

Nova Fit®

Data-Empowered Machine Learning

The Nova Fit® is a state-of-the-art machine learning algorithms hub to amplify signal information with an open platform for reference metrology. It leverages machine learning and data-driven algorithms to maximize the power of traditional modeling of optical critical dimensions.

Highlights and Benefits

- **Superior Accuracy** Retrains algorithms automatically with more reference data for a more robust solution, enabling recipe publication with a single click
- **Outstanding Productivity** Enables full modeling on large data sets to reduce time-to-solution
- **Modeling Synergy** Complements Nova MARS® & Fleet Management®, connecting seamlessly to metrology fleet
- **Ease of Use** Advanced UI for fast and easy recipe creation and control with instant access to insights, algorithms, and data within an accessible development and deployment environment

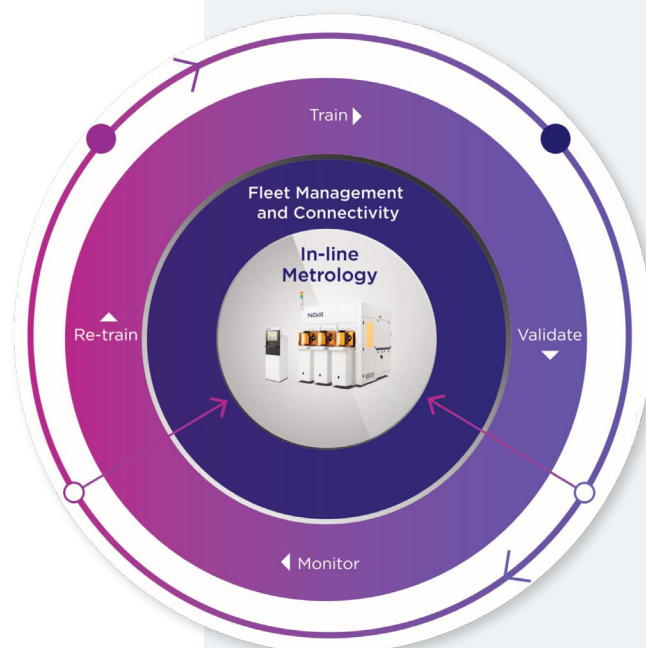
PIP management according to strict standards

State-of-the-art UI operated by process engineers

Data retention for solution re-train

Advanced data analysis tools

Interpretation from database filtering, outlier detection

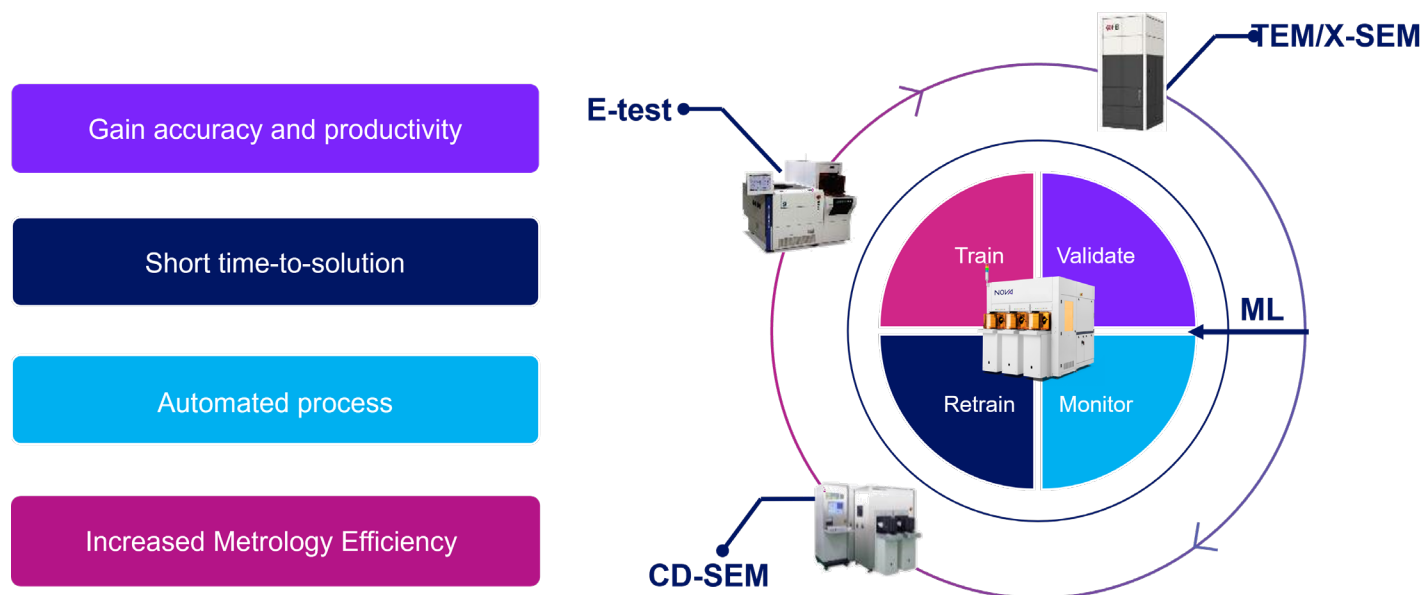


BREAKING THE PARADIGM

that productivity must impact precision, this user-friendly solution combines robust accuracy with minimized time to solution

