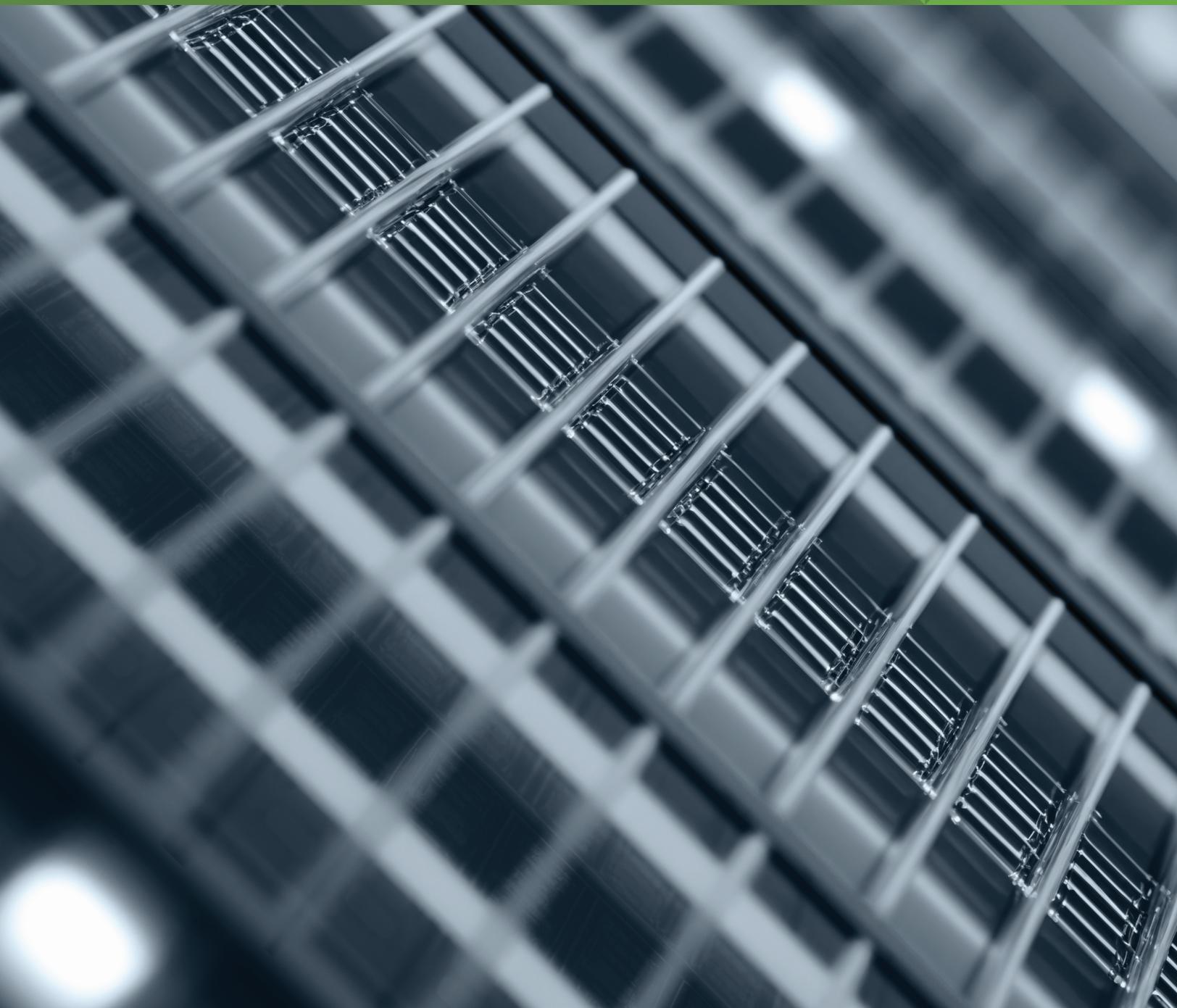


# NAVX™ MATCHING NETWORK

ULTRAFAST, RF-SYNCHRONIZED TUNING  
TO MULTI-LEVEL PULSE STATES





# Tuning Within Multiple Pulse States

# NavX™ Matching Network

Innovate beyond the nanometer. The NavX™ matching network redefines tuning speed, sophistication, and RF synchronization for exacting plasma control across the most complex pulsing profiles.

