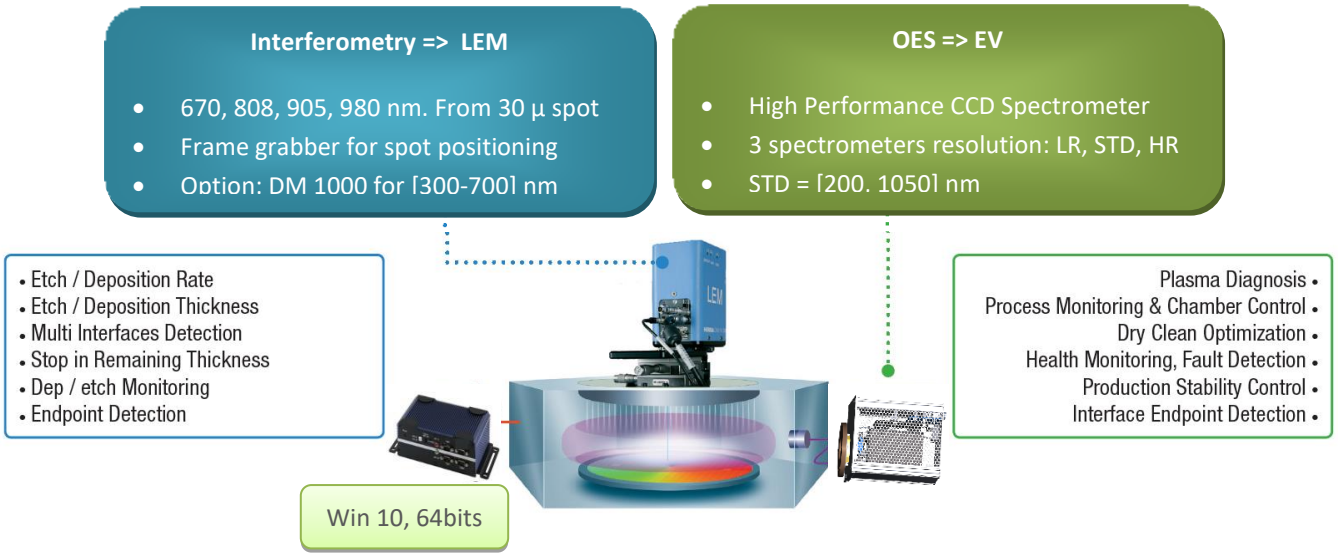


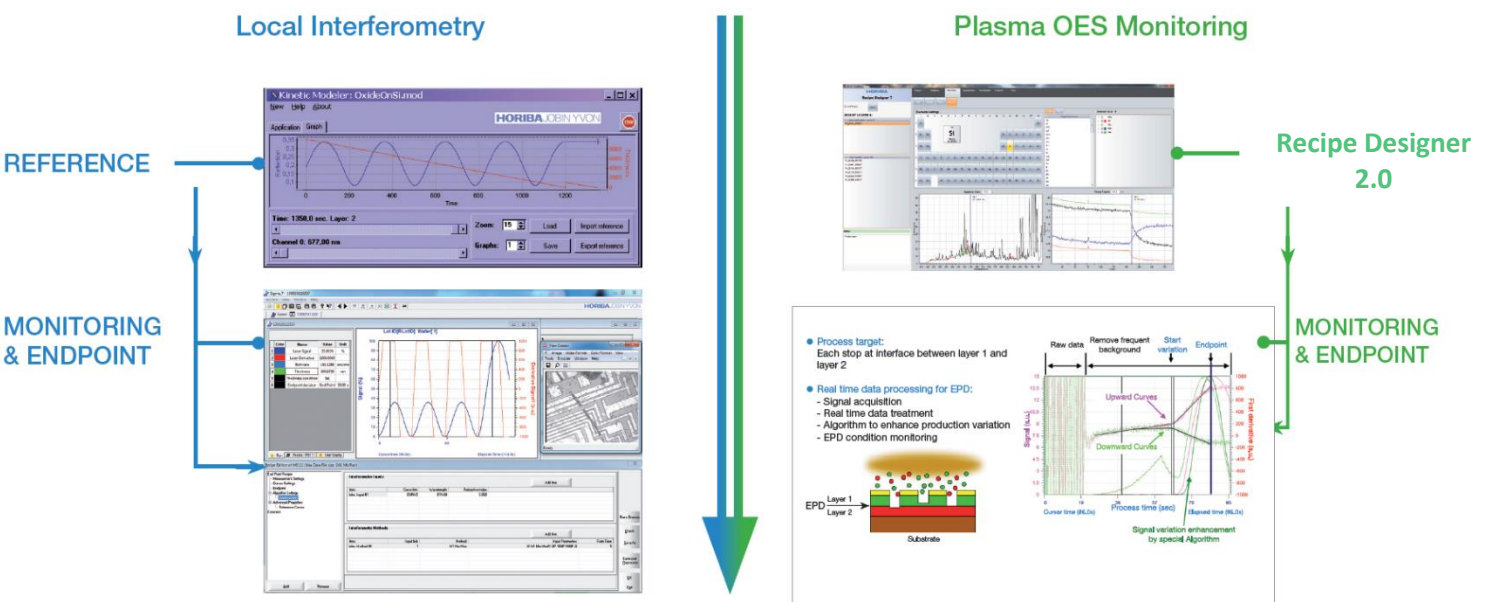
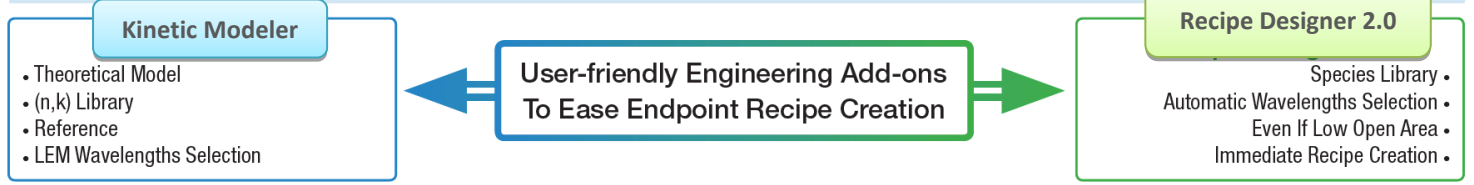
Dry Etch, Cleaning & PECVD Processes Endpoint Control Supervision in Fab's

