

Key Applications

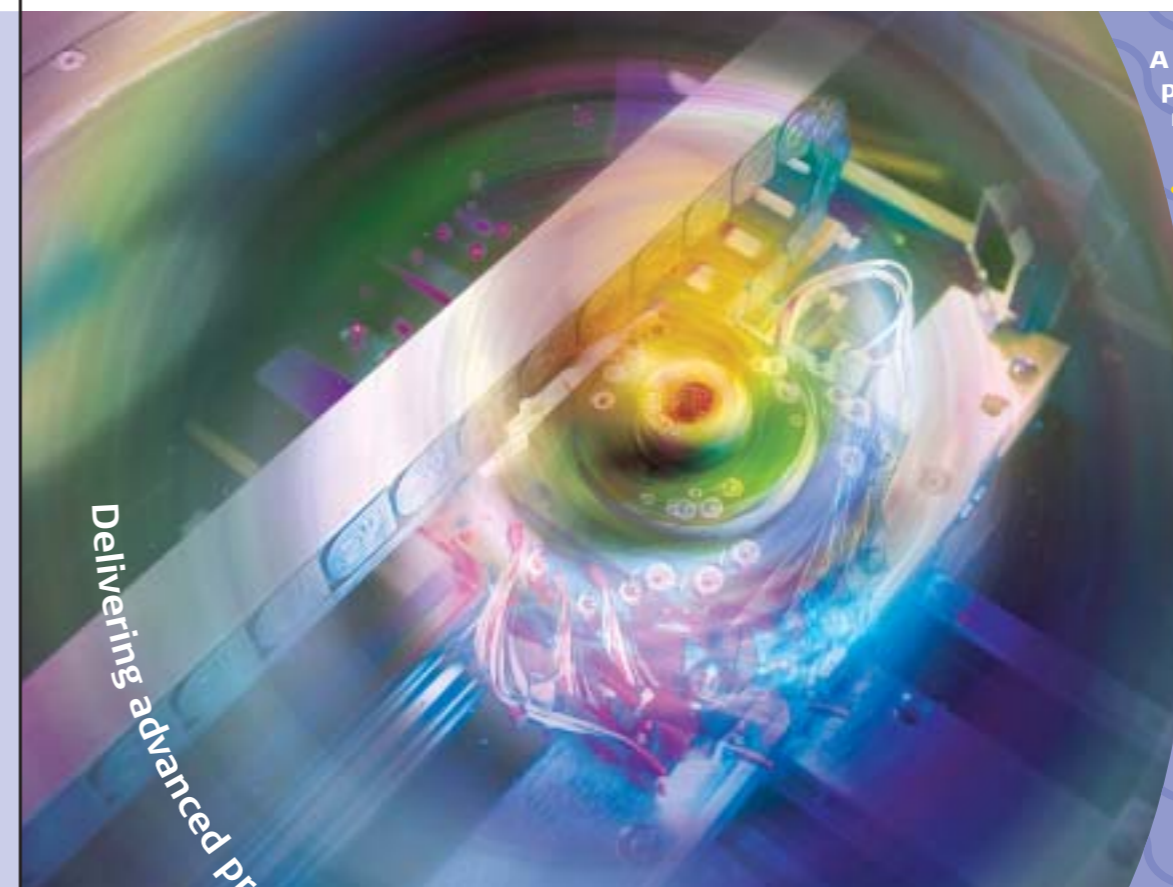
CMP	Thin Film Thickness measurements On solid sites In arrays and within die measurements Thin layers residue detection in pads and Arrays Low-K, cap measurements, Cu line thickness
Litho	After Develop CDs Side Wall Angle 2D & 3D profile applications
Etch	After Develop CDs (ADI as a Feed Forward to Etch) After Ash CDs (AAI, enables fast FB loop to the Etcher) After Clean CDs (ACI, enables fast FB loop to the Etcher) Side Wall Angle Trench Depth 2D & 3D profile applications
CVD	Complicated stack/multiple layers thickness Profiles

About Nova

Nova Measuring Instruments Ltd. (NASDAQ and TASE:NVMI) is the pioneer and world leader in providing advanced metrology solutions for the semiconductor manufacturing industry. Nova holds a number of key patents on the concept of integrated metrology, dedicated algorithms, measurement methods, wafer handling and buffering, and opto-mechanical design of integrated measurement systems.

