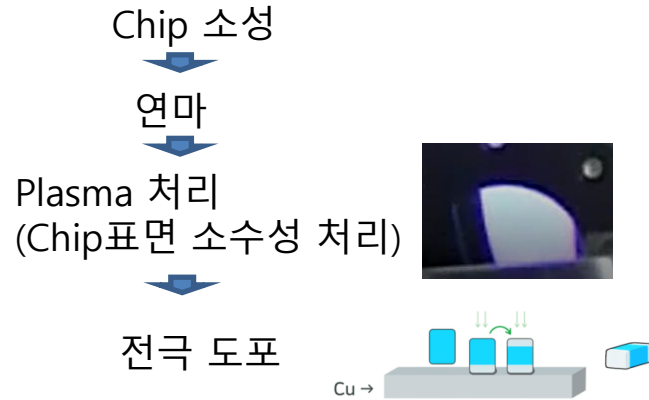


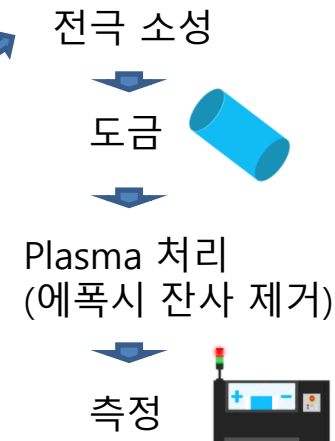
# AUTO BARREL PLASMA SYSTEM

## MLCC제조 공정중 적용 공정

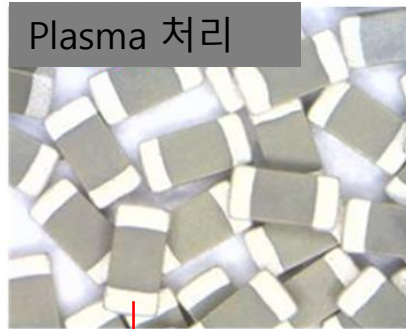
### 1. 전극 도포 공정전 소수성 플라즈마 처리



### 2. 도금 공정후 에폭시 잔사 제거



Mooning 발생



Mooning 미발생

도금 공정에서 발생한 에폭시 잔사 제거후 측정

# AUTO BARREL PLASMA SYSTEM

## MLCC제조 공정중 적용 공정

### 1. 전극 공정 전처리 조건 & Throughput

- Plasma Normal 공정 조건  
=> Power : 100W / C3F6 Gas : 50sccm / 처리 시간 : 60sec / 진공도 : 0.2Torr 이하 / Barrel rpm : 3rpm
- Plasma 1회 처리량  
=> 1Kg 처리 가능 (Barrel 장입량)

### 2. 도금 후처리 조건 & Throughput

- Plasma Normal 공정 조건  
=> Power : 100W / O2 Gas : 50sccm / 처리 시간 : 120sec / 진공도 : 0.2Torr 이하 / Barrel rpm : 3rpm
- Plasma 1회 처리량  
=> 1Kg 처리 가능 (Barrel 장입량)



# AUTO BARREL PLASMA SYSTEM

## TACT TIME & 투입 / 배출

### 1. Tact Time

- Barrel당 Chamber에서 약 300sec 소요  
=>  $300\text{sec} \div 2\text{-Chamber} = \text{약 } 150\text{sec당 } 1\text{Barrel}$  배출 가능