Today's Endpoint Process Control Products & Applications

2 sensors, based on Interferometry or OES, one unique real-time software, dedicated to Run to Run control, chamber health monitoring, fault detection... to ensure system throughput and predict preventive maintenance.



Engineering Flow



To address new requirements in Semiconductor, Compounds, MEMS... Dry Etch, Cleaning and PECVD industry, HORIBA has introduced a unique generation of Sensor dedicated to Advanced Endpoint Control, Fault detection and Chamber Health Monitoring.

Plasma information is complex, **EV 2.0 OES** with Recipe Designer 2.0 (RD 2.0) and Sigma_P Software highlight Process Engineering with automatic Elements Time Trend view and easy Endpoint Recipe creation.

- **EV 2.0** is a configurable, high performance spectrograph that can be customized for a variety of OEM/End-user applications in the fields of plasma chemistry, semiconductors, Compounds, PV, ALD/ALE, MEMS...: any dry etch, Plasma cleaning process and Deposition process (PECVD) needing monitoring, stability and/or drift control and ENDPOINT.
- **EV 2.0** is dedicated to OES or Interferometry (INT) depending on accessories provided
- **RD 2.0** has New engineering add-on to *create automatically Endpoint Recipe* from a template to ease Production Recipe creation!!!
- **3 choices of spectrometer resolution**
 - LR: Low res. 6.5 nm, [300, 900] nm
 - STD: Standard res. 2.5 nm, [200,1100] nm
 - HR: High Res. 1.0 nm, [300, 800] nm
- Today: EV 2.0 PC-OES model
- Tomorrow: SMART model with algorithms inside

Sample information is also complex. **EV 2.0 INT & LEM-CT** permit to obtain local information on optically semi-transparent, multi-layers structure.

- **They can be mounted on any process chamber with direct top view of the wafer.**
 - LEM camera provides a real-time digital CCD image of the sample surface making spot positioning simple, using an XY stage, manual or motorized
 - LEM camera includes illumination intensity control to optimize the visibility of the laser spot on different samples depending on their reflectivity. This significantly enhances image quality.
 - LEM camera can be sold as a sensor so that interferometric signal could be managed directly by customer PC
 - Operating at 670, 808, 905 or 980 nm, designed for OEMs and laboratory QC, the LEM camera provides a simple analog output of signal intensity that can be treated by integrator or HORIBA software.
 - EV 2.0 INT giving a bigger spot (2 cm) need no positioning as integration is made globally on ~2cm wafer diameter giving information on mask and trench evolution during process. It includes:
 - Optical Head with tilt management
 - A MWL source for a broad UV-VIS-NIR interferometric analysis
- **Based on the interferometry technique**, they are ideally suited to etch/deposition rate monitoring and endpoint detection, providing high precision detection of film thickness and trench depth and interfaces.
 - Interference occurs when monochromatic light hits the sample surface, resulting in different optical path lengths due to film thickness and height variations in the film.
 - HORIBA is providing WIN10 64bits PC with HORIBA Software dedicated to interferometric monitoring and endpoint
- Today: LEM Camera, LEM PC and EV 2.0 PC-INT models
- Tomorrow: SMART EV 2.0 INT or LEM 2.0 model with algorithms inside, Pattern Recognition option, DIP for Deep Trench MEMS BOSCH process applications

