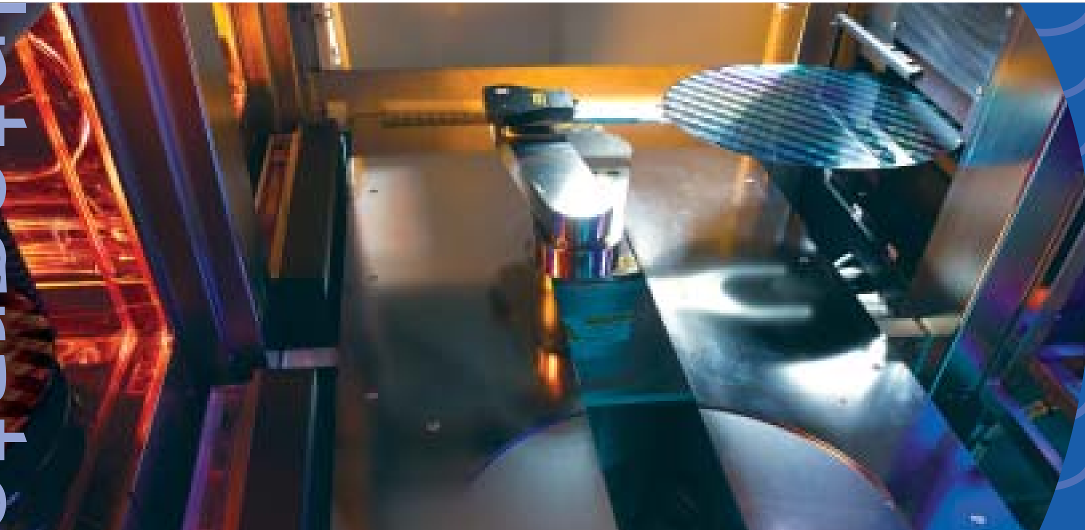
NOVA

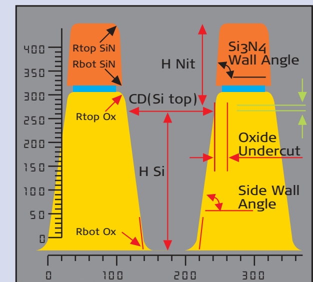
NovaScan 3090CD

Integrated Metrology Solutions



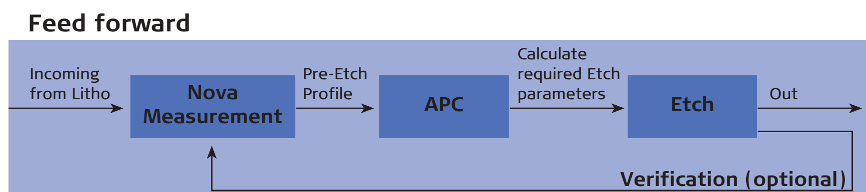
An Advanced Metrology Platform for CD Control and Profile Measurements

- Integrated Metrology and Stand Alone platform for 200mm and 300mm
- Designed for 90nm and lower
- High-throughput system for a wide range of Etch and Lithography applications
- Supports 2D and 3D structures for contacts and via applications
- Provides real-time measurement of CD, trench depth, photoresist height, thickness and shape of complex layer stacks

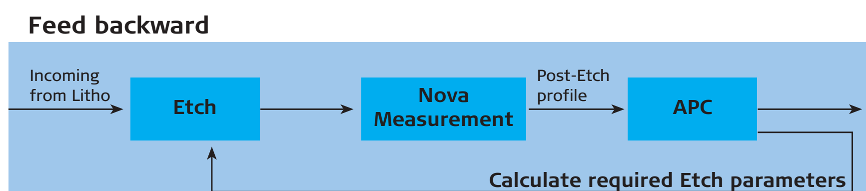


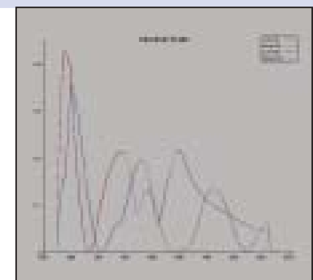
APC Concept: Feed forward and feed backward

Feed forward



Feed backward





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Typical Optical CD Applications

Metrology		
STI	Photoresist grating on STI stack (SiN / Oxide / Si)	STI trench (SiN / Oxide / Si)
Poly	PhotoResist grating on poly stack (Silicide / Poly / gox / Si)	Poly lines
Gate Mask Opening (GMO)	PhotoResist grating on poly stack (SiN / Silicide / Poly / gox / Si)	Partial etch (SiN grating / Silicide or Metal / Poly / gox / Si) Final etch: Silicide or Metal grating / Poly / gox / Si
Dual Damascene	PhotoResist grating on Low-k	Depth measurement, Side wall angle and CD

Additional Applications

- Metal Gratings
- Contacts / Via
- Exposure tools and Track testing (PhotoResist / Si)

System Specifications

Metrology	
Measurement method	DUV Polarized Spectrophotometry Scatterometry
Thickness measurement	
Thickness range	8 - 5,000nm, depending on application
Maximum number of layers	6
Accuracy	1nm or 1.0 % (whichever is larger)
Precision	0.1% or 0.05nm
Repeatability	0.2% or 0.1nm
Stability	0.5% or 0.2nm
CD measurement	
CD range	40-1200nm
Pitch range	120-1500nm
Maximum pattern density	1:10
CD repeatability (3σ)	0.5nm
CD stability (3σ)	1nm
Trench depth range	30-5,000nm
Maximum aspect ratio	1:5

Placement and Mapping	
Wafer size	200mm, 300mm
Wafer input orientation	Random
Wafer alignment	With notchfinder, pattern recognition
Measurement points	User-definable
	Sites configurable per die
Autofocus capability	Patented high-speed dynamic and static method
Pattern recognition capability	Pre-alignment, global alignment and site-by-site alignment
Measurement pad size	50μ x 50μ minimum dimensions
Measurement time	Move-Acquire-Measure (MAM) < 3.5 sec.

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