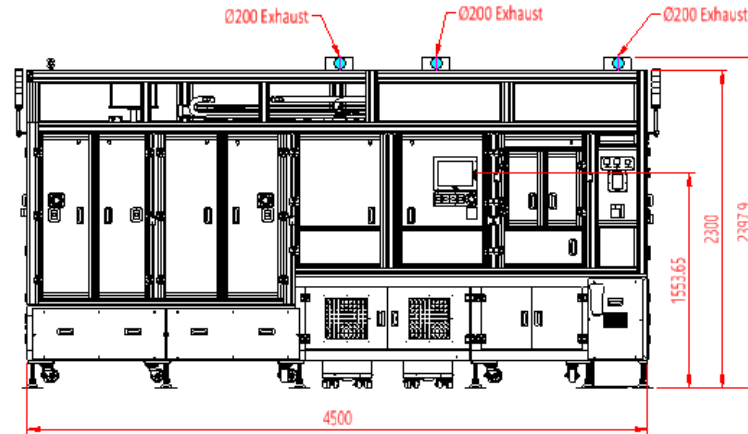
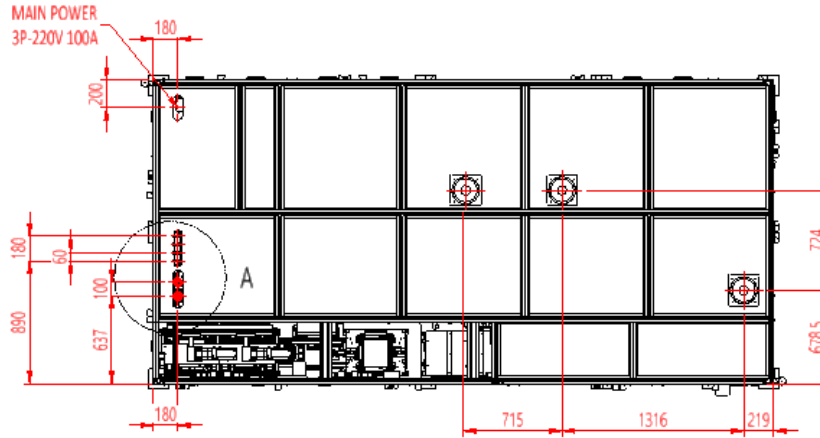
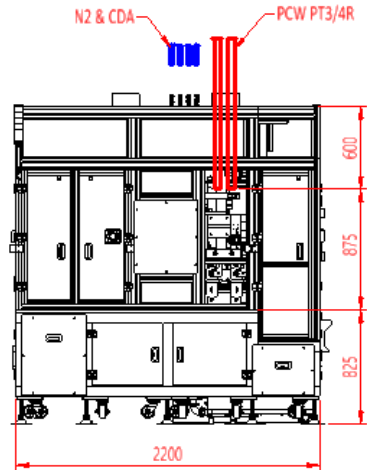
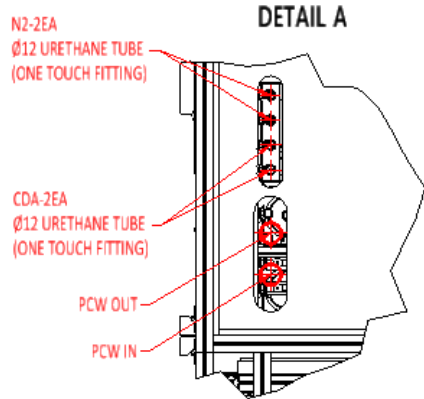
### 2. 투입 / 배출

- 투입 Hopper MLCC 장입량 : 10Kg  
=> 1Barrel 당 1Kg 처리 시 약 25min 내에 MLCC 10Kg 처리 가능
- 배출 Tray MLCC 장입량 : 1.5Kg  
=> Tray 총 적재 가능 수량 : 16EA = MLCC 24Kg 적재 가능



