WHAT IS CLAIMED IS:

1. A plasma generation system comprising:

a reference clock configured to generate a reference signal;

an electronic switch linked to the reference clock;

a plurality of solid state generator modules, each solid state generator module linked to the electronic switch, the solid state generator modules each configured to generate an output based on the reference signal from the reference clock; and

a processing chamber configured to receive the output of at least two of the solid state generator modules to combine the outputs of said solid state generator modules therein.

2. The plasma generation system of claim 1, further comprising an I/Q modulator configured to demodulate a signal at an input to the processing chamber into an I/Q signal, wherein the plasma generation system is further configured to:

determine a voltage standing wave ratio (VSWR) and a reflection coefficient of the I/Q signal;

calculate a first impedance of one of the solid state generator modules based on the VSWR and the reflection coefficient; and

calculate a second impedance of a combined output power of the solid state generator modules within the processing chamber based on the first impedance.

3. The plasma generation system of claim 2, wherein the system is further configured to adjust phase, magnitude, and frequency of at least one of the solid state generator modules based on the second impedance.

4. The plasma generation system of claim 2, wherein the system is further configured to monitor a change in impedance of the processing chamber over time.

5. The plasma generation system of claim 4, wherein the system is further configured to determine a remaining life of the processing chamber based on the change in impedance of the processing chamber over time.

6. The plasma generation system of claim 5, wherein the plasma generation system is configured to issue a warning based on the remaining life of the processing chamber.

7. The plasma generation system of claim 4, further comprising a data bank storing impedance values of a plurality of gases, wherein the system is further configured to identify a process gas within the processing chamber, using the data bank, based on the change in impedance of the processing chamber over time.

8. The plasma generation system of claim 1, wherein the solid state generator modules are connected in a phase lock loop (PLL) such that the outputs of the solid state generator modules have a shared phase.

9. The plasma generation system of claim 8, wherein each solid state generator module includes:

a PLL reference input connected to the electronic switch; and

a PLL reference output connected to the electronic switch and a synthesizer, the synthesizer being connected to a second electronic switch to pulse modulate the output of the solid state generator module.