



SPECIALTY GAS CABINET SYSTEM

*Maximum Safety, Efficiency, Reliability
and Ultra High Purity Solutions*



(주) 진 솔루션

1. Gas Cabinet System?

Gas Cabinet System is the system to store specialty gas cylinders safely and deliver proper volume and pressure of specialty gas to distribution systems (VMB and VMP) or Main Tool (POU, Point of Use) for Semiconductor, FPD, LED, Solar Cell manufacturing process.



Gas Cabinet System

- **Gas Cabinet Type** : Single, Dual, Bundle, BSGS, Bulk type available

- **Operational Controller Type**

1. Full Automatic Type Gas Cabinet
2. Semi Automatic Type Gas Cabinet
3. Manual Type Gas Cabinet

- **Controller Image by Type**



Full Automatic Controller



Semi Automatic Controller

2. Standard Model Specification



Gas Cabinet System

■ System Type : **Full automatic System**

1. 2-cylinders 1-process out
2. Automatic Switchover (= Automatic Changeover) type
3. Automatic Purge / Self Leak Check

■ Dimension

1. Standard Type : 796mm x 550mm x 2320mm
2. Special Type : 1000mm x 600mm x 2320mm (for explosion proof)

■ Weight : 270 kg

■ Power Source : 110~220VAC, 50~60Hz, Single Phase

■ Power Consumption : 1 Kw (2.5 Kw with Heating Controller)

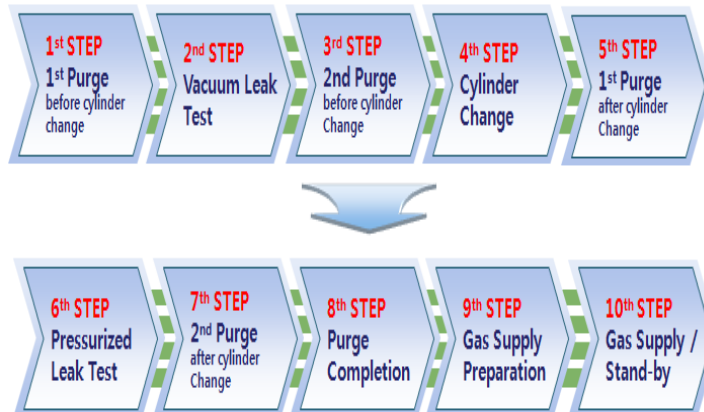
■ Pneumatic Control : 70~90 psig CDA or N2 CDA or N2

■ Enclosure Exhaust Size : 4"

■ Safety Options

Valve Shutter, Weight Scale, UV/IR Sensor, High Temperature Sensor, Sprinkler, Gas Leak Detector, Smoke/Fire Sensor, Line Heater, Heating Jacket, Heating Controller, Auto Guard, Exhaust Damper, Excess Flow Switch, Z-Purge Sensor, Door Sensors, etc.. Available!

3. System Function Specification



■ Safety

1. Safe and stable Delivery of Process Gas
2. Customized Interlocks
3. Reliable & High Performance PLC Based System
4. Emergency Shutdown

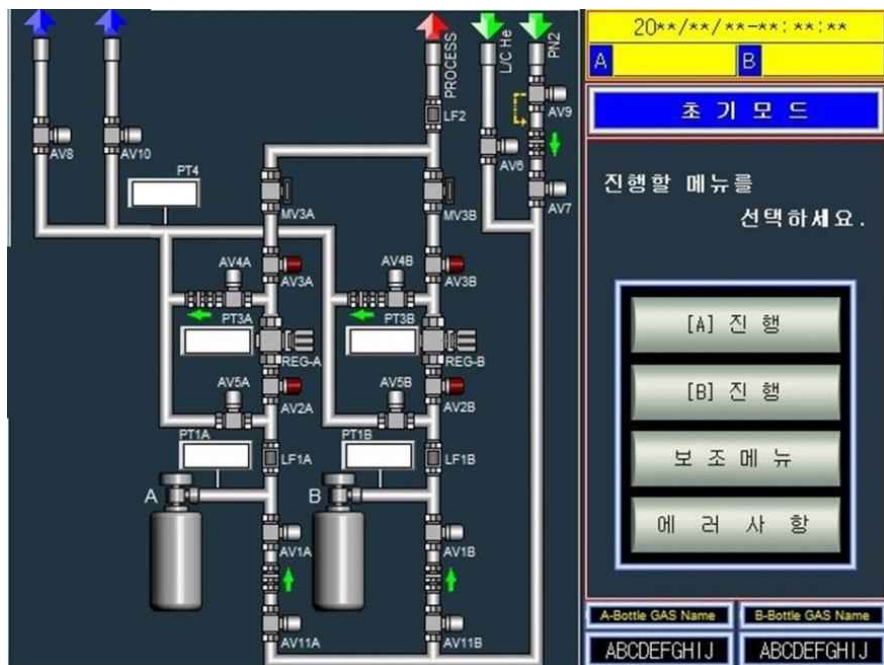
■ Software & Function

1. Automatic Auto Purge / Self Leak Check
2. Automatic Switchover (Auto Changeover)
3. Easy to Use Color LCD Touch Screen
4. User Friendly Interface
5. International Language (English) Support
6. Valve On/Off Counting
7. Password Protected (User & Supervisor Mode)

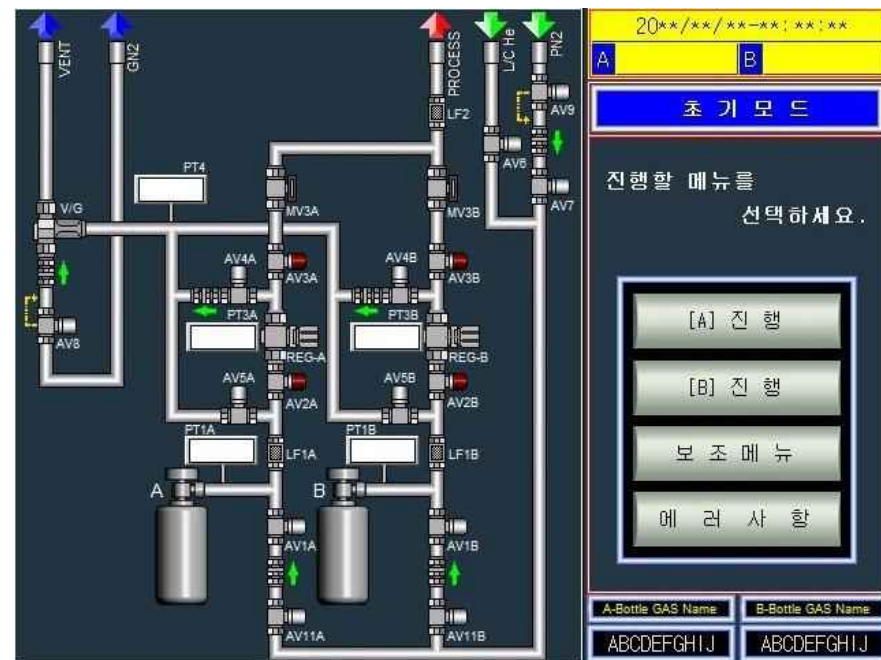
■ Others

1. Lower Cost-of-Ownership
2. Short Lead Time
3. Easy Installation / Excellent Maintainability

4. Main Touch Screen of Gas Cabinet

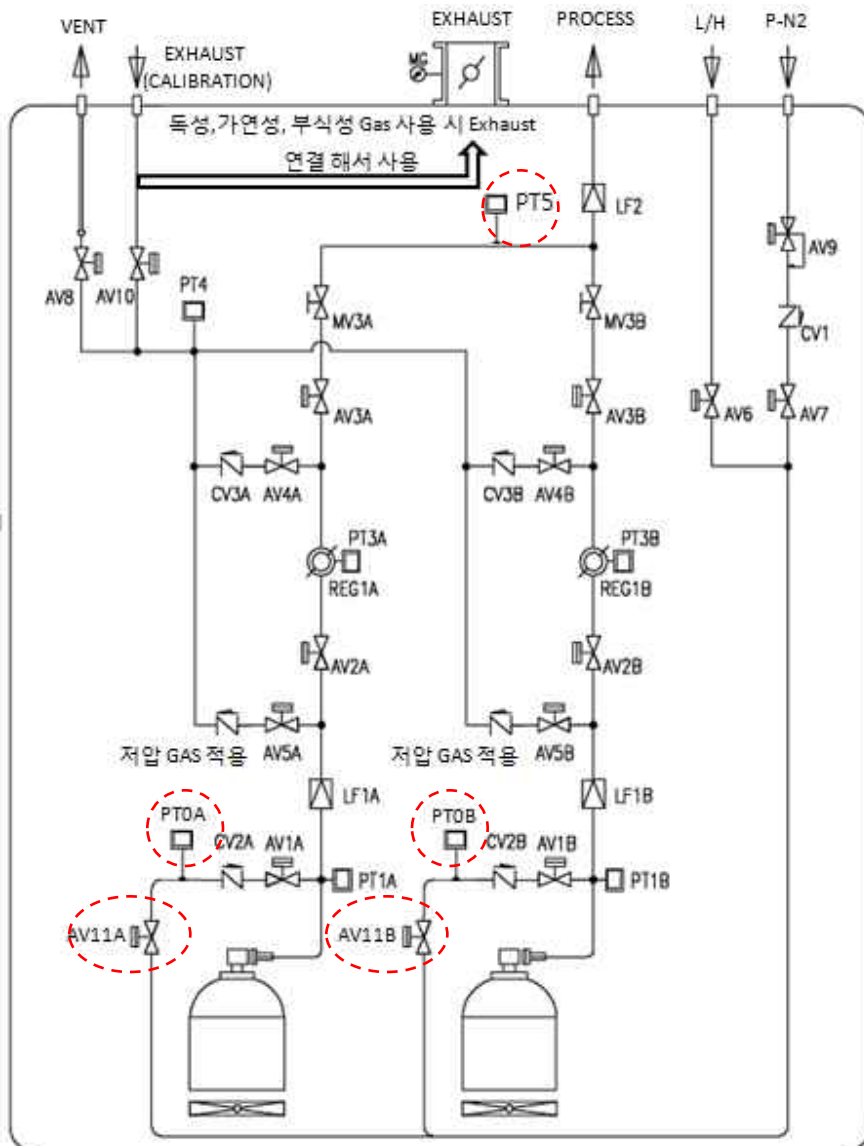


Vacuum Pump Vent Type Gas Cabinet



Vacuum Generator Vent Type Gas Cabinet

5-1. R&D for Safety & Convenience



■ AV11A/B Application (Option)

To protect gas mixing accident of Process Gas and Purge N2 by by-passing of AV1A/B.

■ PT0A/B Application (Option)

To check by-pass condition of AV1A/B and AV11A/B during purge sequence..

■ PT5 Application (Option)

1. To check Regulator Fail which is obstructed.
2. To check delivery side PT working condition (PT3A/B).
3. To check backward stream of gas from main tool.
4. To check gas line leak condition by monitoring PT3A/B and PT5 simultaneously. If the pressure difference between PT3A/B and PT5, system recognizes as gas line leakage.

5-2. R&D for Safety & Convenience

❏ 3D Touch Screen

To provide user friendly operational environment such as 3-dimensional schematic of touch screen for easily checking Gas Cabinet working condition.