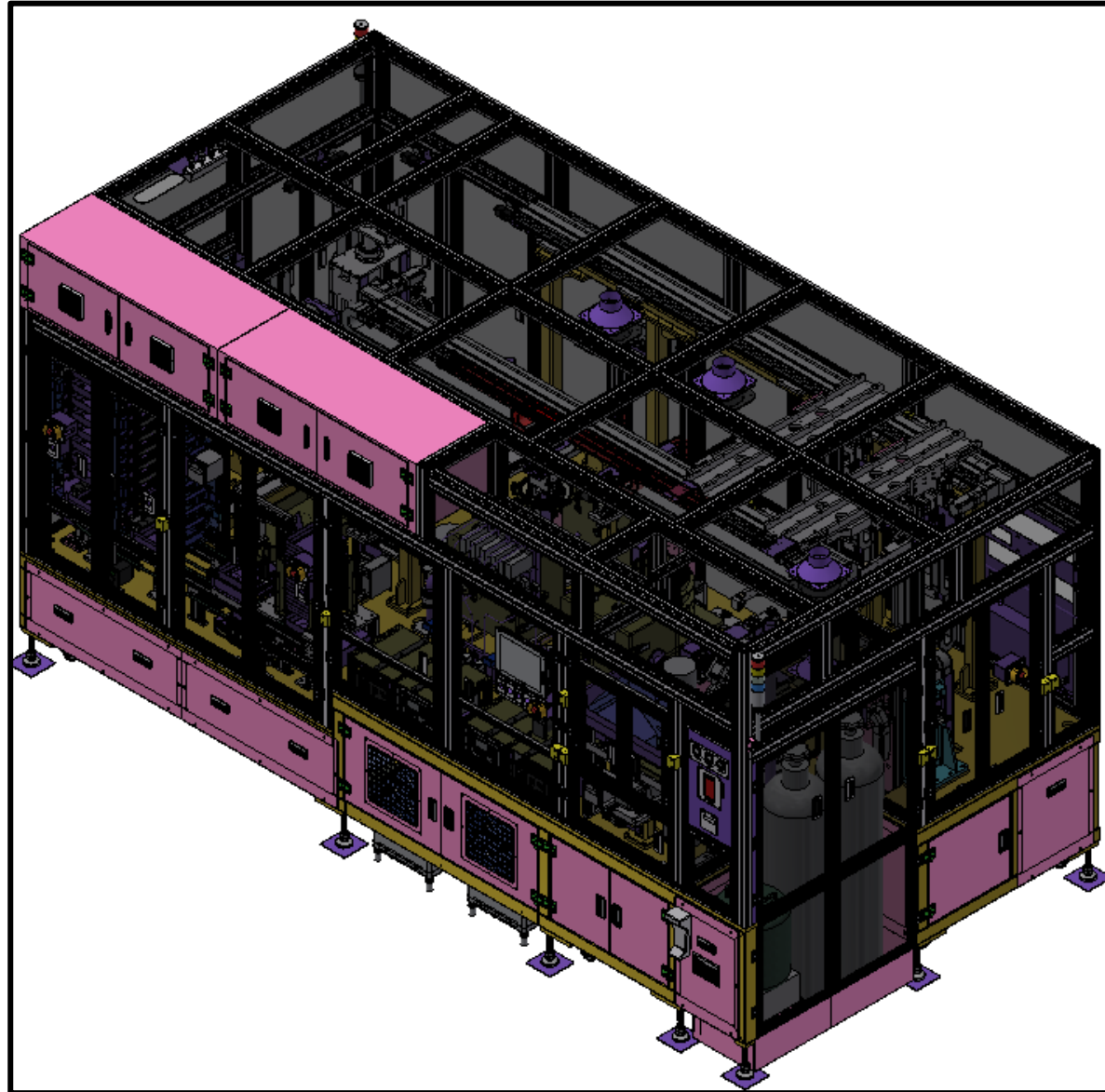
# AUTO BARREL PLASMA SYSTEM

