

# Retrofit: HFV to Paramount Plus MF

Digitally Controlled RF Power Supply with Increased Reliability, Efficiency, and Functionality

The Advanced Energy (AE) Retrofit Program aims to replace existing, aged AE legacy products with a new drop-in solution. With a retrofit of your existing HFV unit to the Paramount Plus MF, Total Cost of Ownership improvements can be realized through reduced tool down time, improved process & wafer yields, and efficiency gains.



## Overview

As semiconductor tools and process power components age, factories are seeing increases in failure rates and repair costs of those components. A retrofit of HFV to Paramount Plus MF provides a reset of the unit life, and an upgrade in unit capability and reliability. A retrofit maximizes tool uptime while reducing overall maintenance costs.

The HFV product line is no longer in production. Retrofitting your HFV generator is the preferred service option as:

- Used equipment available on the market is in unknown condition
- Repairing existing units could be limited in the future due to obsolete components

## Total Cost of Ownership (TCoO)

TCoO in the process power space on a semiconductor tool extends beyond the transactional cost of a repair:

- Tool down time: lost production dollars
- Wafer scrap
- Wafer yield
- Operational costs (efficiency)

## Benefits

- Increased uptime with longer mean time between failures (MTBF)
- Lower overall maintenance costs
- Performance equivalent to processes with new tools
- Additional features allow for enhanced process control or new process development
- Higher efficiency
- Enhanced plasma stability and process repeatability
- CEX and pulsing options available

## Features

- Includes 12-month, whole-box warranty
- Supports wafer fabrication with partnership of AE refurbishment experts
- Resets the clock on aging tools
- Provides cost-effective, modern replacements for discontinued or aging plasma generators
- Presents an efficient upgrade process that is replicable for subsequent tools
- Retrofit kit designed to be a seamless drop-in replacement for HFV
- Improved data logging features enable monitoring of unit health and process trends
- Provides convenient access to system controls and diagnostics through Virtual Front Panel

## Return on Investment (ROI)<sup>1</sup>

The AE Quality Advantage – Maximizing Uptime

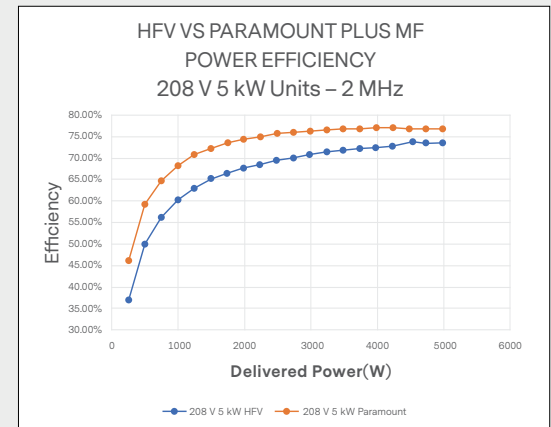
With a retrofit of HFV to Paramount Plus MF:

- Save up to **38%** annually on repair and maintenance costs with new units<sup>2</sup>
- See a five-year ROI<sup>3</sup> of **54%**
- Break even in **3.25** years

<sup>1</sup> Figures are for illustrative purposes only. Contact AE for a customized ROI calculation specific to your install base. Trade-in and volume discounts are also available.

<sup>2</sup> Annual savings achieved through reduced tool downtime, improved process and wafer yields, and efficiency gains.

<sup>3</sup> Figures calculated off of 30-unit population.



## Specification Comparison – HFV to Paramount Plus MF

With the inclusion of a retrofit kit, which contains all required interfaces and adapters, transitioning to a newer product is made seamless by eliminating equipment changes.

| Feature                | HFV                                  | Paramount Plus MF                              | Benefits to Retrofit   |
|------------------------|--------------------------------------|--|--|
| Arc Management         | Not available                        | Detection and Suppression                      | Minimizes arc damage and preserves plasma for increased process yields |
| Dynamic Response       | < 100 ms                             | < 50 ms  | Faster process/higher throughput                                       |
| Power Threshold        | 50 to 5000 W                         | 50 to 5000 W                                   | Identical <sup>1</sup>   |
| Power Accuracy         | ± 3% or ± 24 W, whichever is greater | ± 5 W for 50 to 500W<br>± 1% for 501 to 5000 W | Tighter process control  |
| Reflected Power        | 1000 W                               | 1000 W   | Identical  |
| Frequency              | 1.765 to 2.165 MHz                   | 1.800 to 2.170 MHz                             | Higher frequency range available                                       |
| Sag / Surge Protection | Not Available                        | SEMI F47                                       | Fewer process interruptions  |
| Pulsing                | Not Available                        | Available                                      | Expanded process capability  |
| Analog Interface       | 15-pin D-sub                         | 15-pin D-sub                                   | No change to communication cabling                                     |
| RF Output Connector    | Type SQS                             | Type SQS                                       | No change to output cabling  |
| Input Power            | 208 V, 3 ph                          | 208 V, 3 ph                                    | No electrical panel rewiring   |
| Weight                 | 34 kg                                | 27 kg  | Lighter  |
| Height                 | 133 mm                               | 128 mm   | Smaller footprint  |
| Width                  | 432 mm                               | 483 mm   | Fits in standard 19" rack  |
| Depth                  | 514 mm                               | 653 mm   | Rack ear extensions provided with retrofit                             |
| Cooling                | Air and Water                        | Air and Water                                  | Mixed cooling  |
| Coolant Rate           | 3.0 gpm                              | 2.5 gpm  | Lower water consumption  |
| Water Fittings         | 3/8" NPT                             | 3/8" NPT                                       | No water adapters required   |
| Efficiency             | 73.6% max                            | 76.8% max                                      | Decreased operating costs  |

<sup>1</sup> Retrofit also available for 3 kW HFV units

## Get in Touch

To learn more about your retrofit options, contact Advanced Energy Technical Support at [technical.support@aei.com](mailto:technical.support@aei.com) or contact your local Service Center.

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