❏ PPE Setting and Display function by specialty gas

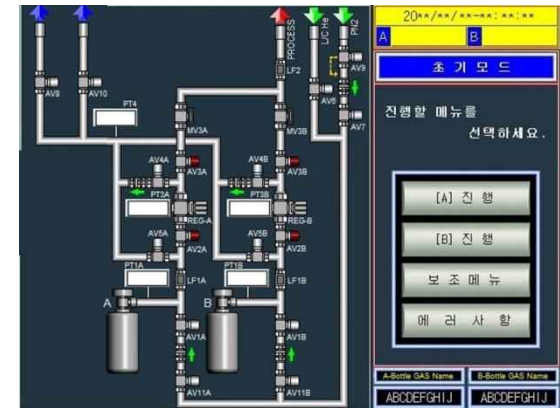
- Can select PPE list by gas on the configuration setting mode.
- Can display PPE list on touch screen on Gas Cylinder Change mode.

❏ Short Message Service (SMS)

- To provide Warning/Emergency message over SMS of mobile phone in the case of Emergency of the gas cabinet system.

❏ Pulse Vent

To protect parts of gas panel and reduce parts damage, system performs 'pulse vent' to vent high pressure remaining process gas by opening/closing AV4 and AV2 alternatively.



Personal Protective Equipment



5-3. R&D for Safety & Convenience

Barcode System

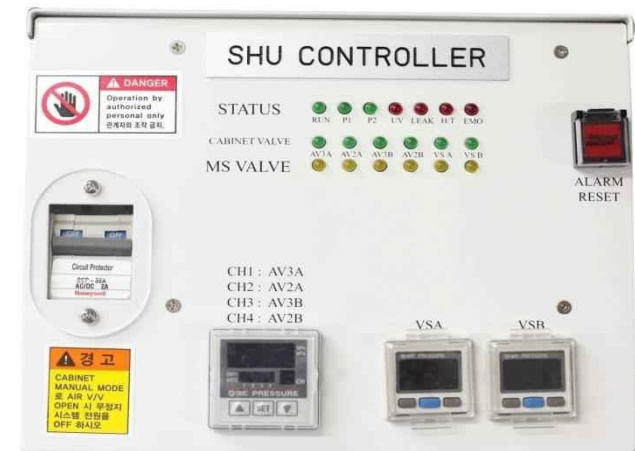
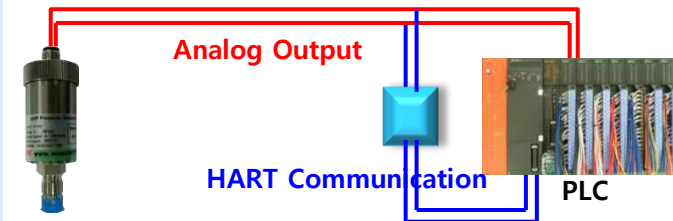
- Barcode provides cylinder information such as gas refill date, validity, LOT Number, etc..
- Provides Alarm for cylinder validity..
- If user installs incorrect cylinder, system recognizes it and gives an alarm.

Huntingless PT Sensor Application and Test (on Testing..)

- Accuracy : 0.25%
- Self-Test & Diagnosis Function
- Zero calibration by button to provide on-site convenience

Non-Stop Supplying System

- To protect stop providing process gas in the case of malfunction of gas cabinet safety options, such as H/T Sensor, U/V Sensor, Leak Detector, EMO.
- Continue to provide N2 to open air valve in the case of malfunction of gas cabinet safety options or no Power Supply (24V).



6. Valve Interlock for Safety

Enable to OPEN OPEN Condition	AV1	AV2	AV3	AV4	AV5	AV6	AV7	AV8	AV9	AV10	Remarks
	AV1	●	●	◇	▣	▣	●	●	●	●	
AV2	●	●	●	▣	▣	●	●	●	●	●	
AV3	◇	●	●	◇	▣	●	●	●	●	●	
AV4	●	●	◇	●	▣	●	●	●	●	●	
AV5	●	●	●	▣	●	●	●	●	●	●	
AV6	●	●	●	▣	▣	●	◇	●	●	●	
AV7	●	●	●	▣	▣	◇	●	●	●	●	
AV8	●	●	●	●	●	●	●	●	●	◇	
AV9	●	●	●	▣	▣	●	●	●	●	●	
AV10	●	●	●	▣	▣	●	●	◇	●	●	

● : Open
 ◇ : Not Open(Interlock)
 ▣ : Prior to open a valve, AV8 should be opened firstly

Section		Enable to OPEN											
		AV0	AV1	AV6	AV7	AV9	AV11	AV8	AV10	AV2	AV3	AV4	AV5
MODE	Pre Purge	X	○	X	○	○	○	○	X	○	X	○	○
	Change Cylinder	X	○	X	○	X	○	X	X	X	X	X	X
	Post Purge	X	○	○	○	○	○	○	X	X	X	X	○
	Calibration Mode	X	○	X	○	○	○	○	○	X	X	○	○
	Stanby Mode	○	X	X	X	X	X	X	X	○	X	X	X
	Supply Mode	○	X	X	X	X	X	X	X	○	○	X	X

7-1. Explosion Proof Options

Explosion Proof Pressure Transducer

1. Application Area : Zone 1, Zone 2
2. Explosion Proof Grade : **Ex d IIC T4**
3. Registration Number : 13-GA2BO-0209
4. Certification Institute : Korea Gas Safety Corporation



Explosion Proof Weight Scale

1. Application Area : Zone 1, Zone 2
2. Explosion Proof Grade : **Ex ia IIC T4**
3. Registration Number : 13-KB2BO-O557X
4. Certification Institute : Korea Testing Laboratory



Explosion Proof UV/IR Sensor

1. Application Area : N/A
2. Explosion Proof Grade : **Ex d IIC T6**
3. Registration Number : 12-AV2BO-0269X
4. Certification Institute : Korea Occupational Safety & Health Agency



7-2. Explosion Proof Options

Explosion Proof Gas Detector

1. Application Area : N/A
2. Explosion Proof Grade : **Ex d IIB+H2 T6**
3. Registration : 13-GA2BO-0154
4. Certification Institute : Korea Gas Safety Corporation



8-1. Gas Cabinet Safety Options

VALVE SHUTTER

- Automatic shut-off device which is installed on the head of Gas Cylinder.
- In the case of occurring Emergency situation during Gas Stand-by or Gas Supply, it automatically closes the shut-off valve on the cylinder head.



WEIGHT SCALE

- Device to check remaining gas volume by weight for low-pressure gas or liquefied gas.
- It notifies automatic switchover point for liquefied gas.



UV/IR SENSOR

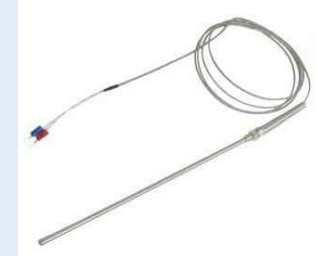
- Device for high speed detecting by UR/IR sensor instead of fire detector.
- It detects sparks or flame and then shutdown gas cabinet system to stop supplying process gas for safety.



8-2. Gas Cabinet Safety Options

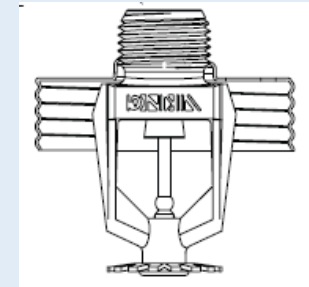
HIGH TEMPERATURE SENSOR

- To detect high temperature inside of gas cabinet by fire.
- It detects high temperature inside of gas cabinet and then shutdown gas cabinet system to stop supplying process gas for safety.



SPRINKLER

- Device to provide water to extinguish fire in the case of detecting over 72 °C temperature of inside of Gas Cabinet by fire or other some reasons.



GAS LEAK DETECTOR

- Device to prevent serious accidents which might be caused by unexpected gas leaks by detecting a variety of gases in gas cabinet system for the process of producing or consuming flammable gases and toxic gases.



8-3. Gas Cabinet Safety Options

SMOKE/FIRE SENSOR

- Device to detect smoke in the case of fire inside of gas cabinet by explosive and flammable gas.
- It detects smoke and then shutdown gas cabinet system to stop supplying process gas for safety.



HEATING LINE

- Gas Line (SUS Tube) heating device to increase gas volume of liquefied gas and provide process gas at stable pressure and flow.
- It is suitable for low-pressure and liquefied gas.



HEATING JACKET

- Gas Cylinder heating device to increase gas volume of liquefied gas and provide process gas at stable pressure and flow.
- It is suitable for low-pressure and liquefied gas.



8-4. Gas Cabinet Safety Options

AUTO GUARD

- When properly installed and operated, Auto Guard connection cover enhances specialty gas operations by preventing accidental disconnection of a hazardous gas cylinder from CGA pigtail of gas cabinet system.
- It is suitable for explosive and toxic gas cylinder.



EXHAUST DAMPER

- To protect users from any gas leak such as hazardous gas or fumes of internal utility of gas cabinet system.
- The cabinet must be connected to a properly designed exhaust system that is continuously operated in order to provide a safe environment.



EXCESS FLOW SWITCH

- If the flow rate of process gas line is exceeded some level, it gives signal to PLC to make warning for user notification.



8-5. Gas Cabinet Safety Options

Z-PURGE SENSOR

- Device checks N2 pressure and provides pressurized N2 to protect fire and explosion by spark inside of operational controller in the case of explosive or flammable gas leak.
- By making a little more high pressurized condition by N2 inside of controller, it protects inflow of leaking gas from outside of controller.

DOOR SENSOR

- Device to check door open/close condition for Gas Cabinet Door or Controller Door.
- If Gas Cabinet Door or Controller Door is opened, Warning pop-up message displays on the touch screen and makes a beep sound to notify.