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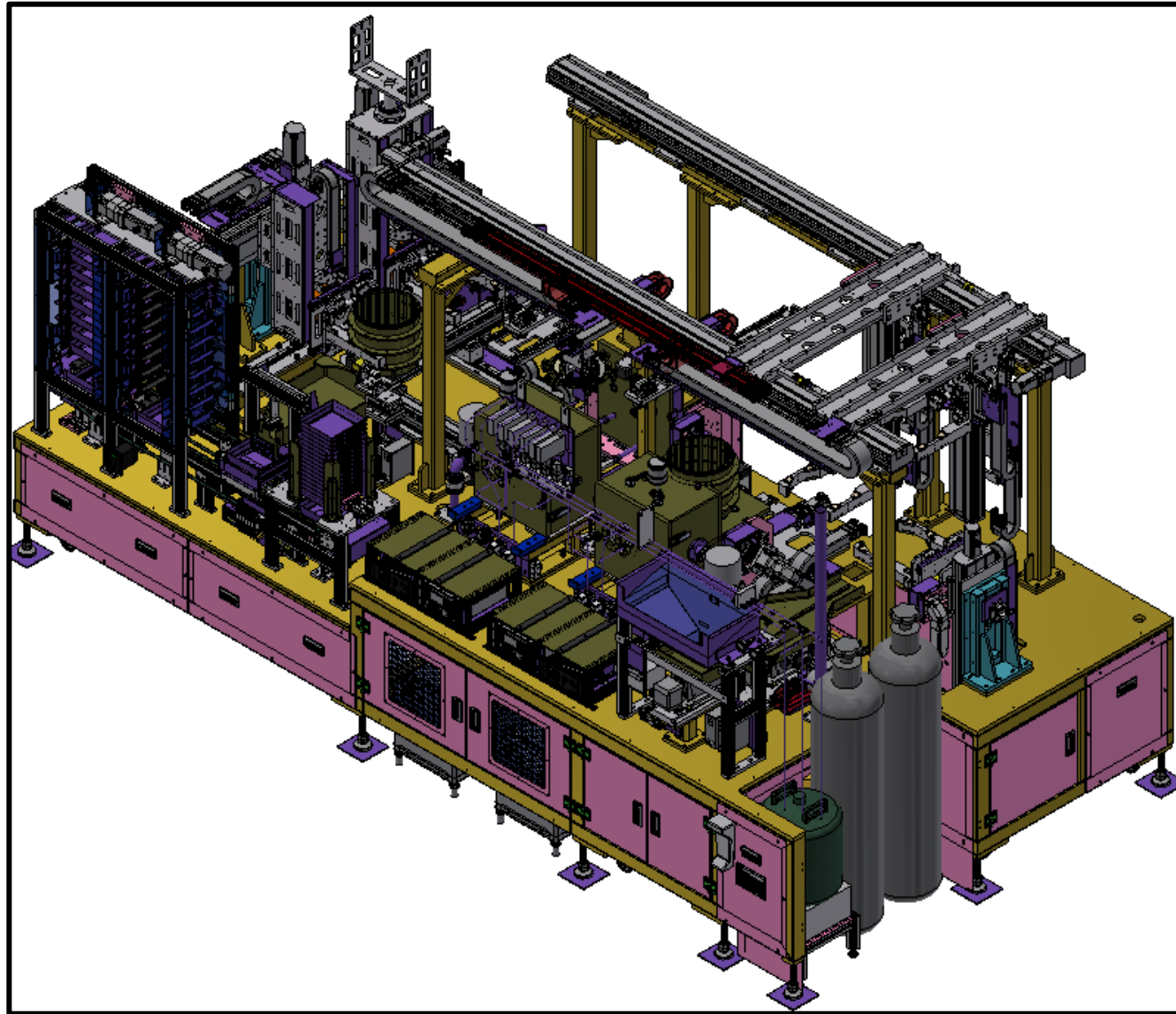


