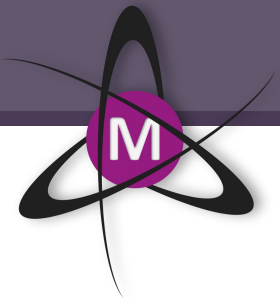


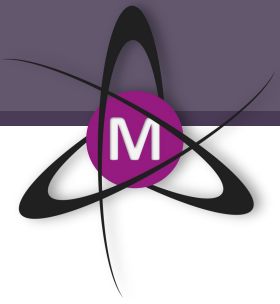
MAGPULS GmbH



pulsing solution expert

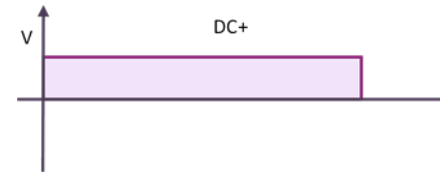
application Plasma – PVD, PECVD, reactive, cleaning, etching, hipims
Plasma Diffusion - Nitrid -
Wet Chemical Plasma

technology Unipolar Pulser
Bipolar Pulser
Bipolar Asymmetric Pulser



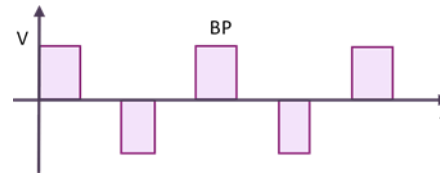
technology

Unipolar Pulser



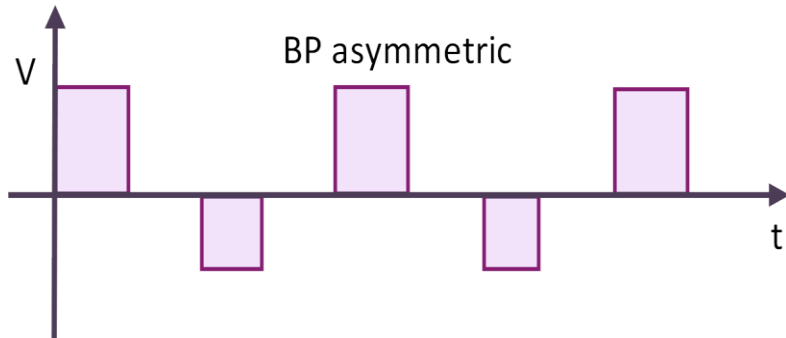
Bipolar Pulser

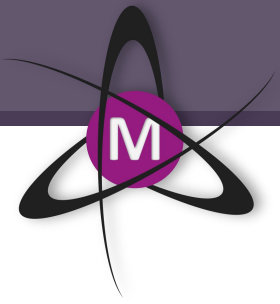
HIPIMS Bipolar Pulser



Bipolar
Asymmetric