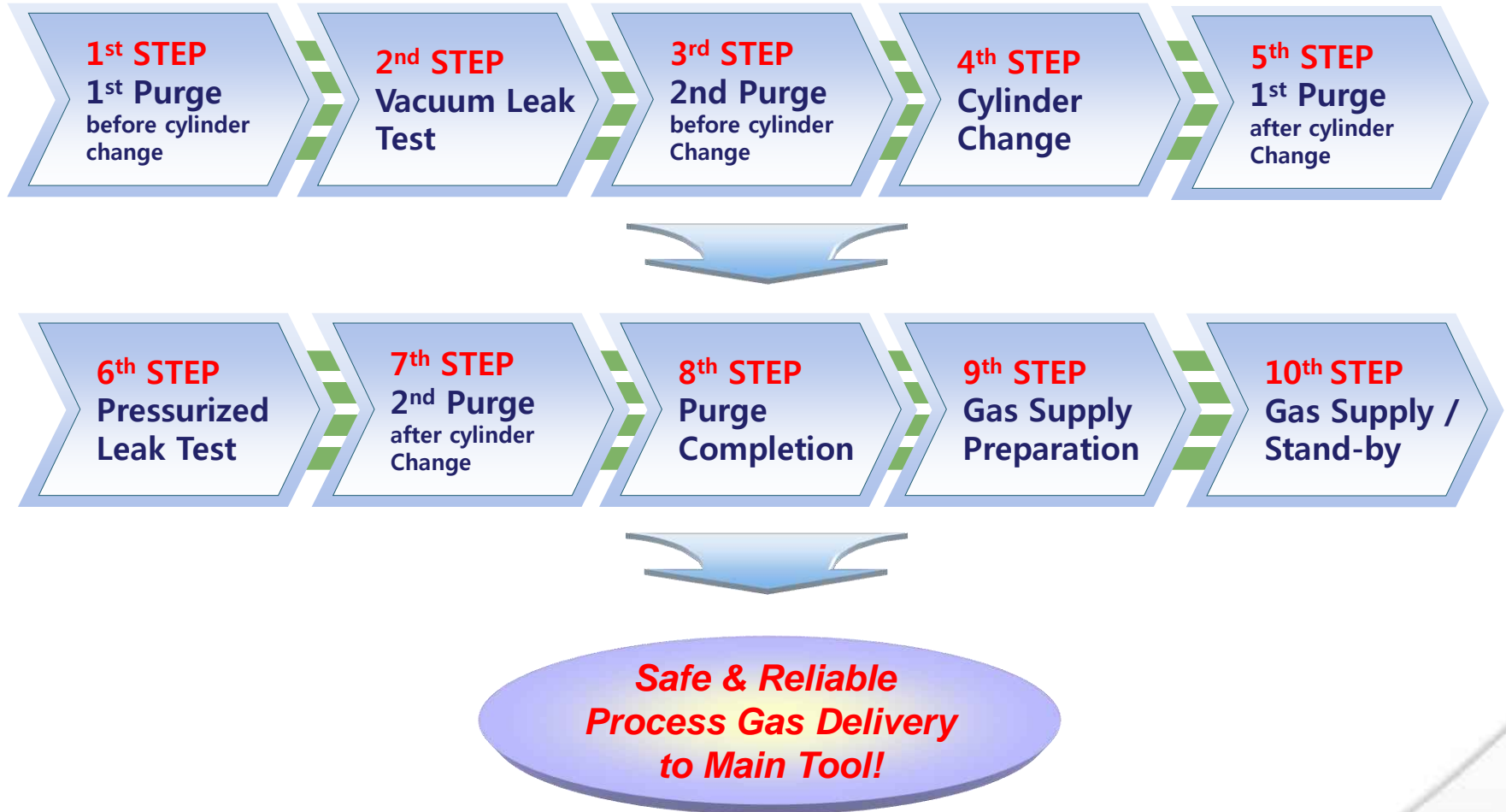


POWER OUTAGE/DIP PROTECTION DEVICE

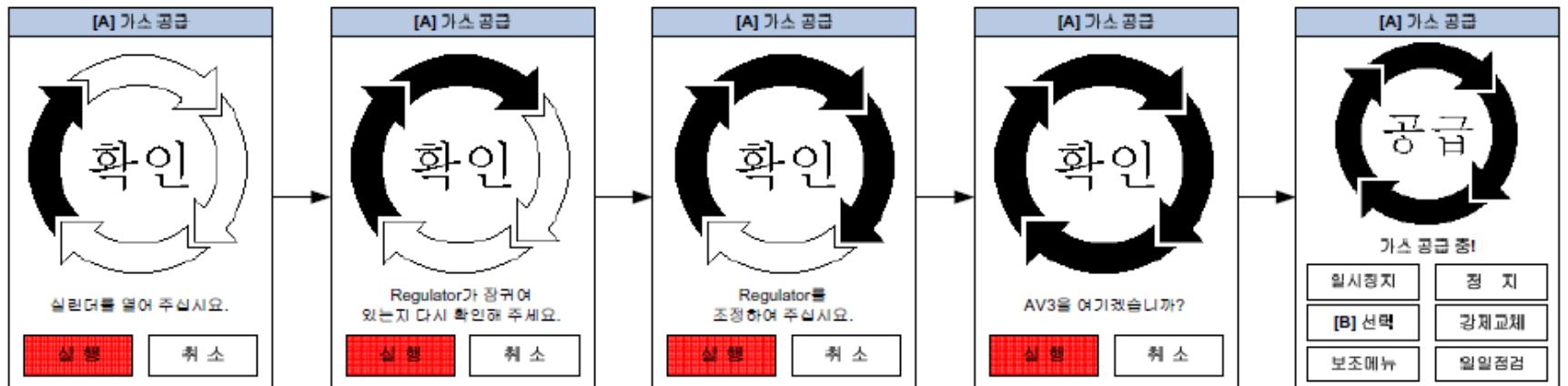
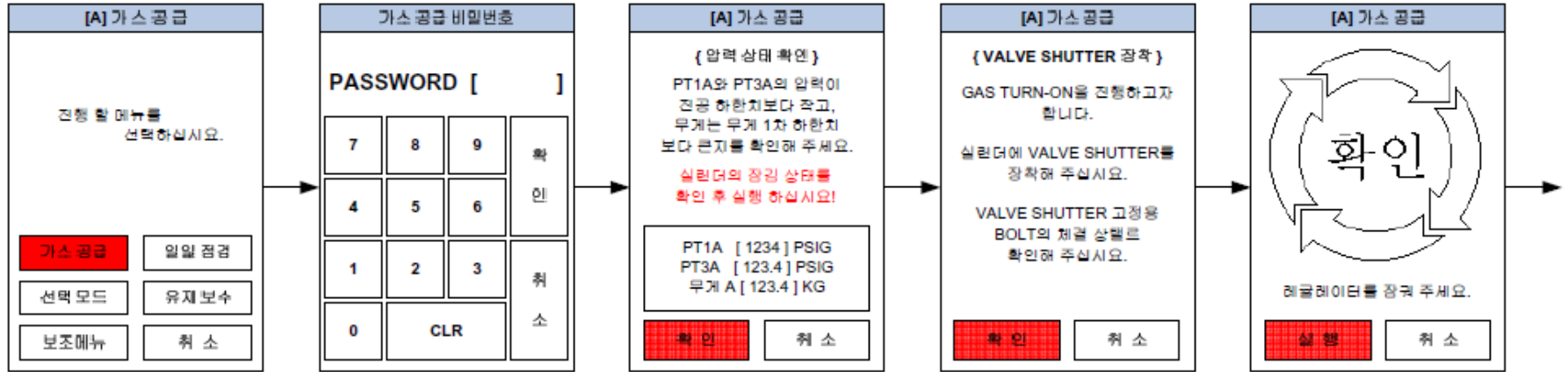
- Device to supply power stably by protecting magnetic Contractor's trip in the case of voltage sag (dip) or interruption (outage)
- No battery needed to operate and no maintenance required.



9-1. Operational Sequence



9-2. Purge Completion → Gas Supply

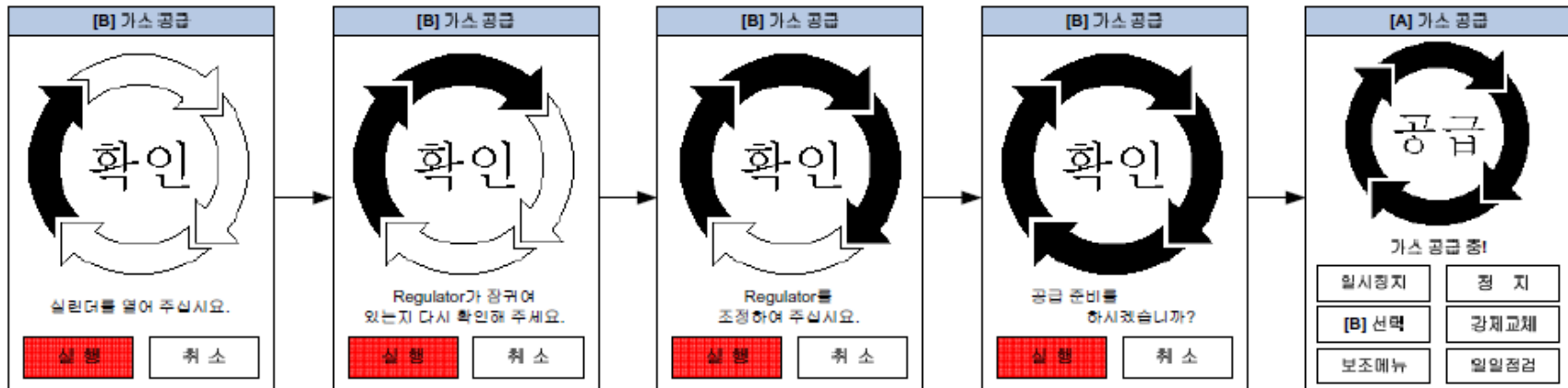
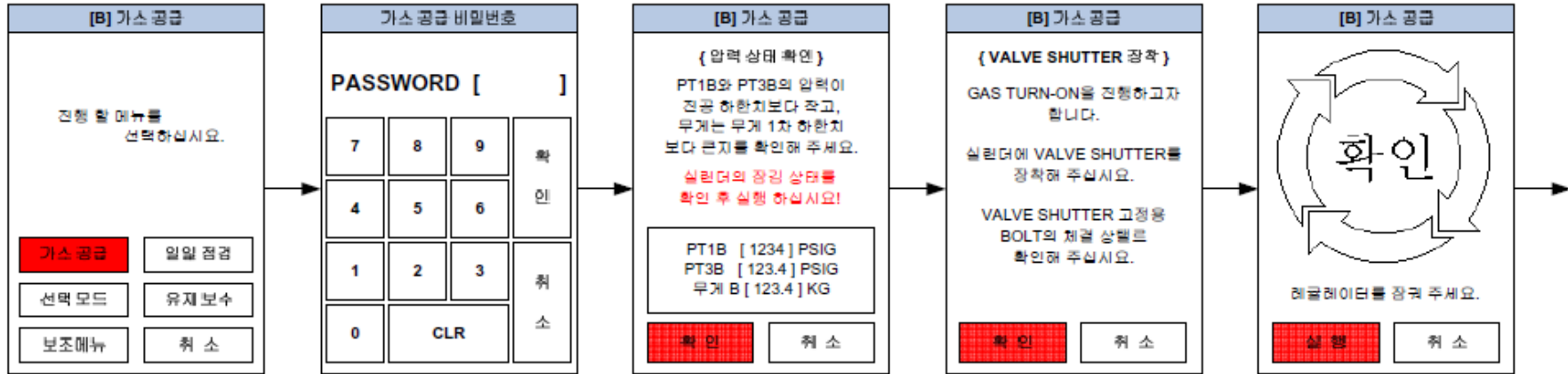


PT1 > 1차 하한치 경우 다음 STEP 진행

PT3 > 하한치 경우 다음 STEP 진행

*"실행"KEY를 누르면 AV30이 열리면서 가스가 공급된다.