Groundbreaking Advanced Selectable Tuning controls allow accelerated analysis for impedance matching to your chosen number of process pulse states. This proprietary algorithm instantly reduces reflected power in processes with shorter RF on times. Paired with the eVerest™ RF generator, the NavX matching network completes AE's latest RF delivery system, enabling unparalleled control of plasma characteristics as the industry sets its sights on Angstrom scale geometries.

Together, the NavX matching network and eVerest RF generator empower process innovation at the limits of physics and chemistry. Direct match-generator communication and AE's proprietary Velocity Tuning algorithm optimize hardware response speed for pulse sequences, while critical process power and impedance measurements are available via EtherCAT communication.

## BENEFITS

- Enhanced repeatability, yield, and throughput
- Tight control of plasma characteristics
- Increased process parameter customization
- Optimized response speed for control during rapid pulse sequences
- Expanded access to new energy regimes through scalable pulse states
- Increased uptime and productivity

## FEATURES

- Advanced Selectable Tuning: single or multiple pulse state tuning
- eVerest RF generator communication and synchronization
- Critical process power and impedance measurement
- Improved sensor calibration
- Faster tuning/matching response time
- Sweep-frequency operation
- Intermodulation distortion (IMD) immunity for multi-frequency applications

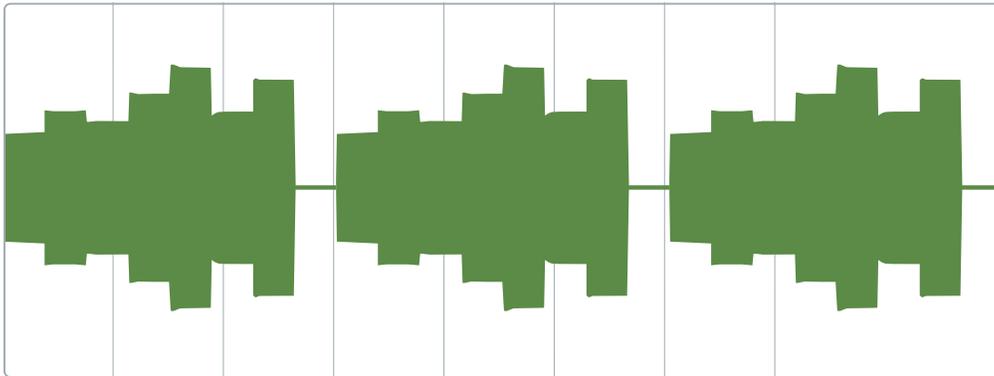
## APPLICATIONS

- Etch
- PECVD
- PVD
- Chamber Clean
- HDP-CVD

## MARKETS

- Semiconductor
- Solar
- Flat Panel Display
- MEMs
- Industrial Coatings

## Speed and Control within Programmable Pulse Profiles



Dynamically control multi-level pulsing.

Access new energy regimes and distributions.