Pulser

HIPIMS Bipolar
Asymmetric
Pulser





**hardware
technology**

Unipolar Pulser



Power 1 - 75kW more on demand

Bipolar Pulser

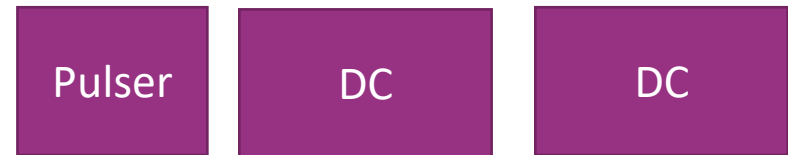
HIPIMS



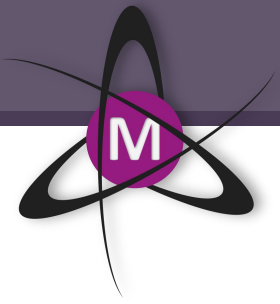
Power 1 - 75kW more on demand

Bipolar
Asymmetric
Pulser

HIPIMS



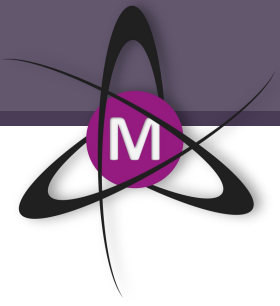
Power 1 - 75kW more on demand



MP2 with one DC power supply

MP2-AS with two DC power supplies



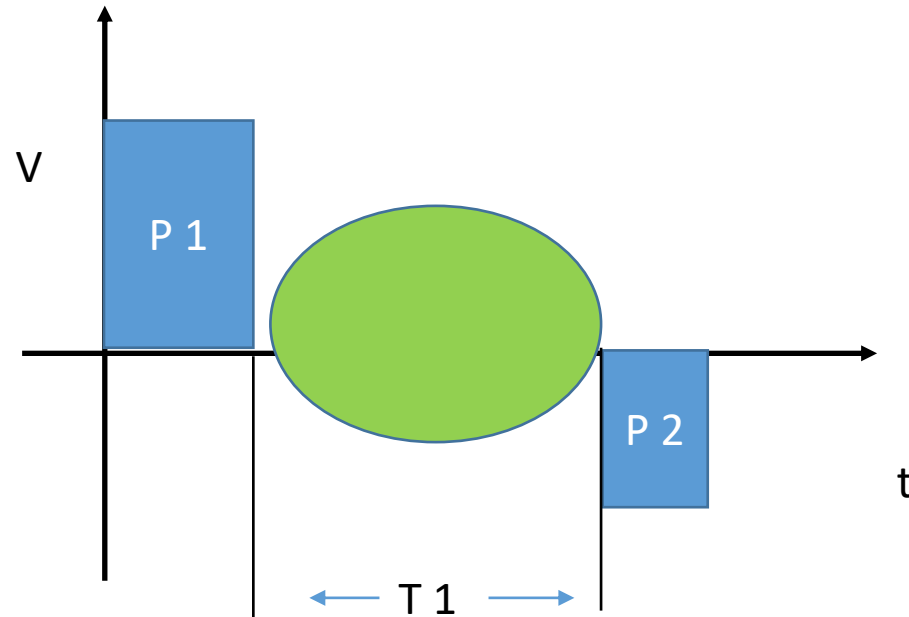


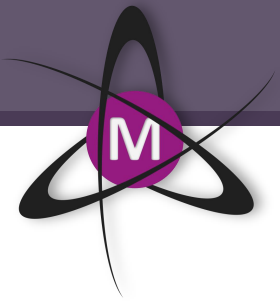
plasma-case

Bipolar
Asymmetric
Pulser

application