We are committed to supporting our customers' success by timing our ongoing delivery of superior technologies and solutions to market needs and by maintaining an innovative, efficient and rewarding global organization that provides outstanding service and quality to our customers.

Founded in 1993, Nova is headquartered in Israel, with subsidiaries and representatives throughout Asia, North America and Europe. With more than 1000 Nova systems installed, we count all the top 20 semiconductor manufacturers among our customers.



Delivering advanced process control for high-end applications using polarized DUV

A comprehensive, production-proven platform for array measurement for Standalone and Integrated Metrology

- Provides easy migration path for existing 300mm systems
- Enables advanced process management with Closed Loop Control
- Allows 100% pre and post process measurement and control
- Delivers unequalled throughput
- Designed for air or water ambience

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NovaScan 3090

UNIFIED METROLOGY PLATFORM FOR REAL-TIME ADVANCED PROCESS CONTROL

Introducing the NovaScan 3090 – the complete answer to the complex measurement and process control challenges of emerging 300mm applications that utilize technologies down to 65nm. A single channel polarized DUV metrology system, the NovaScan 3090 sets a new standard in spectrophotometry by offering the widest polarized spectral range (250-950nm) on a single channel, along with high accuracy, stability and speed.

The NovaScan 3090 is based on Nova's field-proven NovaScan series. It utilizes a combination of spectroscopic Reflectometry and Scatterometry to measure CD, trench depth, photoresist height, thickness and shape of complex layer stacks, and a variety of other lateral and vertical features and parameters. It is available in both Integrated Metrology and Standalone configurations, for a broad range of wet and dry CMP, Copper/low-k, Etch, and Lithography applications.

The NovaScan 3090 leads the industry in delivering tight wafer-to-wafer and within-wafer control. It provides real-time process monitoring through Closed Loop Control (CLC) that utilizes pre and/or post-process measurement data.



The standalone configuration delivers higher throughput, enabling a higher sampling rate.

Smart handling solutions enable the highest throughput in the market

NovaScan 3090 is designed for wet or dry ambience

Integrated process control

For Integrated Metrology, the measurement unit is built-in to the process tool and utilizes the system-dedicated wafer handling mechanism. All NovaScan process monitoring functions are controlled by the process tool controller interface. Data collected in real-time is transmitted directly to the tool or uploaded in real time to the factory host computer via a SECS II or HSMS link.

In-line process control

In standalone configuration, the NovaScan 3090 delivers exceptionally high throughput, enabling a higher sampling rate. The system can also be used as an engineering station for application development for Integrated Metrology, and supports automation for 200 and 300mm fabs.