9-3. Purge Completion → Stand-By

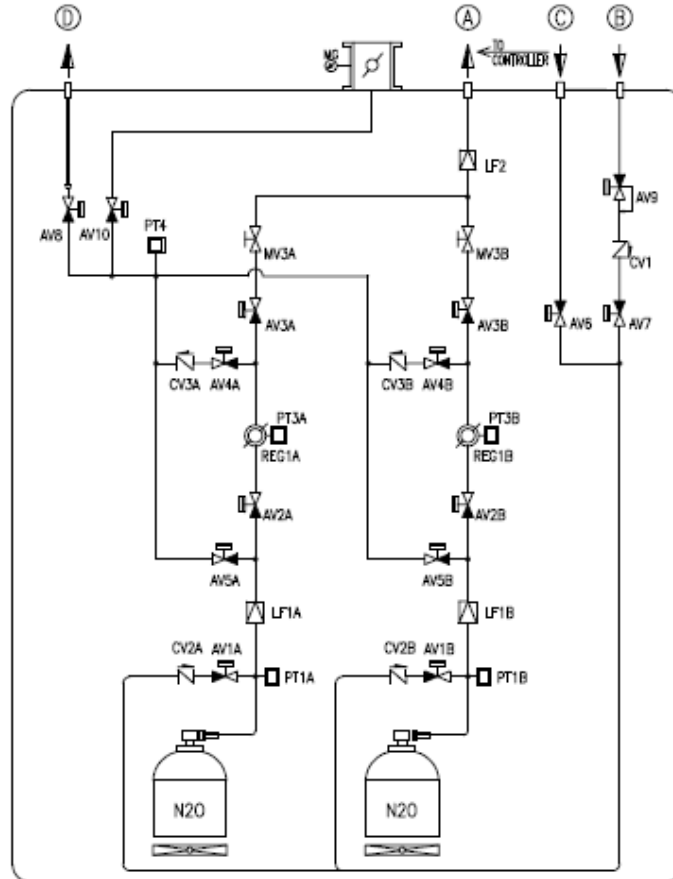


PT1 > 1차 하한치 경우 다음 STEP 진행

PT3 > 하한치 경우 다음 STEP 진행

10-1. Gas Cabinet Schematic Drawing

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Rev. No.	Revision Note	Date	Signature	Checked
1	APPROVAL			
2				
3				

- MANUAL VALVE
- BLEED VALVE
- AIR VALVE
- CHECK VALVE
- PRESSURE GAUGE
- PRESSURE TRANSDUCER
- REGULATOR
- VACUUM GENERATOR
- BLOCK VALVE
- FILTER
- DAMPER
- WEIGHT SCALE
- VALVE SHUTTER

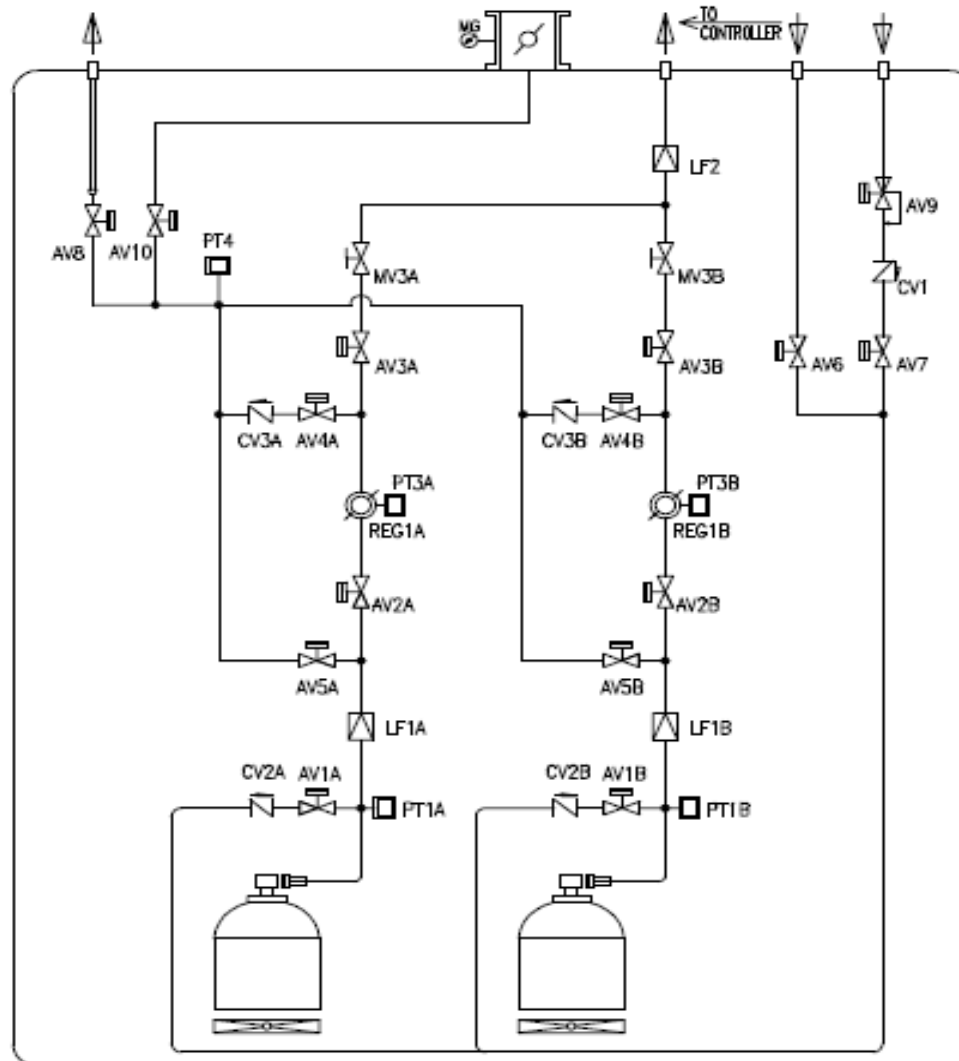
NO.	PART NO.	DESCRIPTION	SPECIFICATION	MAKER	QTY
13.		DAMPER	4" SUG304	JIN	1EA
12.		HEAT & CONTROLLER	HEATING LINE, JACKET 400W	JIN	1SET
11.		WEIGHT SCALE	250 x 200 x 150kg	SEIKO	3EA
10.	CGA	CGA CONNECTOR	-	FRIMET	3EA
9.	REG1A,B	REGULATOR	8581-00050PMMAR1200EX	YOKUHO	3EA
8.	MV3A,B	MANUAL VALVE	KD4075-VFC-10-SET	KITZ	3EA
7.	AV3	FLUID VALVE	KD4075-VFC-100-EP	KITZ	1EA
6.	AV2A,B	3-WAY AIR VALVE-LWR	KD4075-VFC-EP	KITZ	6EA
5.	AV1A,B	3-WAY AIR VALVE-100H	KD4075-VFC-EP	KITZ	6EA
4.	PT3A,B, PT4	PRESSURE TRANSDUCER	(PT300V-100CT(-15)-250P30)	OMTECH	3EA
3.	PT1A,B	PRESSURE TRANSDUCER	(PT300V-100CT(-15)-250P30)	OMTECH	3EA
2.	LF1A,LF2	LINE FILTER	W520S8002	EVTECH	3EA
1.	CV1, CV2A, CV2B	CHECK VALVE	6L-CW4VM-F-20	SHANGHAI	3EA
NO.	PART NO.	DESCRIPTION	SPECIFICATION	MAKER	QTY

GAS	DESCRIPTION	SIZE	TYPE	MATERIAL
A	PROCESS OUT N2O	1/4"	TUBE STUB	316LP EP
B	PURGE N2	1/4"	TUBE STUB	316LP EP
C	LEAK CHECK He	1/4"	TUBE STUB	316LP EP
D	PUMP	1/2"	TUBE STUB	316LP EP

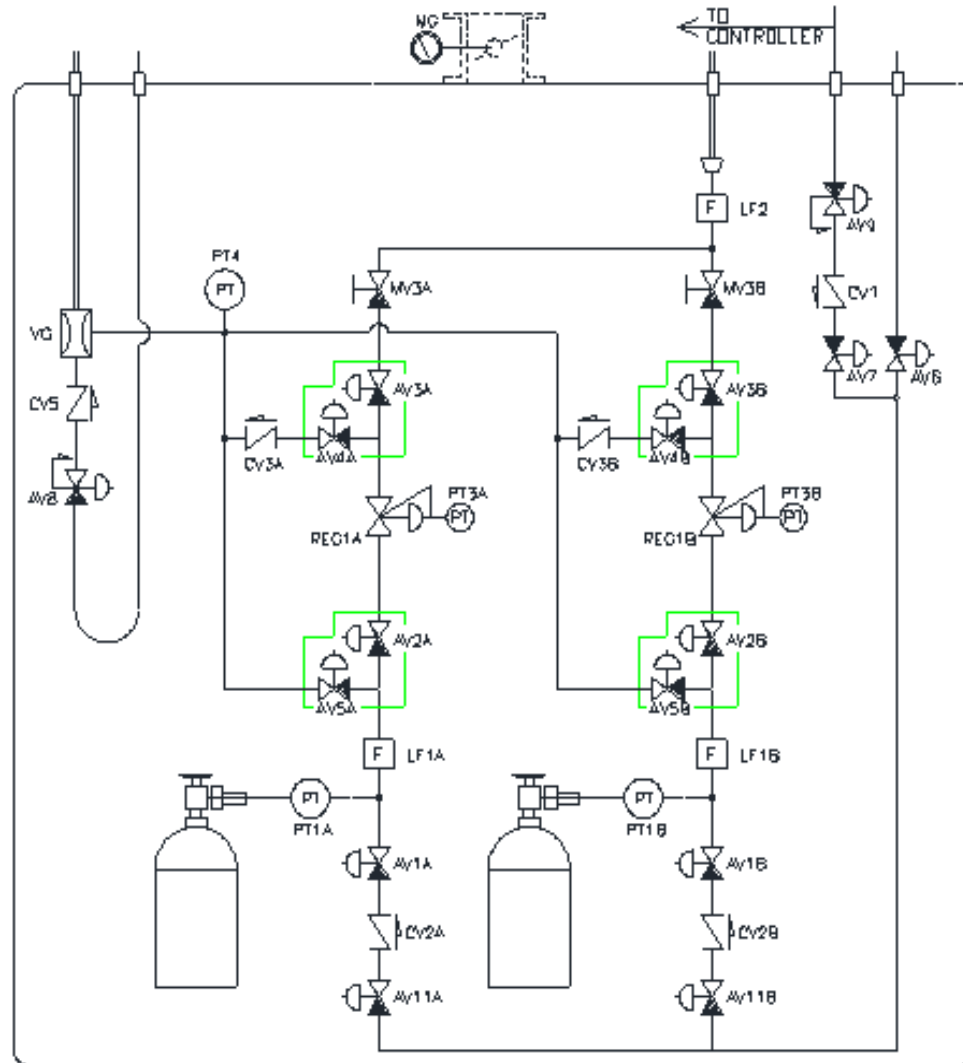
OPTION SHEET											
GAS	SEC. SHUT	HEAT. SHUT	HEAT. SHUT	LOW. SHUT	HEAT. SHUT	HEAT. SHUT	SEC. SHUT	SEC. SHUT	SEC. SHUT	SEC. SHUT	SEC. SHUT
N2O											

TITLE		2ST AUTO CHANGE GAS CABINET (N2O)				JIN SOLUTION, LTD.	
Designer	Yoon	Checked		Reviewed		Scale	N/S
Signature	K.Y.H					Date	2014.03.28
Date	03/26					DRW No.	PCS-2303-P02