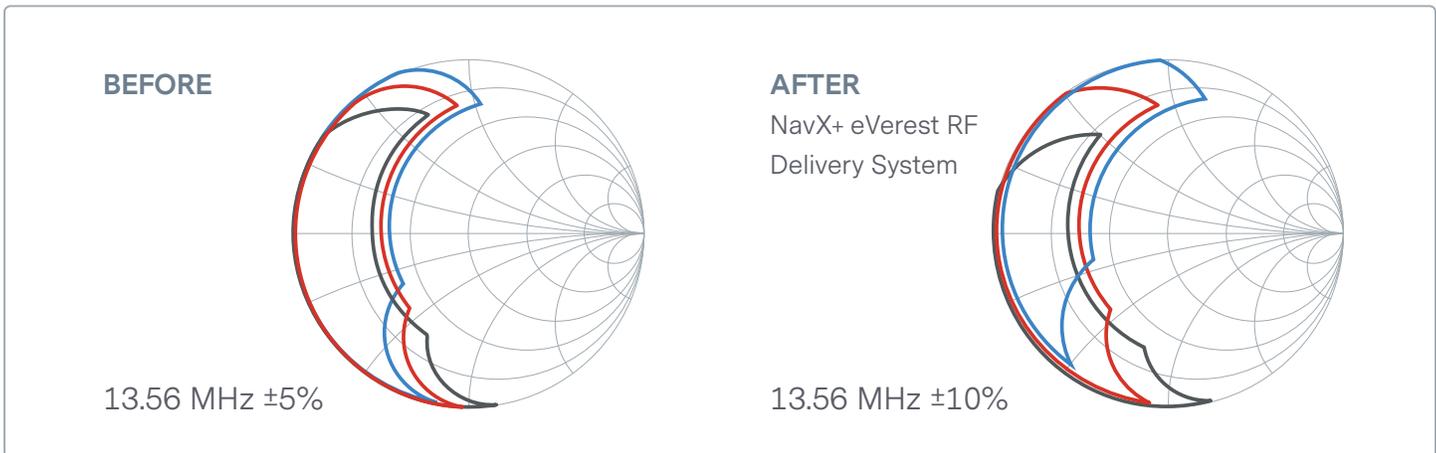
## Low Reflected Power in Pulsed RF Steps



Advanced Selectable Tuning enables impedance matching to one or more states.

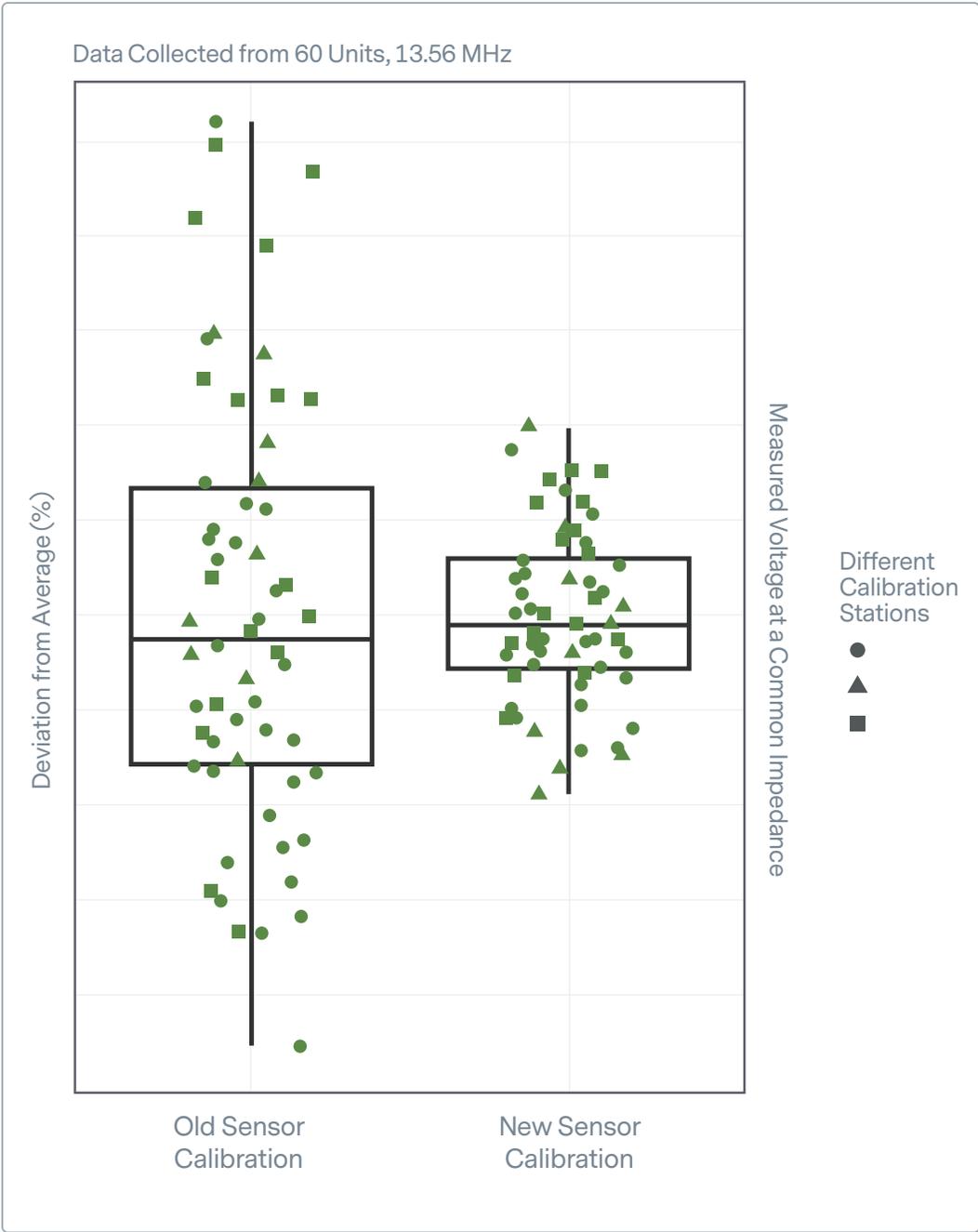
Select single or multiple state tuning.

