



## Impedance Matching Networks

# Synertia® RFM

**Synertia®, Comet's integrated RF power delivery platform, enables the unprecedented power delivery control required by plasma process tools for the next generation of microchips.**

Synertia® is the RF power delivery platform that ensures powerful command and control of plasma conditions at the highest speeds. The system allows the user to manage the complexities of multi-layer next-generation memory and atomic-scale plasma processes.

The Synertia® RFM works in powerful synergy with Synertia® RFG. Precise sensors and an enhanced tuning algorithm in the matching network ensures consistent and stable plasma processes. Onboard diagnostics enable actionable insights for more complex plasma applications.



### Features

- Precise and repeatable input/output sensors
- Advanced multi-level pulsing with the ability to set custom tuning parameters
- Ability to work with a combination of various tuning elements
- Onboard monitoring and diagnostics to assist with preventive maintenance
- Ultra wide-band sensors

### Benefits

- Continuous process improvement via real time signal processing and data collection
- Superior process control and repeatability with fully digital and customizable controls
- Consistent, stable RF plasma with enhanced tuning algorithm
- Reduced total cost of ownership with improved MTBF and enhanced reliability
- Robust design with RF expertise, state-of-the-art modeling/virtual prototyping and extensive library of RF tuning circuits

## Technical data Synertia® RFM

Frequencies	400 kHz – 100 MHz
Input power	600 W to 20 kW
Output V/I	max. current (~150 Apk), max. voltage (10 kVpk)
Pulsing	Single, dual and multi-level
User interface	EtherCAT, RS232, analog, advanced user interface (ProfiNet and D-Net coming soon)
Optional sensor capabilities	Vpp, Vdc and others

### Special features

- **Custom tuning parameters:** Gamma, VSWR, Z target tune point, etc.
- **Integration of Comet Vacuum Capacitors:** Standard and customized capacitor designs, equipped with advanced technologies such as Ultra Life drive system or XtraVolt features for low frequency applications.
- **Monitoring:** Monitoring and diagnostics to assist with preventive maintenance.
- **Wide-band frequency range sensors:** High fidelity and sensitivity over a wide frequency range that continues to track and tune even when the RF fundamental frequency is varied up to  $\pm 10\%$ .

### Target applications

- Etch
- PECVD
- PVD
- PEALD
- ALE

#### Switzerland (Head Office)

Comet AG  
Flamatt

#### Germany

YXLON International GmbH  
Aachen

#### United States

Comet Technologies USA, Inc.  
San Jose/CA

#### China

Comet Mechanical Equipment  
(Shanghai) Co. Ltd., Shanghai

#### Korea

Comet Technologies  
Korea Co., Ltd., Suwon-si

#### Malaysia

Comet Technologies  
Malaysia Sdn Bhd, Penang

#### Taiwan

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## Comet Matching Networks

### RF design experts



Unique understanding of plasma physics



Global design centers for close partnering with customers

### Vertically integrated

- Comet is the only supplier that designs and builds every component, from capacitor to matching networks and RF generators
- Decades of design experience and the latest technology enable us to deliver highly customized solutions