10-2. Pump Vent Type Gas Cabinet

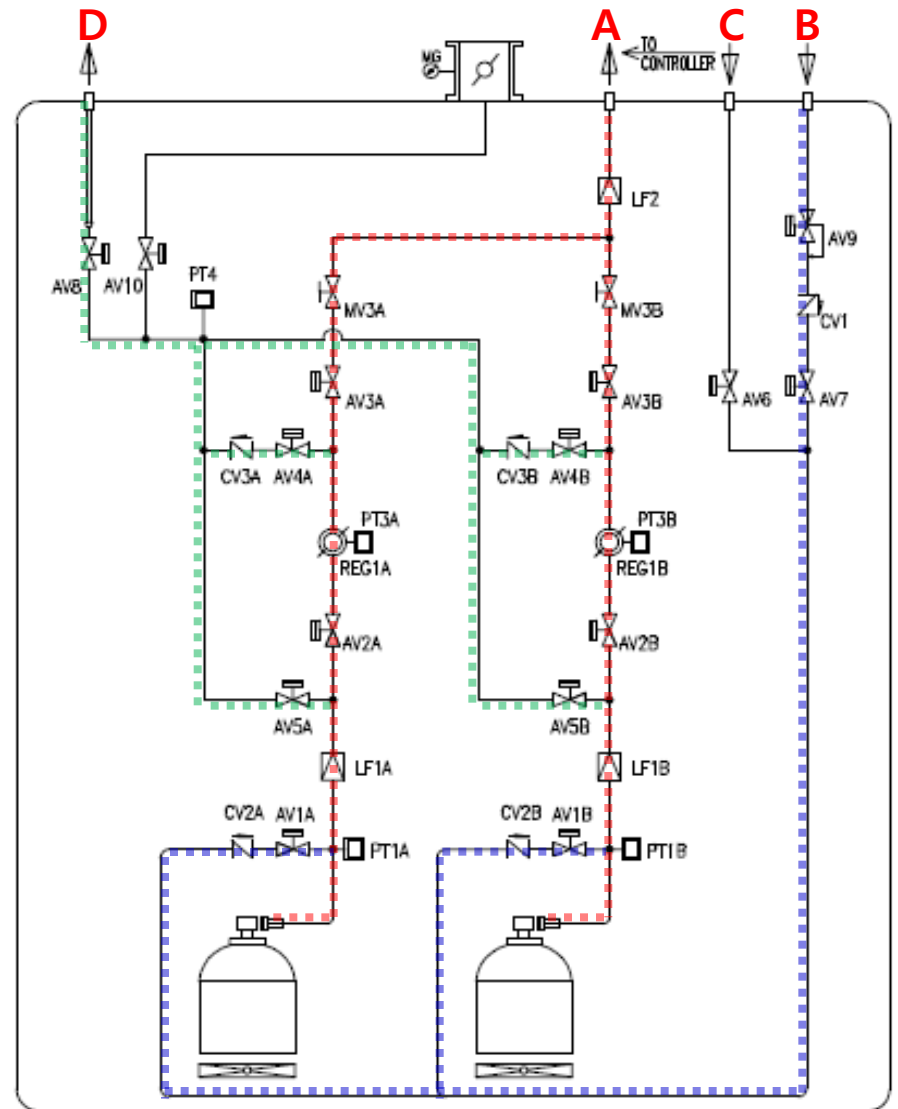
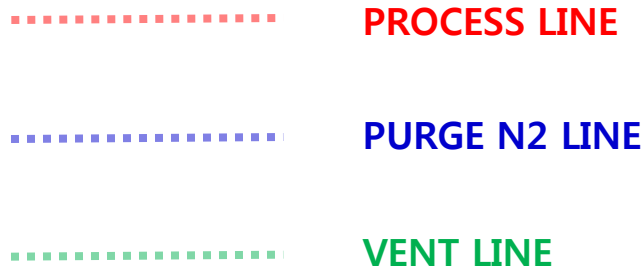


10-3. V/G Vent Type Gas Cabinet

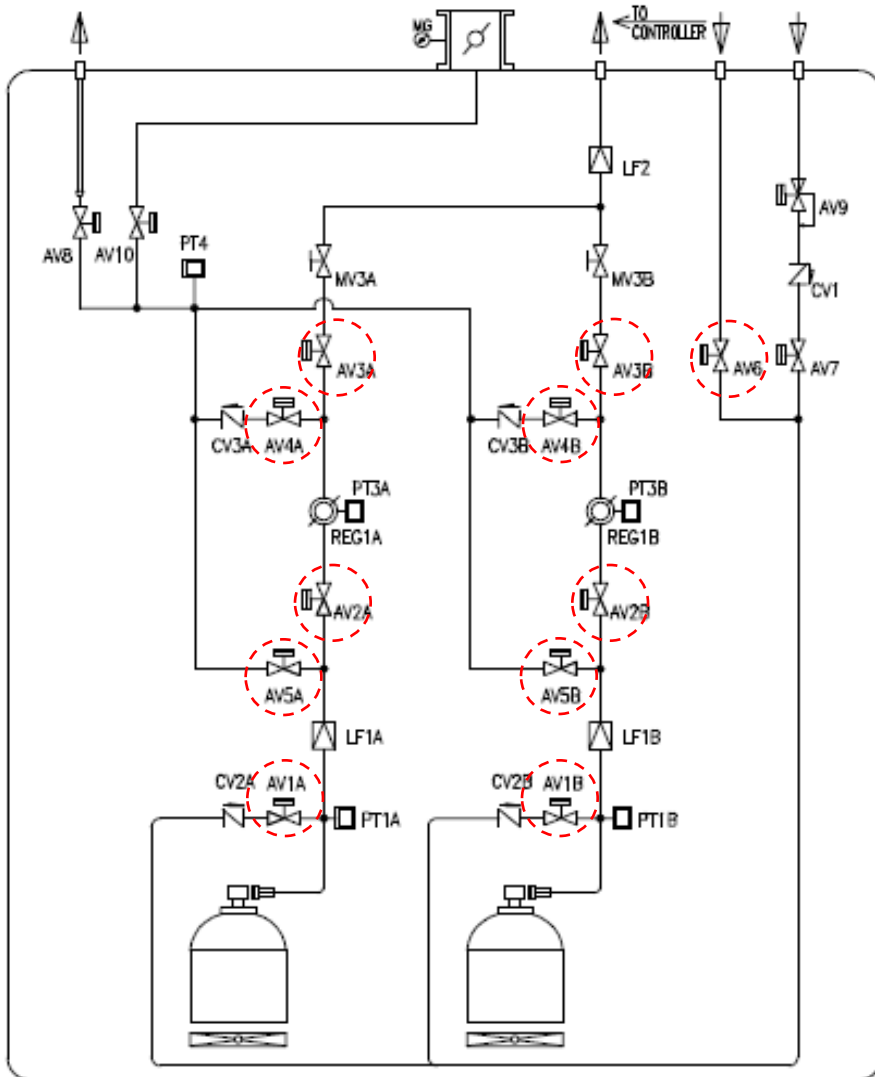


10-4. Utility & Gas Line for Gas Cabinet

- **A Process Out** : Gas Line for delivering Process Gas to VMB/P or Main Tool.
- **B Purge 'N2'** : Gas Line for purging Process Gas by N2 (Nitrogen) during purge sequence.
- **C Leak Check 'He'** : Gas Line for supplying He (Helium) gas to check the pressurized leak test.
- **D Vent** : Gas Line for removing and venting internal Process Gas and Purge N2 Gas.



11-1. Function of Each Component



■ AV1A/B : Final Purge Gas Isolation Valve

This pneumatic valve finally isolates and supplies the N₂ to purge gas line for gas cylinder change.

■ AV2A/B : Process Gas Supply Isolation Valve

This pneumatic valve controls the first isolation of supply process gas from gas cylinder.

■ AV3A/B : Process Gas Delivery Isolation Valve

This pneumatic valve isolate the final supply of process gas after regulator.

■ AV4A/B : Process Gas Delivery Vent Valve

This pneumatic valve permits flow out from the portion of the panel after regulator to vent.

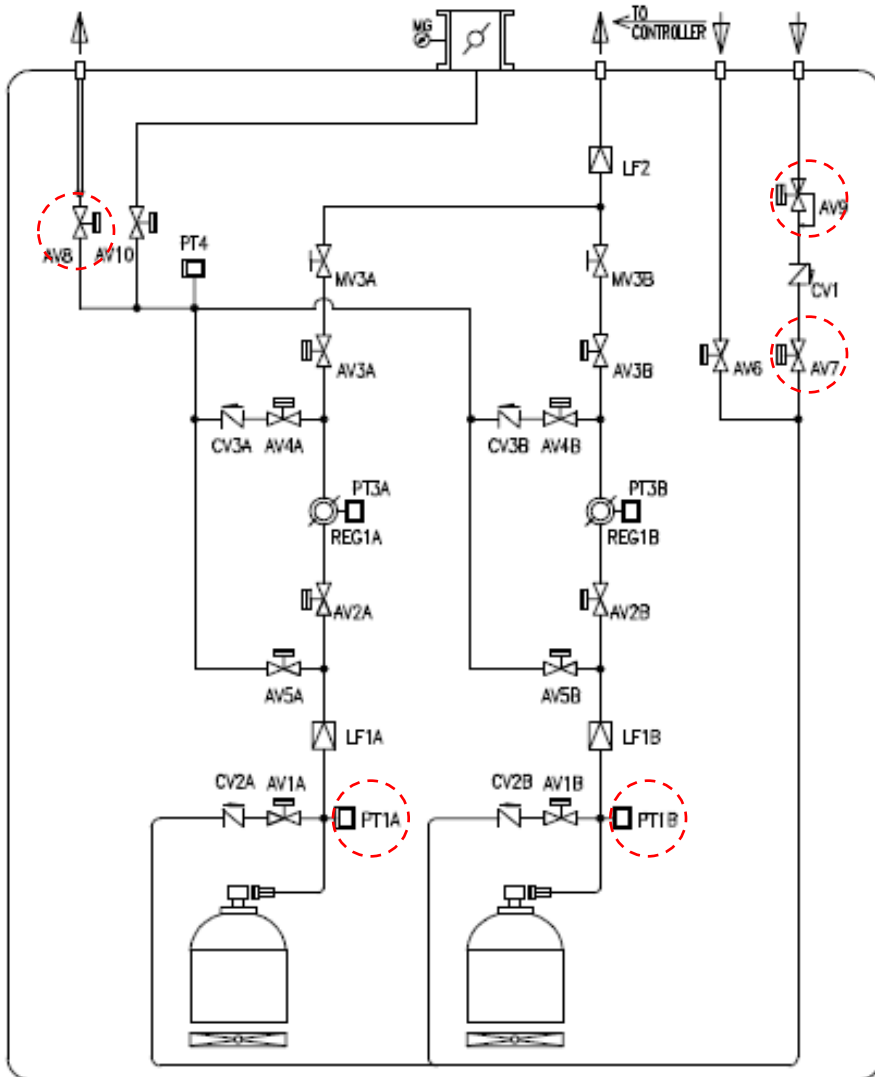
■ AV5A/B : Process Gas Supply Vent Valve

This pneumatic valve permits flow out from process gas and Purge N₂ to vent.

■ AV6 : Helium Leak Check Supply/Isolation Valve

To supply/isolate He gas to perform pressure leak check.

11-2. Function of Each Component



■ AV7 : Initial Purge Gas Supply/Isolation Valve

This pneumatic valve initially isolates and supplies the N2 to purge gas line from N2 utility line.

■ AV8 : Vacuum Pump Vent Valve

This pneumatic valve isolates and allows to vent process gas or purged gas by Vacuum Pump.