Why Nova Fit®

Embeds advanced machine learning capabilities and architectures into optical modeling. Revolutionizes how customers use metrology data to tighten process windows, avoid process excursions and improve yield.



Platform for Advanced Machine Learning Algorithms

- Machine Learning for T2T and repeatability
- Machine Learning with RCWA features
- Enabler for in-die IM, e-test prediction, non-periodic structures

Seamless Connectivity Between Fleet Management & Host

- No manual spectra transfer from tools
- Easy reference data import
- Recipe distribution with click of a button
- Recipe management in central software

Works with Nova MARS® physical modeling engine and Nova Fleet Management®

to drive metrology performance, accelerate time-to-solution, and expand the metrology envelope for enriched process control

Supported by Nova HPC: a high-performance computing solution

Nova HPC is designed for the Nova software suite processes and significantly expedites application development. Its advanced hardware design optimizes Nova's proprietary algorithm performance for the most calculation-demanding application developments

Nova Fleet Management[®]

Robust Fleet Controls and
Accelerated Compute Power

Nova Fleet Management[®] is a comprehensive solution for managing large fleets of metrology tools

designed to address the needs and working methodologies of metrology and process engineers in the fab

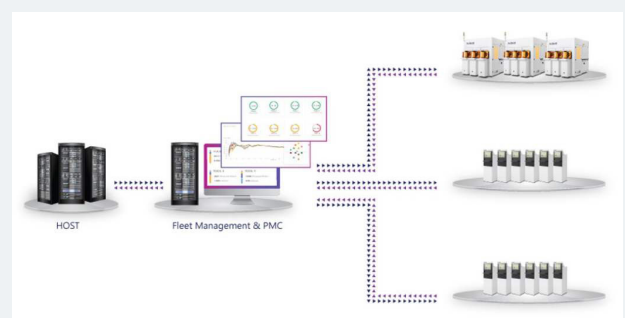
Highlights and Benefits

- **Improved Productivity** - One-snapshot results, and recipe publication with a single click
- **Reduced Tool Downtime** - Server data is available for rapid analysis and offline recipe creation
- **Centralized Control** - Stores customer data in a single location to manage recipe import/export
- **Recipe Data Integrity** - Stores all recipe versions for optional rollback to previous versions
- **Optimized Hardware** - Offers faster calculations with unique GPU and CPU hardware, modular architecture, and patented design, based on Nova HPC

Why Fleet Management[®]

As IC fabrication becomes more complex, manufacturers need ways to manage an ever-growing variety of metrology tools and software architectures.

Nova Fleet Management can help to solve these issues with smart automation and user-friendly controls.



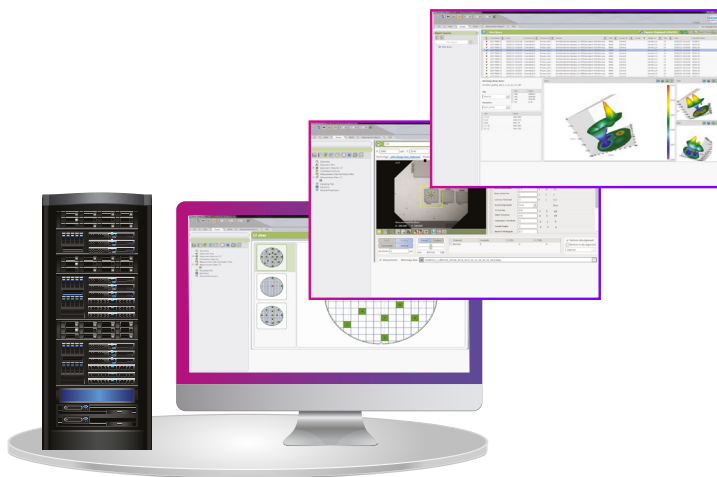
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Nova Fleet Management®