## Frequency vs. Tuning Range



### Enhanced Repeatability

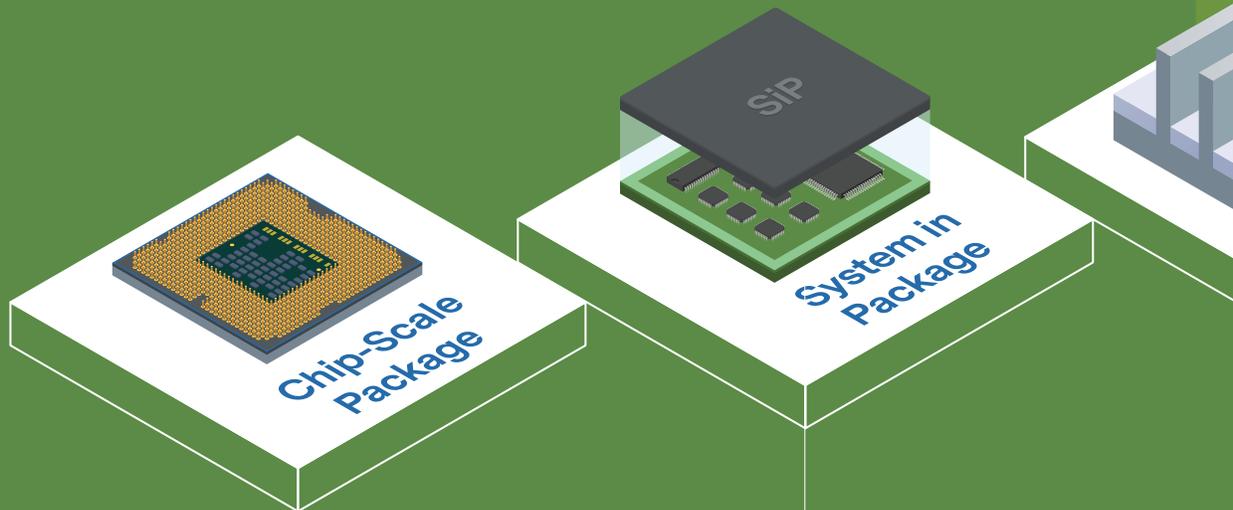
Improve process control and precision.