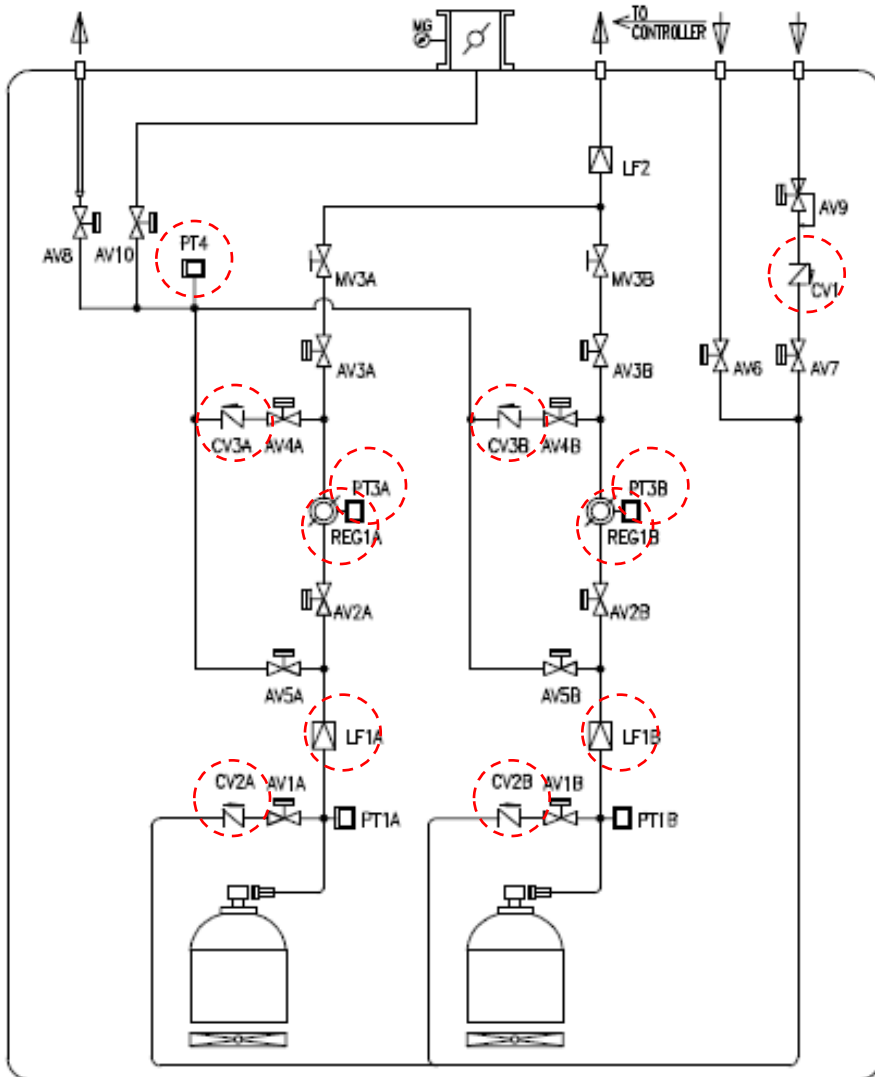
■ AV9 : Purge Gas Bleed Valve

This pneumatic valve is used to provide a trickle purge from an open pigtail connection during cylinder change. The valve has a small orifice which allows a continuous flow of purge gas when it is closed and AV1A/B and AV7.

■ PT1A/B : Supply Pressure Transducer

This transducer measures the real pressure of process gas supply. It makes a possible to display vacuum and pressure leak check condition on the touch screen.

11-3. Function of Each Component



■ PT3A/B : Delivery Pressure Transducer

This transducer measures the real pressure of process gas delivery. It makes a possible to display vacuum and pressure leak check condition on the touch screen.

■ PT4 : Vacuum Pressure Transducer

During purging, this transducer measures the processing status of vacuum pump to vent.

■ REG1A/B : Regulator

This regulator controls the pressure of the process gas to the process line.

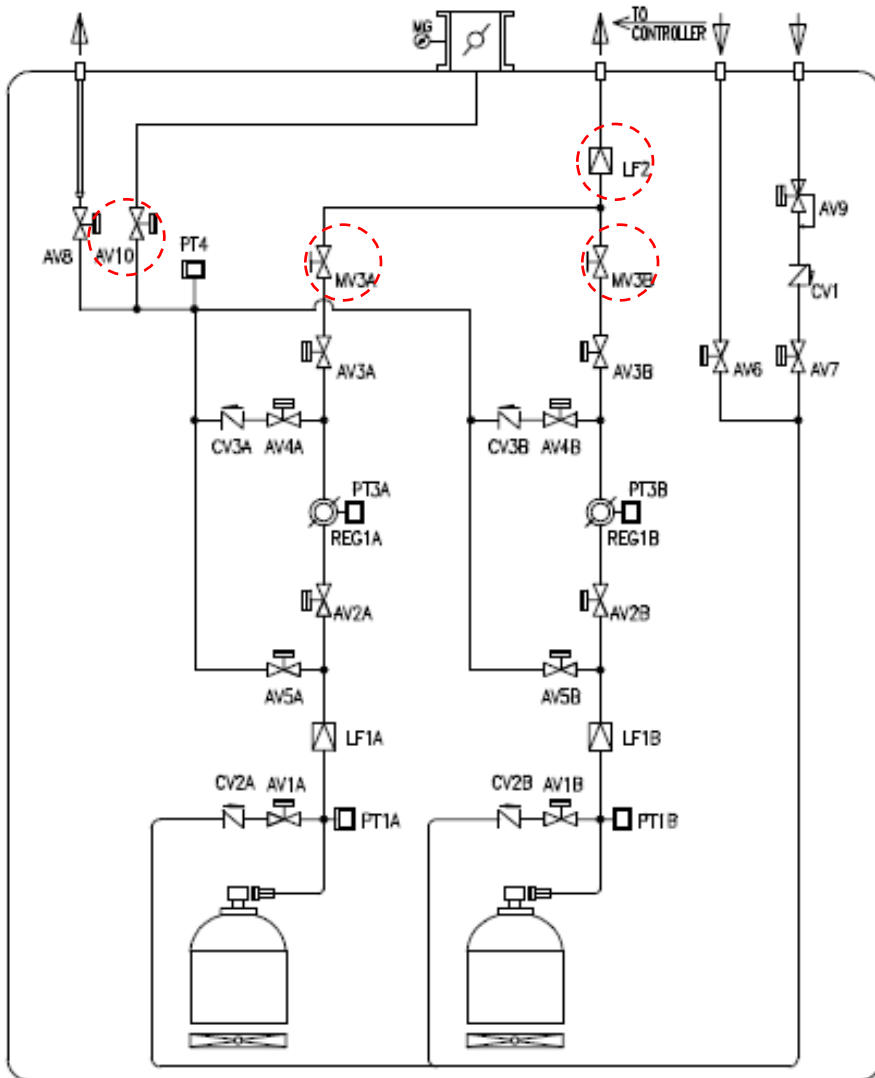
■ CV1/2/3 : Check Valve

Check valve protects parts damage and accident by backward gas flow.

■ LF1A/B : Line Filter

This initial filter catches particles from outlet of gas cylinder and protects damage of valves and regulator by particle.

11-4. Function of Each Component



■ LF2 : Final Line Filter

This final filter catches particle from initial line filters (LF1A/B) to delivery process gas to process line.

■ MV3A/B : Process Gas Delivery Isolation Manual Valve

This valve is to isolate and deliver process gas by manual at the final process line after Regulator. It is also useful for maintenance purpose for the double check.

■ AV10 : Calibration Valve

This pneumatic valve is to perform zero calibration for pressure transducers inside of gas cabinet system to make a atmosphere condition.

12-1. Main Option Configuration

MAIN 옵션 설정		3301x Module 11px	3301x Module 11px
Gas Leak Shutdown	Exhaust Fail	PUMP TYPE	MV1
UVIR Sensor	Cabinet Door S/W	Vacuum Generator	AV5
Hi-Temp Sensor	Control Door S/W	Pulse Vent	CV5
Excess Flow S/W	Weight	Valve Shutter	AV6
PT1 고압 Shutdown	Tare Weight	Auto Guard	MV10
Gas Leak Fault	NET Weight	Auto Damper	AV11
Heat Temp Fuse	Panel Heat	AV8/AV10 VENT	
Z-Purge Sensor	2'nd Heat	P I 7	
Low Pneumatics	Jacket Heat	PT3 VACUUM CHECK	
SUB PLC	자동진행 Heating		
	NOT SELECT		

12-2. Gas / Gas Cabinet Configuration

가스 사양 설정															
A Gas Name? [ABCDEFGHIJ]															
B Checking Time 설정?							D 자동진행 Vacuum 순서 설정? [1]								
Vacuum Checking Time? [123.0] 초							1. AV8 -> AV5								
Pressure Checking Time? [123.0] 초							2. AV8 -> AV5 --> AV1 --> AV11								
C AV8/AV4 VENT TIME 설정?							E 현재 시간 설정 ?								
AV8/AV4 VENT 간격 [123] 분							현재시간 20**년**월 **일 **시 **분								
AV8/AV4 VENT시 OPEN TIME [123.0] 초							설정시간 1234년12월 12일 12시 12분								
1	2	3	4	5	6	7	8	9	0	%	+	-	\$	CLR	ESC
A	B	C	D	E	F	G	H	I	J	K	L	M	/	BS	
a	b	c	d	e	f	g	h	i	j	k	l	m	.	▲	*
N	O	P	Q	R	S	T	U	V	W	X	Y	Z	◀	▼	▶
n	o	p	q	r	s	t	u	v	w	x	y	z	ENT		

12-3. Purge Configuration 1-A



설정 모드 1-A

20**/**/**-**-**-**:**

비밀번호

1	교환전 1차 배관청소 [1234]회	10	감압시험 시간 [1234]분
2	교환전 REG' 배관청소 [1234]회	11	질소공급 하한치 [1234]PSI
3	교환전 2차 배관청소 [1234]회	12	감압시험 안정시간 [1234]분
4	교환후 1차 배관청소 [1234]회	13	가압시험 안정시간 [1234]분
5	교환후 2차 배관청소 [1234]회	14	누출압력 변환치 [1234]PSI
6	가압시험 상한치 [1234]PSI	15	PLUSE VENT 횟수 [1234]회
7	가압시험 하한치 [1234]PSI	16	PLUSE VENT RANGE [-1234]PSI
8	진공상태 하한치 [-1234]PSI	17	수동 PURGE 진행 [1234]회
9	가압시험 시간 [1234]분	비밀번호를 입력하세요 [****]	

1	2	3	4	5	-	BS	▲	CLR	ENT	ESC
6	7	8	9	0	.	◀	▼	▶		

12-4. Alarm Level Configuration 2-A

설 정 모 드 2-A			고온경보 1-A	저온경보						
1	PT1A 고압	[-1234]PSI	11	PANEL HEAT 고온 [12]℃						
2	PT1A 1차 저압	[-1234]PSI	12	PANEL HEAT 설정 [12]℃						
3	PT1A 2차 저압	[-1234]PSI	13	PANEL HEAT 저온 [12]℃						
4	PT3A 2차 고압	[-123.0]PSI	14	JACKET HEAT 고온 [12]℃						
5	PT3A 1차 고압	[-123.0]PSI	15	JACKET HEAT 설정 [12]℃						
6	PT3A 1차 저압	[-123.0]PSI	16	JACKET HEAT 저온 [12]℃						
7	PT3A 2차 저압	[-123.0]PSI	17	2차배관 HEAT 고온 [12]℃						
8	무게 1차 경고	[123.0]Kg	18	2차배관 HEAT 설정 [12]℃						
9	무게 2차 경고	[123.0]Kg	19	2차배관 HEAT 저온 [12]℃						
10	TARE Weight	[123.4]Kg	20							
비밀번호를 입력하세요 [****]										
1	2	3	4	5	-	BS	▲	CLR	ENT	ESC
6	7	8	9	0	.	◀	▼	▶		

12-5. Calibration

JIN SOLUTION		조정 모드 - A			20**/**/**-**-**-**-**-**-**-**-**-**	
	최대값	Analog값	DISPLAY	OFFSET		
PT1A	1234 PSI	12.34	-1234 PSI	-123 PSI		
PT3A	123.0 PSI	12.34	-123.4 PSI	-12.0 PSI		
PT4	1234 PSI	12.34	-1234 PSI	-123 PSI		
W/I A	123.0 KG	12.34	-123.4 KG	-12.0 KG		