Key Functions

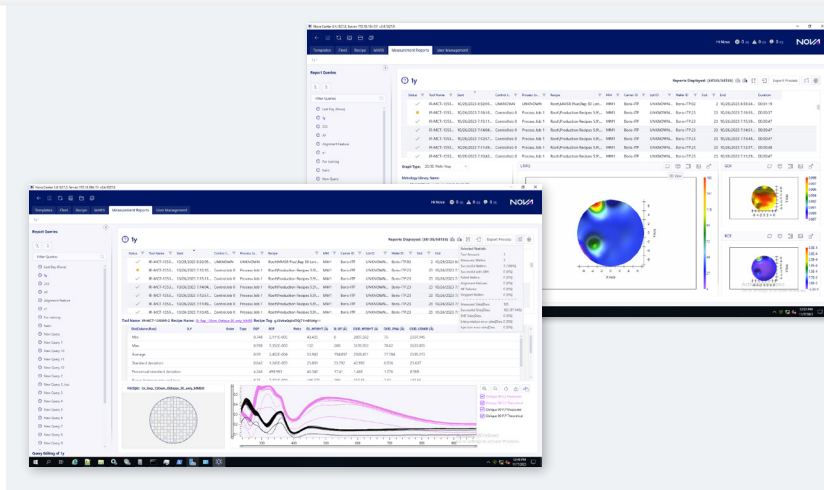
- No impact on tool performance
- User-defined logic clusters
- Central storage
- History & rollback
- Integrity comparison report
- Application solution integrity
- Engineering station to IM: Wafers less and ease of use recipe creation capability
- Transferable between platforms and software releases



Value Drivers

Wizard-based/wafer-less recipe creation:

An intuitive, user-friendly GUI to simplify recipe creation, that rapidly builds recipes from existing elements. An upgraded package leveraging CAD file information is available to create recipes even before the wafer is produced.



Recipe management system:

Driven by a centralized database, it contains all tool recipes to enable easy distribution. The RMS offers a quick snapshot of element sharing, displays links to Nova MARS® solution, and enables easy tracking of recipe changes and rollbacks.

Centralized storage and management:

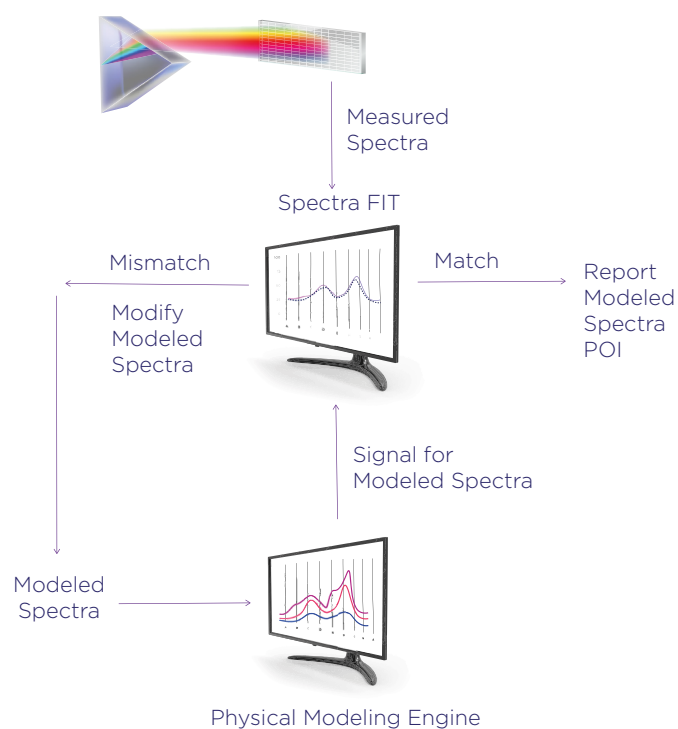
A centralized database for all tool outputs. Storage capacity is configurable and enables modifications while not interfering with tool operation.

Enhanced cross-tool functionality:

The centralized solution routes information between tools to enhance overall fleet performance such as cross-tool injection of results and spectra.

Nova MARS® Modeling Software

Complex 2D/3D Device Modeling



Highlights & Benefits

- **High accuracy:** Physical modeling inherently provides accurate sample description, because the scope of possible solutions is limited from the onset of this approach
 - **Unphysical outlier rejection:** For the same reason, non-physical results are inherently filtered out
 - **Speed-up:** With physical modeling, previous knowledge about the sample can be easily accounted for. This greatly speeds-up the solution
 - **Physical results:** Physical modeling allows a straightforward connection to other metrology tools (refer to Hybrid metrology) as the parameters at its output have well-understood physical meaning
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- Multi Channel Metrology Modeling Engine for Complex 2D/3D device
 - Optimized for Accuracy, Ease of Use and Recipe Development Speed
 - Modeling support for vast range of semiconductor fabrication materials
 - Seamless Connectivity with Nova HPC®