New sensor calibration minimizes unit-to-unit deviation for better repeatability.

# Over 20 Years of Full RF Systems

Advanced Energy has offered full RF delivery systems for over 20 years, with multiple options for matching solutions and intelligent SyncTech™ synchronization.



## RF Plasma Generators



**RFG**  
Digital/Analog



**APEX®**  
Digital/Analog

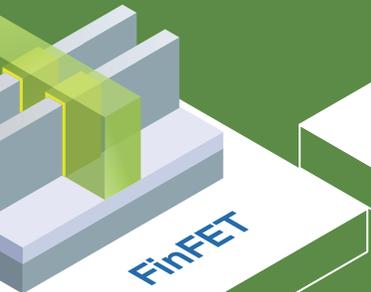
## RF Match Networks



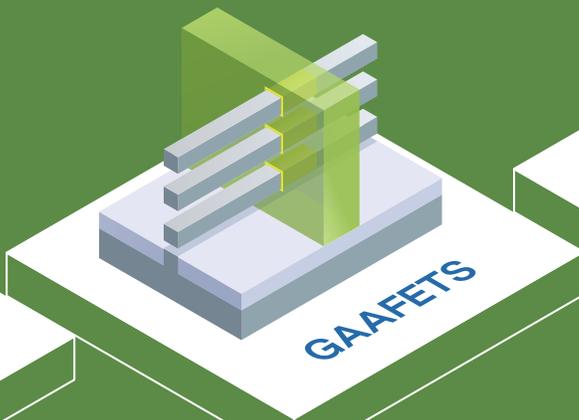
**Navigator®**  
All Digital



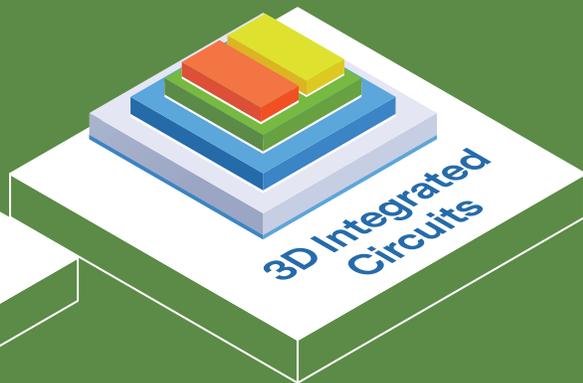
**Navigator®**  
All Digital



**FinFET**



**GAAFETS**



**3D Integrated Circuits**



**eVos™**  
Tunable Ion Energy



**Paramount®**  
Higher Density



**Paramount®+**  
Digital Control



**eVerest™**  
Accelerated Digital Control



**Navigator® II**  
Model-Based



**Navigator® II**  
Model-Based



**NavX™ Matching Network**  
MLP Tuning  
In-State Pulse Tuning

## Specifications

Electrical Specifications	
Match Types	Single Frequency Dual Frequency
Available Matching Topologies	L match, T match, design per customer's tune range requirements
Frequency Range	1 to 60 MHz
Current Range	0.1 to 150 A, design per customer's requirements
Voltage Range	1 to 10 kVpk, design per customer's requirements
RF Output Power Range	1 to 10 kW
Communication Interface	Serial (RS-232) EtherCAT Ethernet
Pulsing State Time	11 $\mu$ sec to 250 msec

Mechanical Specifications	
Dimensions	Design per customer's requirements
Weight	Design per customer's requirements
Cooling	Air, water
RF Input Connector	Design per customer's requirements (HN, 7/16)
DC Input Connector	Design per customer's requirements (7 Pin, 9 Pin)
Primary Output Connector	Design per customer's requirements (B20N)
Interlock Requirement	Provided default for system readiness

## Complete RF Delivery System



**eVerest™  
RF Generator**



**NavX™ Impedance  
Matching Network**





For international contact information,  
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+1 970 221 0108

## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE | TRUST

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