new characteristic
Influence the
electrons and ions



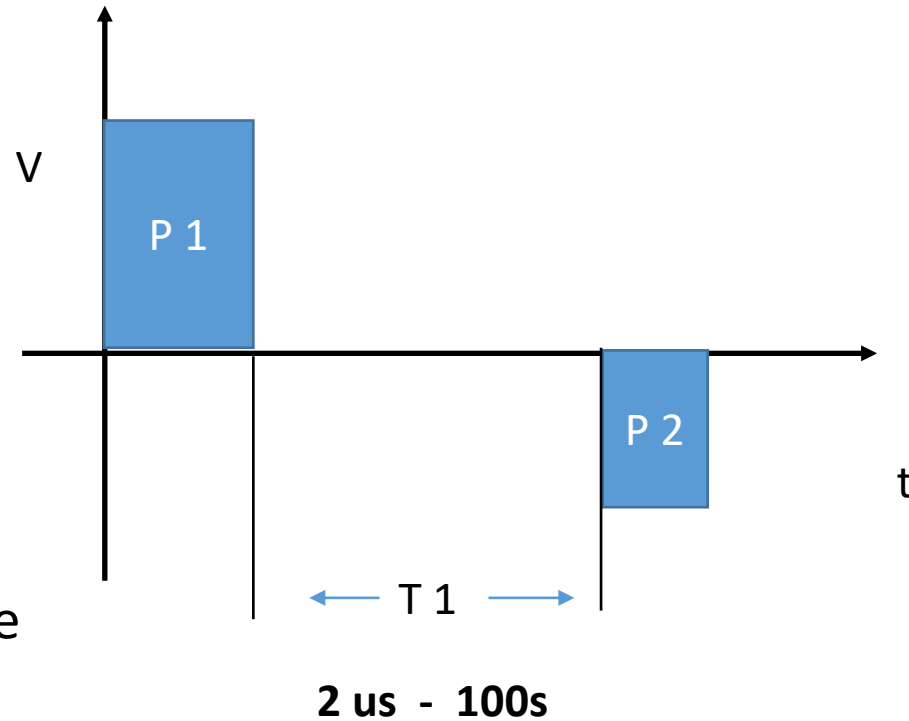


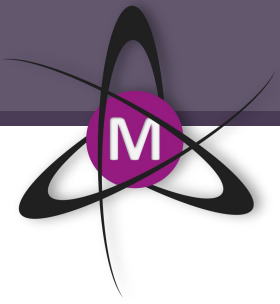
plasma-case

Bipolar
Asymmetric
Pulser - HIPIMS

application

Co-Sputtering
Disappearing anode
cleaning
De-Stress anti grazing



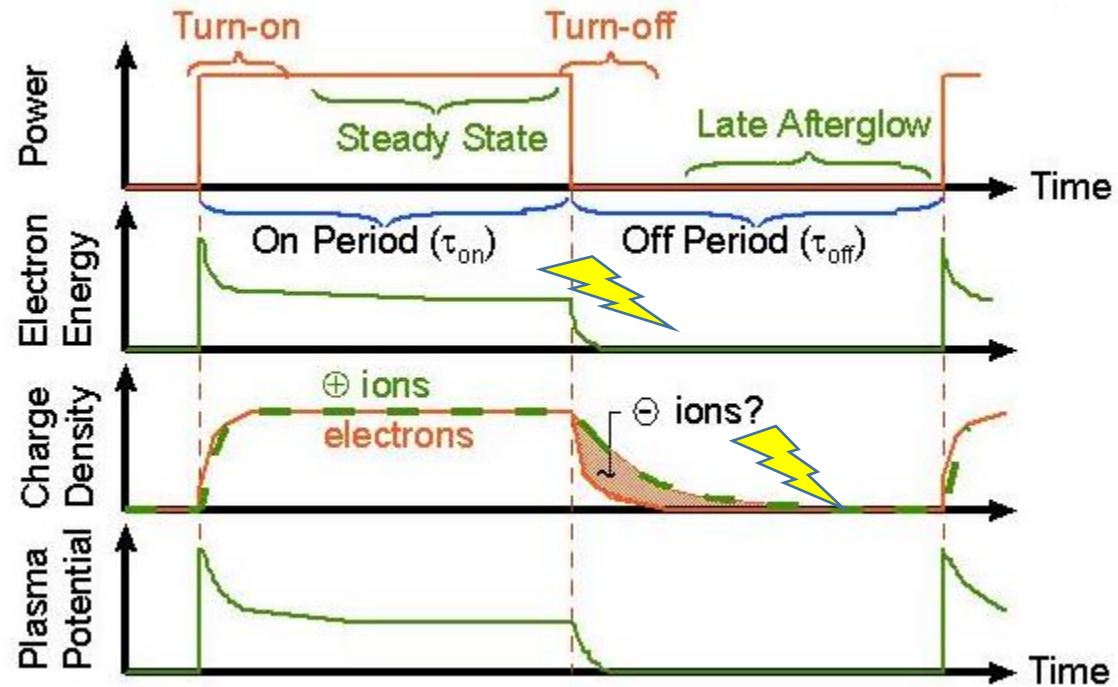


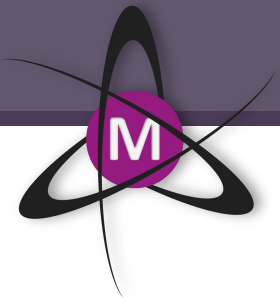
application

new process /
parameter
Influence the
electrons and ions

result

new characteristic
Bipolar asymmetric solutions gives you more process-
capabilities and finally new business as well with HIPIMS