1	2	3	4	5	-	BS	▲	CLR	ENT	ESC
6	7	8	9	0	.	◀	▼	▶		

12-6. Major Part Lifetime Warning



EARLY WARNING SYSTEM

Valve	설정횟수	진행횟수	Valve	설정횟수	진행횟수
V/S A	-12345678	-12345678	V/S B	-12345678	-12345678
AV1A	-12345678	-12345678	AV1B	-12345678	-12345678
AV2A	-12345678	-12345678	AV2	-12345678	-12345678
AV3A	-12345678	-12345678	AV3B	-12345678	-12345678
AV4A	-12345678	-12345678	AV4B	-12345678	-12345678
AV5A	-12345678	-12345678	AV5A	-12345678	-12345678
AV11A	-12345678	-12345678	AV11B	-12345678	-12345678
AV6	-12345678	-12345678	AV9	-12345678	-12345678
AV7	-12345678	-12345678	AV7	-12345678	-12345678
AV9	-12345678	-12345678			

[* * * *]

1	2	3	4	5	-	BS	▲	CLR	ENT	ESC
6	7	8	9	0	.	◀	▼	▶		

12-7. Pressure Transducer QC Mode



QC MODE

1/1 DISPLAY

DATA CLEAR

모름

[****]

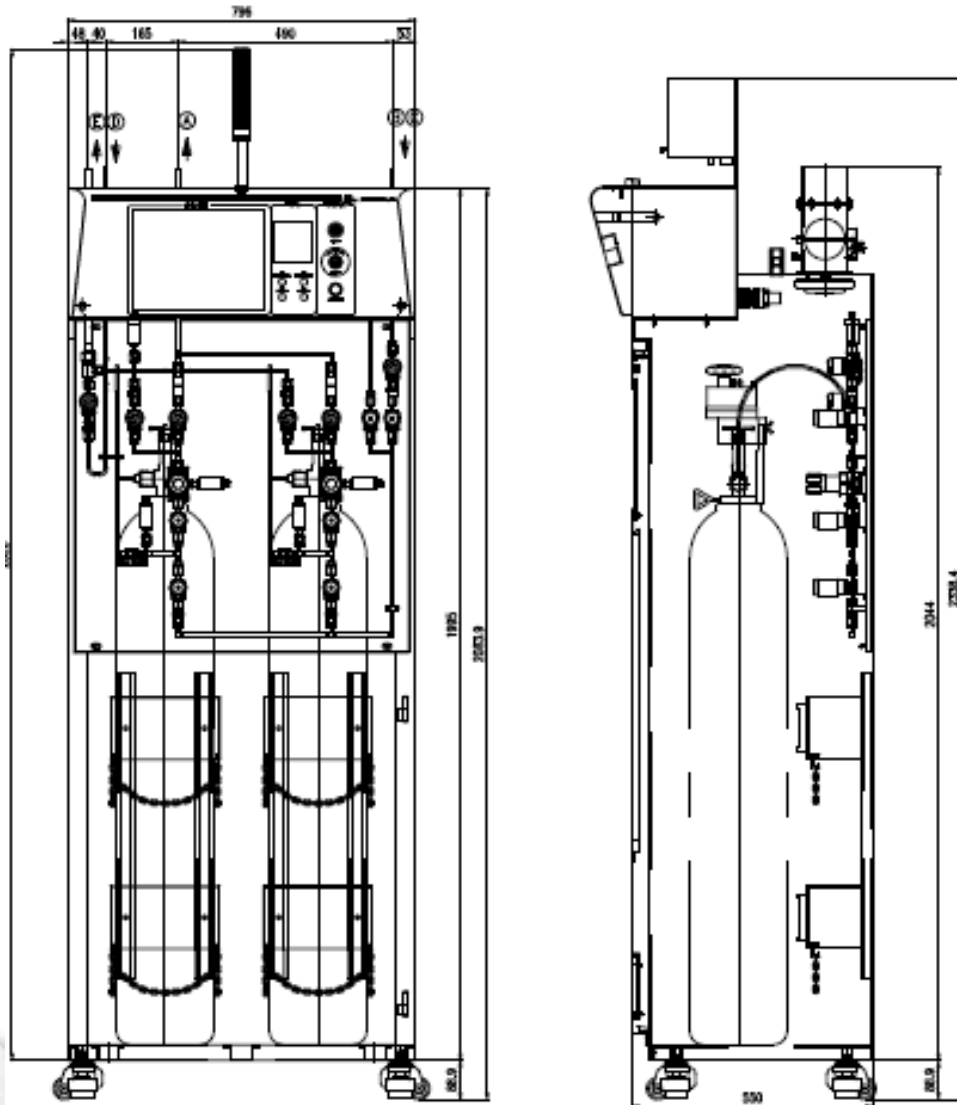
20**/**/ **-**-**: **:**

제어 설정

Interval Time[12] Hour

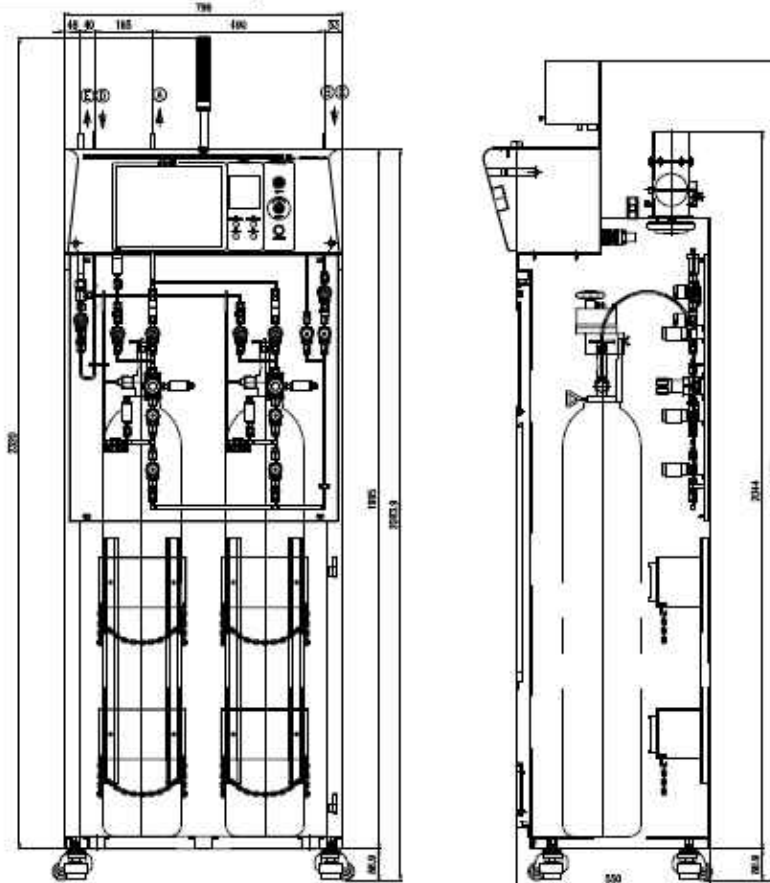
	PT1A	PT3A	PT1B	PT3B	PT4	일 - 시 : 분 : 초
현재압력	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
1	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
2	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
3	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
4	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
5	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
6	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
7	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
8	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
9	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **
10	-1234	-123.4	-1234	-123.4	-1234	** - ** : ** : **

13-1. External Drawing

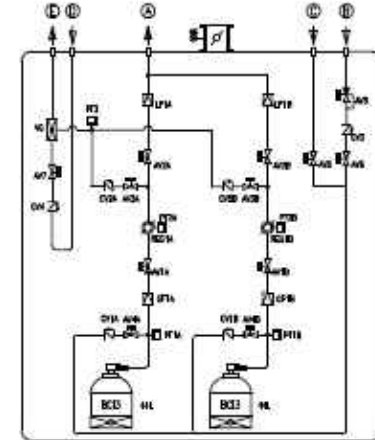


13-2. External Drawing

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Rev. No.	Revision note	Date	Signature	Checked
1	APPROVAL			



NO.	ITEM	QTY	UNIT	REMARKS
1	HEATING LINE	1	M	
2	DIAPHRAGM VALVE	1	PC	

NO.	ITEM	QTY	UNIT	REMARKS
1	HEATING LINE	1	M	
2	DIAPHRAGM VALVE	1	PC	
3	HEATER	1	PC	
4	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
5	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
6	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
7	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
8	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
9	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
10	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
11	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
12	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
13	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
14	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
15	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
16	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	
17	HEAT SENSITIVE DIAPHRAGM VALVE	1	PC	

NO.	PART NO.	DESCRIPTION	SPECIFICATION	MANFR.	QTY
17.		HEAT & CONTROLLER	HEATING LINE	JIN	1SET
16.		DIAPHR	4" SUS304	JIN	1EA
15.		HIGHTEMP SENSOR	MAX 72°C	JIN	1EA
14.		HEAT SCALE	250 x 250 x 150mm	SEATECH	3EA
13.		LEAK DETECTOR	BC3	SANTRON	1EA
12.		SPRINKLER	HC303	WAGO	3EA
11.		VALVE SHUTTER	VS-300	WST	2EA
10.		COA	COA CONNECTOR	FRIMET	2EA
9.		REG	REGULATOR	VERIFLO	2EA
8.		AV	DIAPHRAGM VALVE	KITZ	1EA
7.		AV1,AV2,AV3	2-WAY AIR VALVE-180°	KITZ	3EA
6.		AV1,AV2,AV3	2-WAY AIR VALVE-LOW	KITZ	3EA
5.		PT1,PT2,PT3	PRESSURE TRANSDUCER	SEATECH	3EA
4.		LF1,LF2	LINE FILTER	EVENS	2EA
3.		OP1,OP2	ORBITAL FILTER	EVENS	2EA
2.		CV1,CV2,CV3	CHECK VALVE	SHIMADZU	3EA
1.		HE	HEATER	TRIST	1EA

GAS	DESCRIPTION	SIZE	TYPE	MATERIAL
A	PROCESS OUT BCI	1/4"	TUBE STUB	316L P-EP
B	PURGE N2	1/4"	TUBE STUB	316L P-EP
C	LEAK CHECK He	1/4"	TUBE STUB	316L P-EP
D	GENERAL N2	1/4"	TUBE STUB	316L P-EP
E	VENT	1/2"	TUBE STUB	316L P-EP