CLASS OF FIN SH	GENERAL TD. (MACHINE)	0000	AUTO BARREL IV MC	1			
▽	NOMINAL C. & TOL.	NO	DESCRIPTION	MATERIAL	Q'TY	STANDARD	PEN/MS
▽	SIZ	MAK 0.5	UMER 6	±1.03			
▽	1.50	6	30	±1.1			
▽	3.25	30	±1.1	±1.5			
▽	C.BE	±1	3P	±0.2			
▽	3'S	1000	±0.3				
▽	100	±0.8					
▽	200	±1.5					
▽	300	±2.0					
▽	400	±2.5					
▽	500	±3.0					
▽	600	±3.5					
▽	700	±4.0					
▽	800	±4.5					
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▽	1000	±5.5					
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▽	3000	±15.5					
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▽	3200	±16.5					
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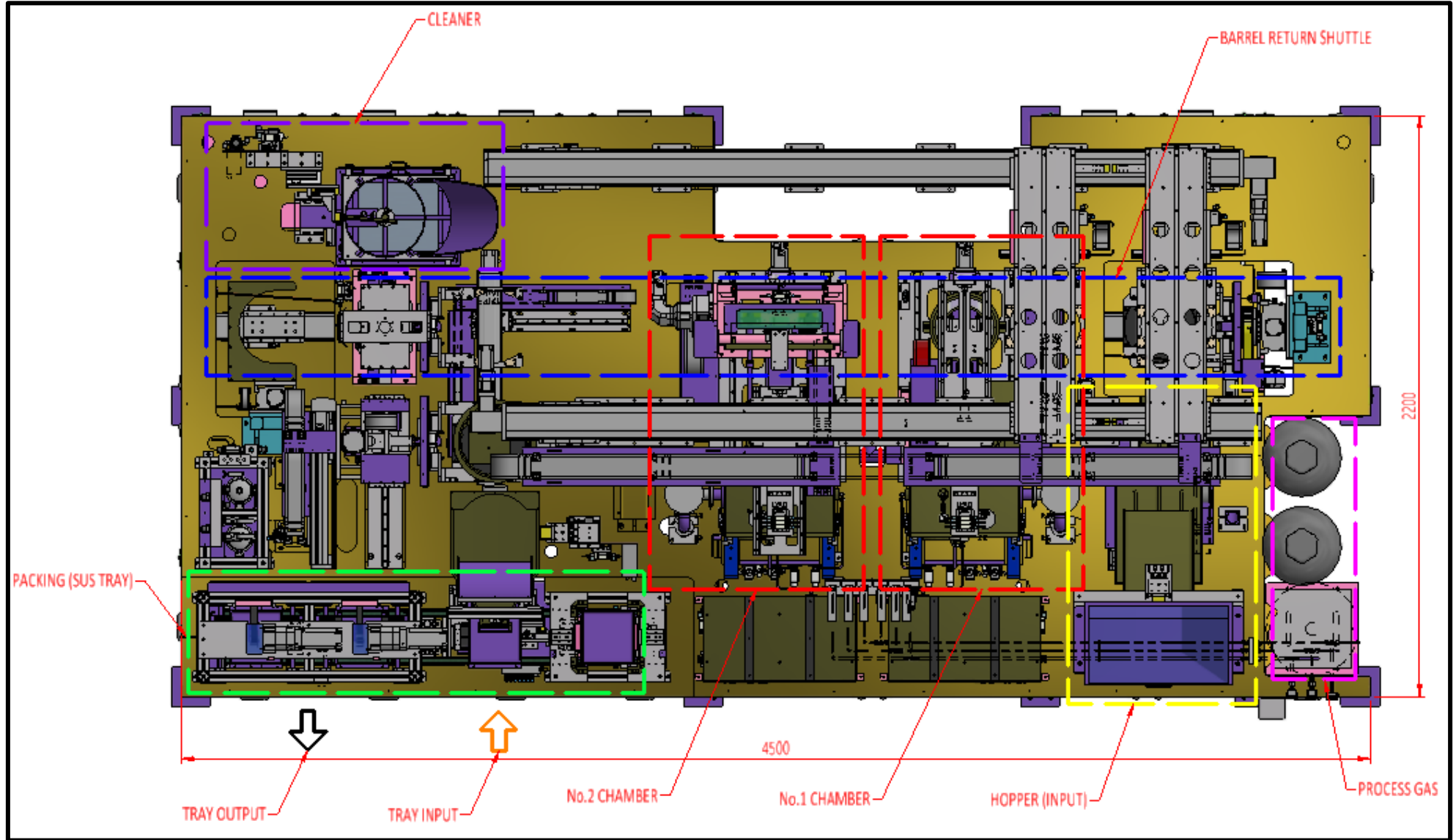
# AUTO BARREL PLASMA SYSTEM