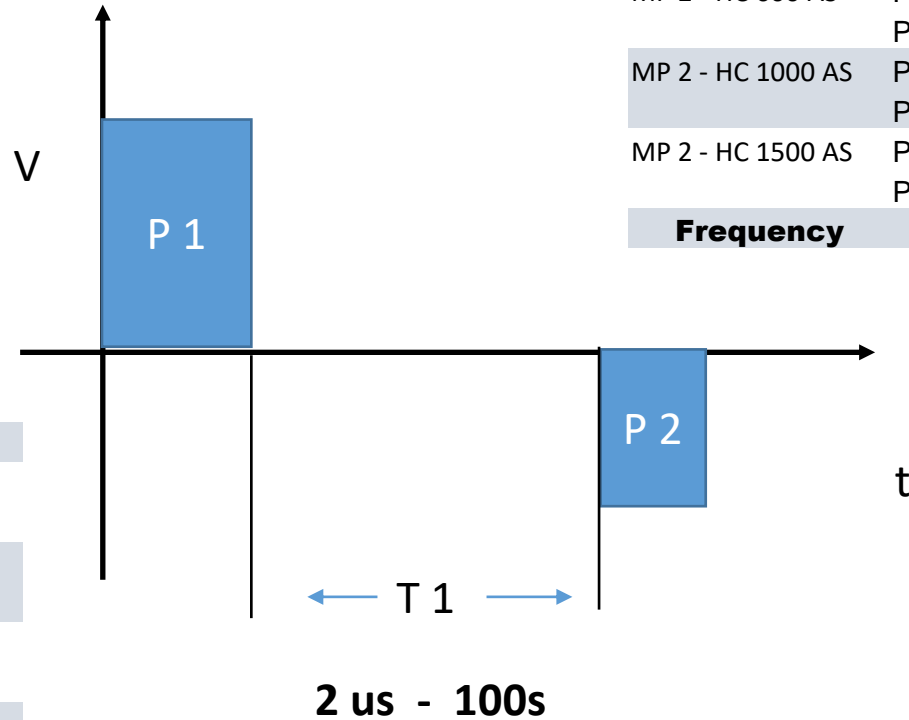




HIPIMS bipolar asymmetric - Family

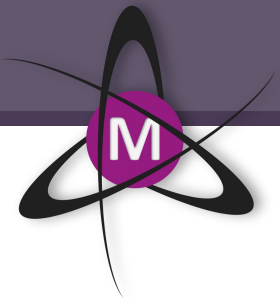
Type	DC	Min/Max
MP 2 - HC 200 AS	P 1	10kW
	P 2	1/ 10kW
MP 2 - HC 400 AS	P 1	30kW
	P 2	1/30kW
MP 2 - HC 600 AS	P 1	40kW
	P 2	1/40kW
MP 2 - HC 1000 AS	P 1	60kW
	P 2	1/60kW
MP 2 - HC 1500 AS	P 1	60kW
	P 2	1/60kW