Productivity tools

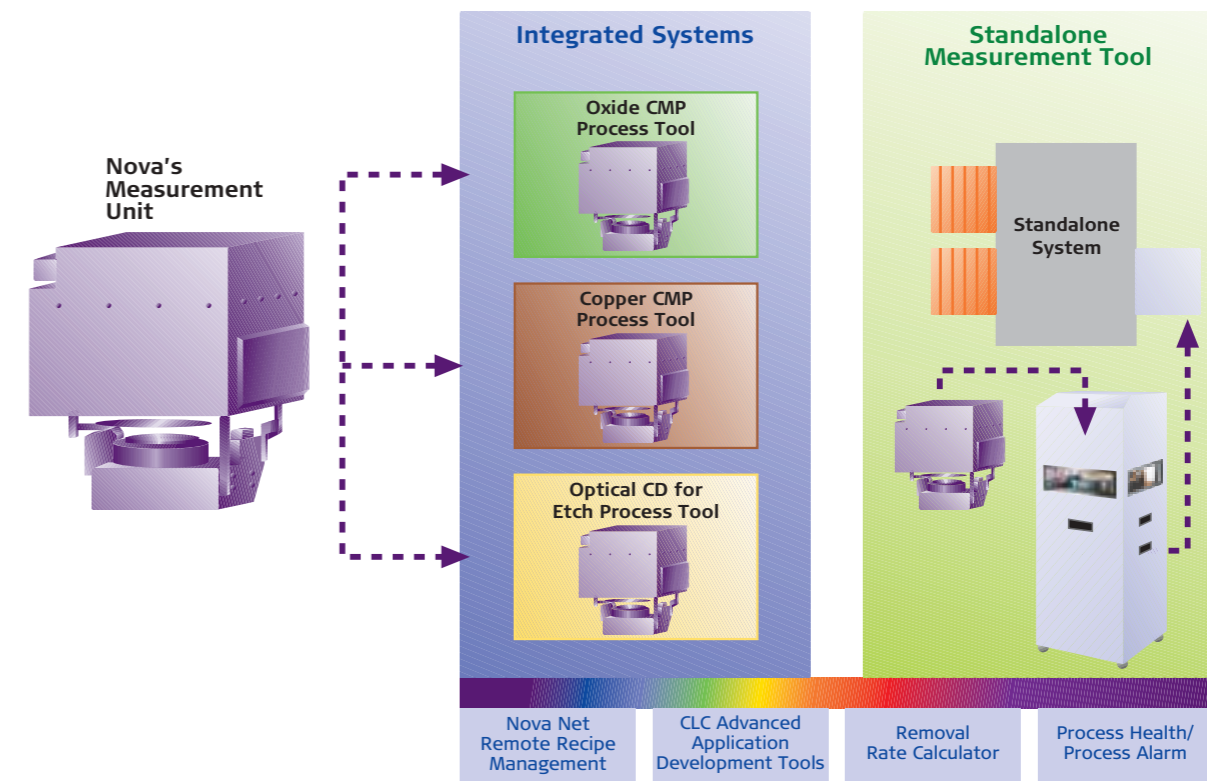
Both the integrated and standalone configurations come with a suite of fully compatible productivity tools:

- NovaNet – Recipe management data sharing
- CLC – Closed Loop Control wafer-to-wafer APC
- RRC – Removal rate calculator
- Process Alarm – Process health and excursion control

The Integrated Metrology unit is built-in to the process tool, utilizing the system's dedicated wafer handling mechanism



NovaScan 3090 Metrology Platform



Key Benefits

Wide application range

- Uses polarized DUV optics and enhanced algorithms, enabling highly accurate measurement of dielectric and conducting thin films, down to 15Å.
- Capable of measuring complex stacks of more than 8 transparent or semi-transparent layers
 - Simultaneous analysis of up to five layers, including n&k variations
 - Special applications for STI and PMD (see table, over)

High throughput

- Delivers measurement time of 13 sec. per wafer for 13 measurement sites.
- Optimized wafer handling sequences achieved through close cooperation with process equipment manufacturers
 - Advanced wafer buffering system (Semi-Buffer) with parallel handling enables pre and post measurement, while preserving optimal process tool throughput

Superior control

Minimizes the process window, increases CpK, and prevents or identifies process excursions in real time, creating significant savings in wafer rework and scrap rates.

- Real-time wafer measurement enables data to be used for feed-forward and feed-backward, allowing accurate adjustment of subsequent wafers
- Self-adjusting control algorithms enable real-time process correction
- Automatic excursion detection enables rework wafers to be added to work in process, and reprocessed
- Audio-visual Process Alarm, triggered when user-defined process deviation is detected, supports effective unattended operation

Improved equipment productivity and OEE

- Built into the process tool in Integrated Metrology configurations, eliminating operator handling and intervention.
- Increases the effective throughput of the tool
 - Drastically cuts the need for time-consuming external verification

Highly accurate process verification with high repeatability

Achieves tool-to-tool matching of less than 1% and better than 0.25% repeatability on wafers with layer thickness of 50 - 50,000Å.