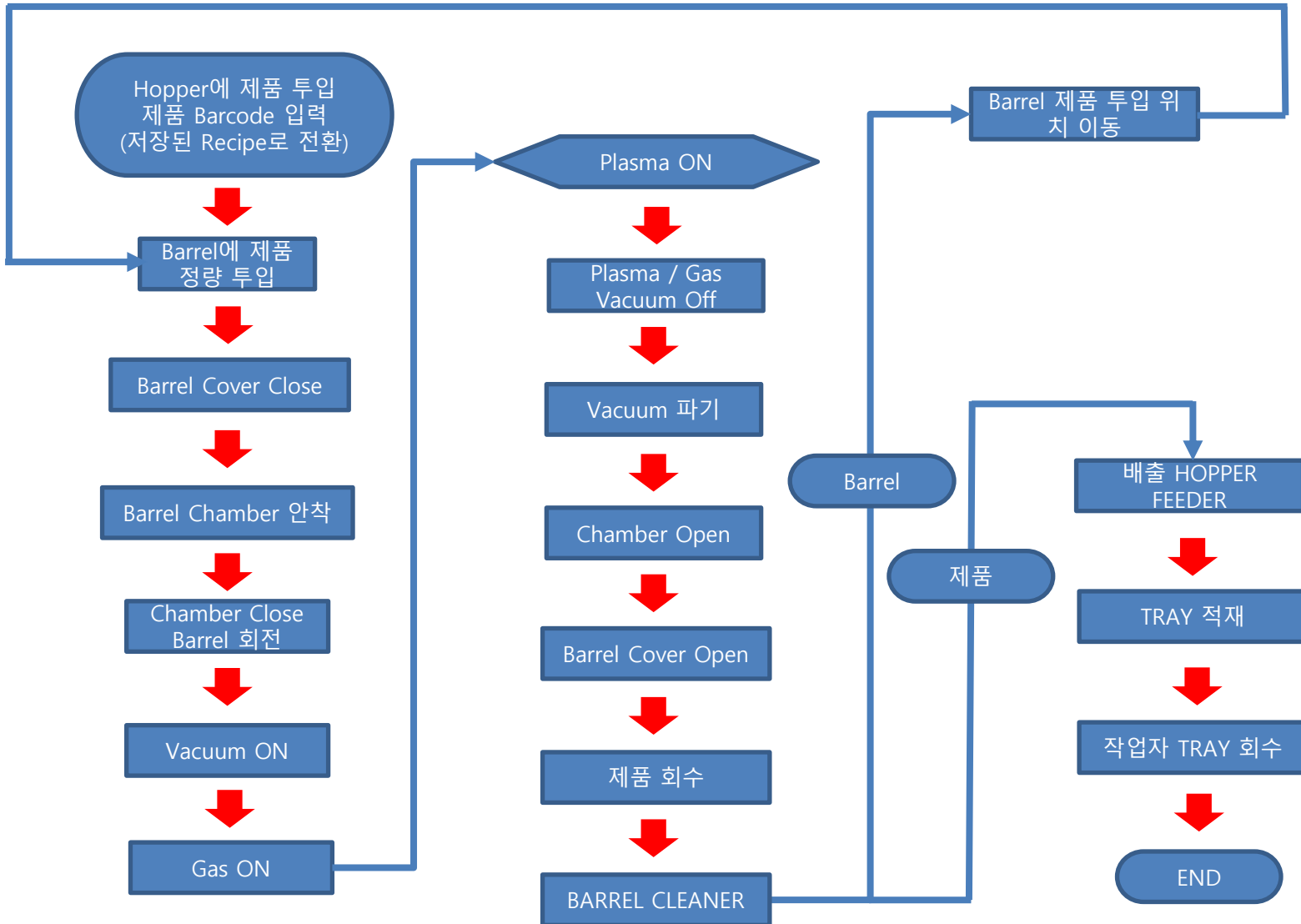
# AUTO BARREL PLASMA SYSTEM



# AUTO BARREL PLASMA SYSTEM



# AUTO BARREL PLASMA SYSTEM





# AUTO BARREL PLASMA SYSTEM

## General Specification

Enclosure Dimensions	Dimension	4,500(W) x 2,200(D) x 2,400(H)
Chamber	Max Volume	31.1 Liter
RF Power	Max Output	300W
	Frequency	12.56/13.56MHz ± Some MHz
Control	Software	PLC Control, Touch Screen
	Gas (C3F6, O2, Ar)	MFC Control , Max 500sccm
Vacuum Pump	Chamber Volume	Dry Pump
	Ultimate Vacuum	1 x E-3 Torr
Utility	Purge N2	1,000LPM
	Compressed Air	1,000LPM
	Cooling Air	500LPM
	Exhaust	Ø200 (3EA)
	Power Supply	3Phase, 220V, 100A
	PCW	0.4MPa , 50Liter/min

# AUTO BARREL PLASMA SYSTEM

## Important Component

VACUUM CHAMBER	Descriptions	Specifications
	Dimension	420(W) x 290(D) X 420(H)
	Material	Aluminum Anodizing
	Weight	54Kg
	Component	CHAMBER PROTECTION PLATE + O-RING
ELECTRODE	Descriptions	Specifications
	Dimension	124(Ø) x 271(H)
	Material	Aluminum Anodizing + Teflon
	Weight	4.4Kg
	Component	Gas Diffusion Hole
Teflon Insulator		

# AUTO BARREL PLASMA SYSTEM

## Other Components

UNIT	용도
RF Generator	Plasma power supply
RF Matching box	Controller that holds matching in order to generate plasma stably
MFC	A device that supplies a certain amount of gas
Dry pump	Vacuum generator
Gas detector	Gas detection device
Baratron gauge	Chamber internal vacuum value measuring device
Throttle valve	Chamber internal vacuum maintenance device