POWER

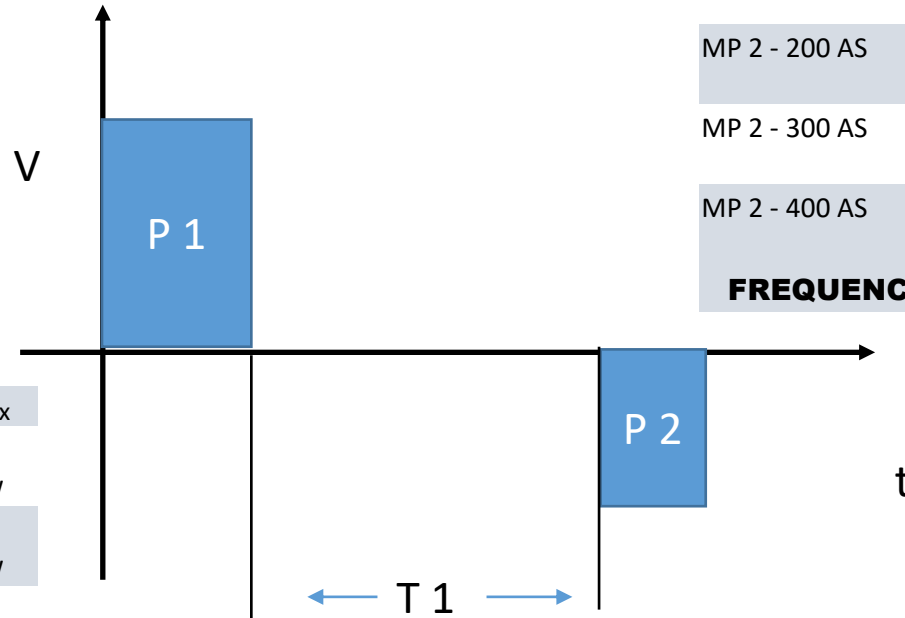


Type	Freq.	Time	kHz
MP 2 - HC 200 AS	P 1	50 us	20
	P 2	50/10 us	20 / 100
MP 2 - HC 400 AS	P 1	100 us	10
	P 2	100/20 us	10 / 50
MP 2 - HC 600 AS	P 1	250 us	10
	P 2	250/ 20 us	4 / 10
MP 2 - HC 1000 AS	P 1	500 us	2
	P 2	500/ 20 us	2 / 50
MP 2 - HC 1500 AS	P 1	500 us	2
	P 2	500/ 20 us	2 / 50

Frequency Time



**Pulser
bipolar
asymmetric -
Family**



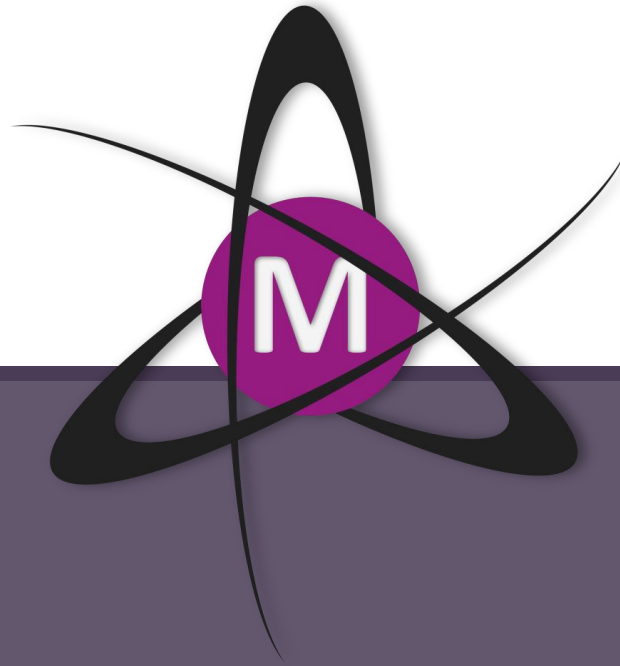
2 us - 100s

Type	DC	Min/Max
MP 2 - 35 AS	P 1	3kW
	P 2	1/ 3kW
MP 2 - 60 AS	P 1	5kW
	P 2	1/ 5kW
MP 2 - 100 AS	P 1	10kW
	P 2	1/10kW
MP 2 - 200 AS	P 1	15kW
	P 2	1/15kW
MP 2 - 300 AS	P 1	20kW
	P 2	1/20kW
MP 2 - 400 AS	P 1	30kW
	P 2	1/30kW

POWER

Type	Freq.	Time	kHz
MP 2 - 35 AS	P 1	10 us	100
	P 2	10 us	100
MP 2 - 60 AS	P 1	10 us	100
	P 2	10 us	100
MP 2 - 100 AS	P 1	10 us	100
	P 2	10 uus	100
MP 2 - 200 AS	P 1	10 us	100
	P 2	10 us	100
MP 2 - 300 AS	P 1	10 us	100
	P 2	10 us	100
MP 2 - 400 AS	P 1	10 us	100
	P 2	10 us	100

FREQUENCY **TIME**



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