OPTION SHEET									
GAS	REG	AV	OP	PT	HE	CV	LF	OP	CV
B03	○	○	○	○	○	○	○	○	○

TITLE	2 BOTTLE AUTO CHANGE GAS CABINET (BC13)
Rev. No.	1
Date	02/17

14-1. Gas Characteristics Table

No	Name of Gas	Chemical	Molecular Weight	Specific Grative	Toxicity (TLV)	Flammability Range	State	Divide Group	Hazards Gas	System Type
1	Ammonia	NH₃	17.03	0.597	25 ppm	16-25 %	Liquid	C , F	Yes	Cabinet
2	Argon	Ar	39.95	1.38	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack
3	Arsine	AsH₃	77.95	2.695	0.05 ppm	Not Established	Liquid	T , F	Yes	Cabinet
4	Boron Trichloride	BCl₃	117.17	4.05	(1 ppm)	Non Flammable	Liquid	C	Yes	Cabinet
5	Boron Trifluoride	BF₃	67.31	2.37	1 ppm	Non Flammable	Compress	T , C	Yes	Cabinet
6	Carbon Dioxide	CO₂	44.01	1.521	5000 ppm	Non Flammable	Compress	I	No	Cabinet & Rack
7	Carbon Monoxide	CO	28.01	0.968	50 ppm	12.5-74 %	Compress	T , F	Yes	Cabinet
8	Chlorine	Cl₂	70.91	2.49	0.5 ppm	Combustion	Liquid	T , C	Yes	Cabinet
9	Chlorine Trifluoride	ClF₃	92.45	3.14	0.1 ppm	Corr./Oxidizing	Liquid	T , C , O	Yes	Cabinet
10	Diborane	B₂H₆	27.67	0.95	0.1 ppm	0.8-98 %	Compress	T , F	Yes	Cabinet
11	Dichlorosilane	SiH₂Cl₂	100.99	3.48	Not Established	4.1-98.8 %	Liquid	T , F , C	Yes	Cabinet
12	Disilane	Si₂H₆	62.22	2.38	Not Established	30℃ at 2.5%	Liquid	T , F	Yes	Cabinet
13	Fluorine	F₂	37.997	1.696	1 ppm	Poison/Oxidizing	Compress	T , F	Yes	Cabinet
14	Germane	GeH₄	76.62	2.66	0.2 ppm	Unknow	Compress	T , F	Yes	Cabinet
15	Halocarbon 11	CCl₃F	137.7	5.04	1000 ppm	Non Flammable	Liquid	I	No	Cabinet & Rack
16	Halocarbon 12	CCl₂F₂	120.91	4.2	1000 ppm	Non Flammable	Liquid	I	No	Cabinet & Rack
17	Halocarbon 13	CClF₃	104.46	3.8	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
18	Halocarbon 14	CF₄	88	3.038	Not Established	Non Flammable	Compress	I	No	Cabinet & Rack
19	Halocarbon 23	CHF₃	70.01	2.43	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
20	Difluomethane	CH₂F₂	52	1.79	Not Established	13.3-29.3%	Liquid	T	Yes	Cabinet
21	Halocarbon 116	C₂F₆	138.01	4.773	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
22	Halocarbon C-318	C₄F₈	200.03	7.33	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
23	Helium	He	4.003	0.138	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack
24	Haxafluoropropylene	C₃F₆	150.03	1.583	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
25	Hydrogen	H₂	2.016	0.0696	Asphyxiant	4-75 %	Compress	F	Yes	Cabinet

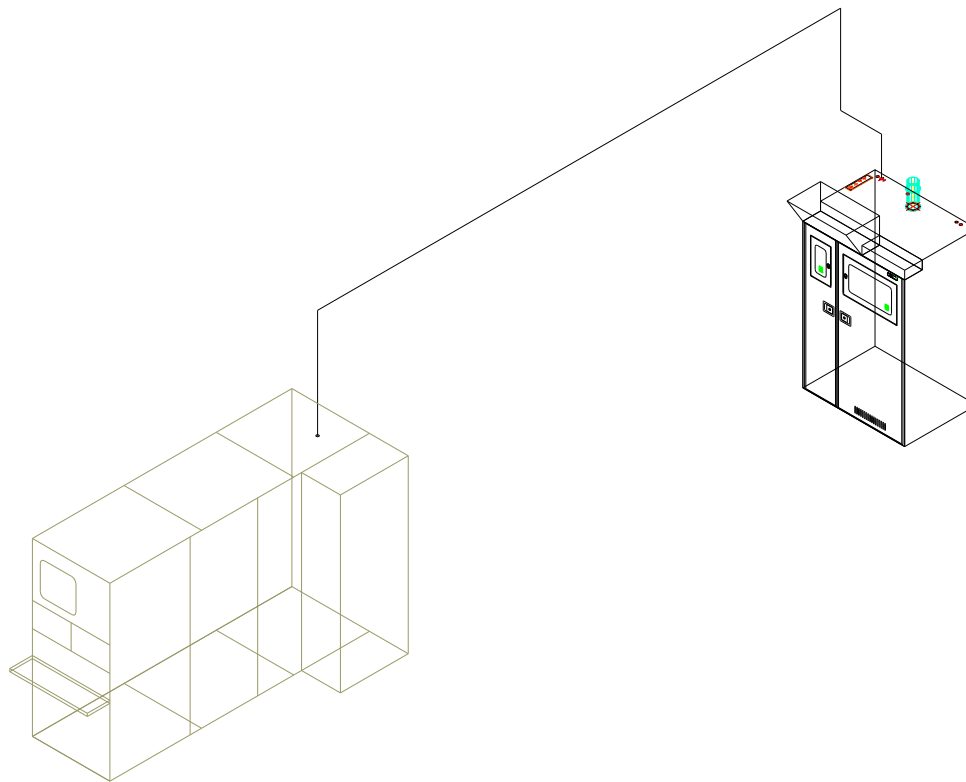
14-2. Gas Characteristics Table

No	Name of Gas	Chemical	Molecular Weight	Specific Grative	Toxicity (TLV)	Flammability Range	State	Divide Group	Hazards Gas	System Type
26	Hydrogen Bromide	HBr	80.92	2.7	3 ppm	Non Flammable	Liquid	T , C	Yes	Cabinet
27	Hydrogen Chloride	HCl	36.46	1.268	5 ppm	Non Flammable	Liquid	C , T	Yes	Cabinet
28	Hydrogen Fluoride	HF	20.01	1.27	3 ppm	Non Flammable	Liquid	T , C	Yes	Cabinet
29	Hydrogen Sulfide	H₂S	34.08	1.19	10 ppm	Non Flammable	Liquid	T , F	Yes	Cabinet
30	Isobutylene	C₄H₈	56.11	1.997	Not Established	1.8-9.6 %	Compress	F	Yes	Cabinet
31	Krypton	Kr	83.8	2.899	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack
32	Methane	CH₄	16.04	0.55	Asphyxiant	5-15 %	Compress	F	Yes	Cabinet
33	Methyl Fluoride	CH₃F	34.03	1.195	Not Established	Not Established	Liquid	F	Yes	Cabinet
34	Neon	Ne	20.18	0.696	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack
35	Nitric Oxide	NO	30.01	1.04	25 ppm	Oxidizing	Compress	T , O	Yes	Cabinet
36	Nitrogen	N₂	28.01	0.967	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack
37	Nitrogen Trifluoride	NF₃	71	1.537	10 ppm	Oxidizing	Compress	T , O	Yes	Cabinet
38	Nitrous Oxide	N₂O	44.01	1.53	Not Established	Oxidizing	Liquid	O	No	Cabinet & Rack
39	Oxygen	O₂	32	1.105	Not Established	Oxidizing	Compress	I	No	Cabinet & Rack
40	Perfluoropropane	C₃F₈	188.02	6.683	Not Established	Non Flammable	Liquid	I	No	Cabinet & Rack
41	Phosphine	PH₃	34	1.184	0.3 ppm	Flammable	Compress	T , F	Yes	Cabinet
42	Propane	C₃H₈	44.1	1.55	Asphyxiant	2.1-9.5 %	Compress	F	Yes	Cabinet
43	Propylene	C₃H₆	42.08	1.476	Asphyxiant	2.4-11.1 %	Compress	F	Yes	Cabinet
44	Silane	SiH₄	32.12	1.114	5 ppm	Flammable	Compress	F , T	Yes	Cabinet
45	Silicon Tetrachloride	SiCl₄	169.9	5.9	0.5 ppm	Corrosive	Liquid	C , T	Yes	Cabinet
46	Silicon Tetrafluoride	SiF₄	104.08	3.7	0.5 ppm	Non Flammable	Compress	T , C	Yes	Cabinet
47	Sulfur Hexafluoride	SF₆	146.05	5.114	1000 ppm	Non Flammable	Liquid	I	No	Cabinet & Rack
48	Tungsten Hexafluoride	WF₆	297.84	10.29	Not Established	Corrosive	Liquid	C , T	Yes	Cabinet
49	Xenon	Xe	131.3	4.56	Asphyxiant	Non Flammable	Compress	I	No	Cabinet & Rack

* Notes : C : Corrosive F : Flammable O : Oxidizer T : Toxic P : Pyrophoric I : Inert

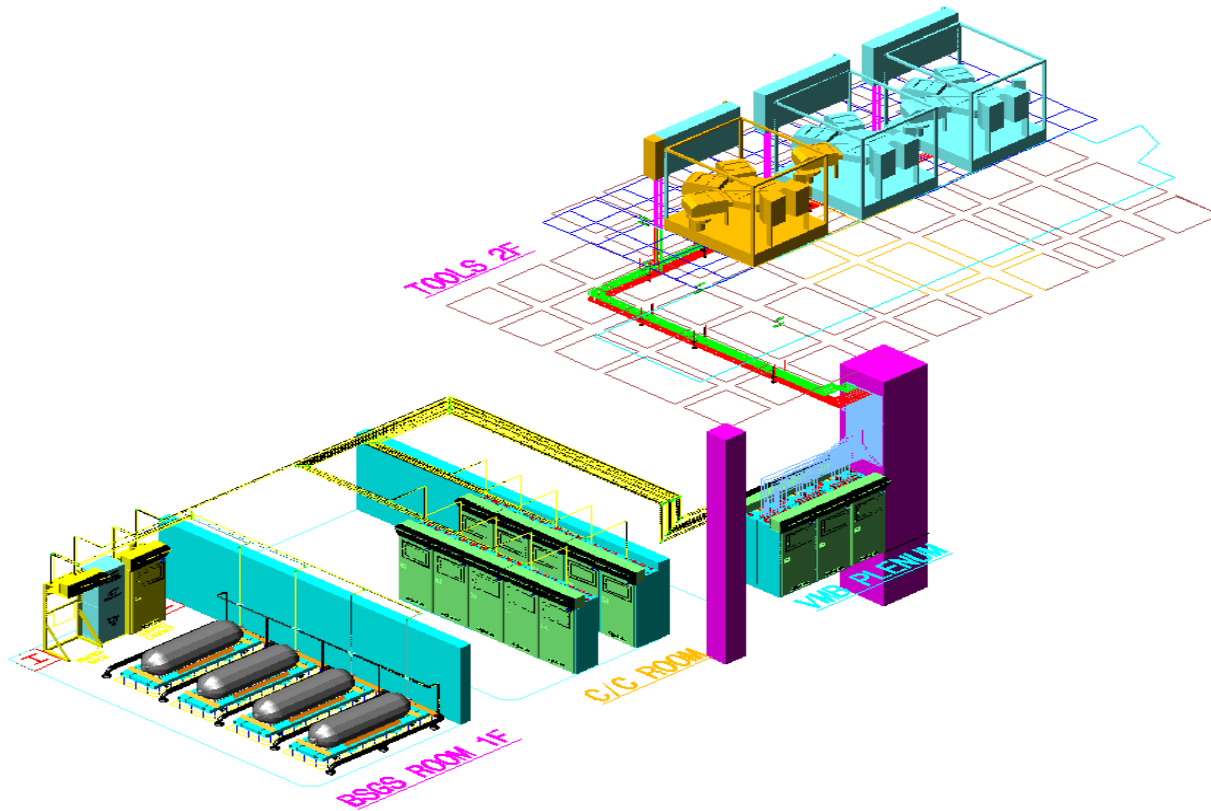
15-1. Gas Cabinet Application Way 1

■ Gas Cabinet System → Main Tool



15-2. Gas Cabinet Application Way 2

■ Gas Cabinet System → VMB → Main Tool



15-3. Gas Cabinet Installed Image



FLAMMABLE GAS ROOM



INERT GAS ROOM



TOXIC GAS ROOM



Thank You!



(주) 진 솔루션