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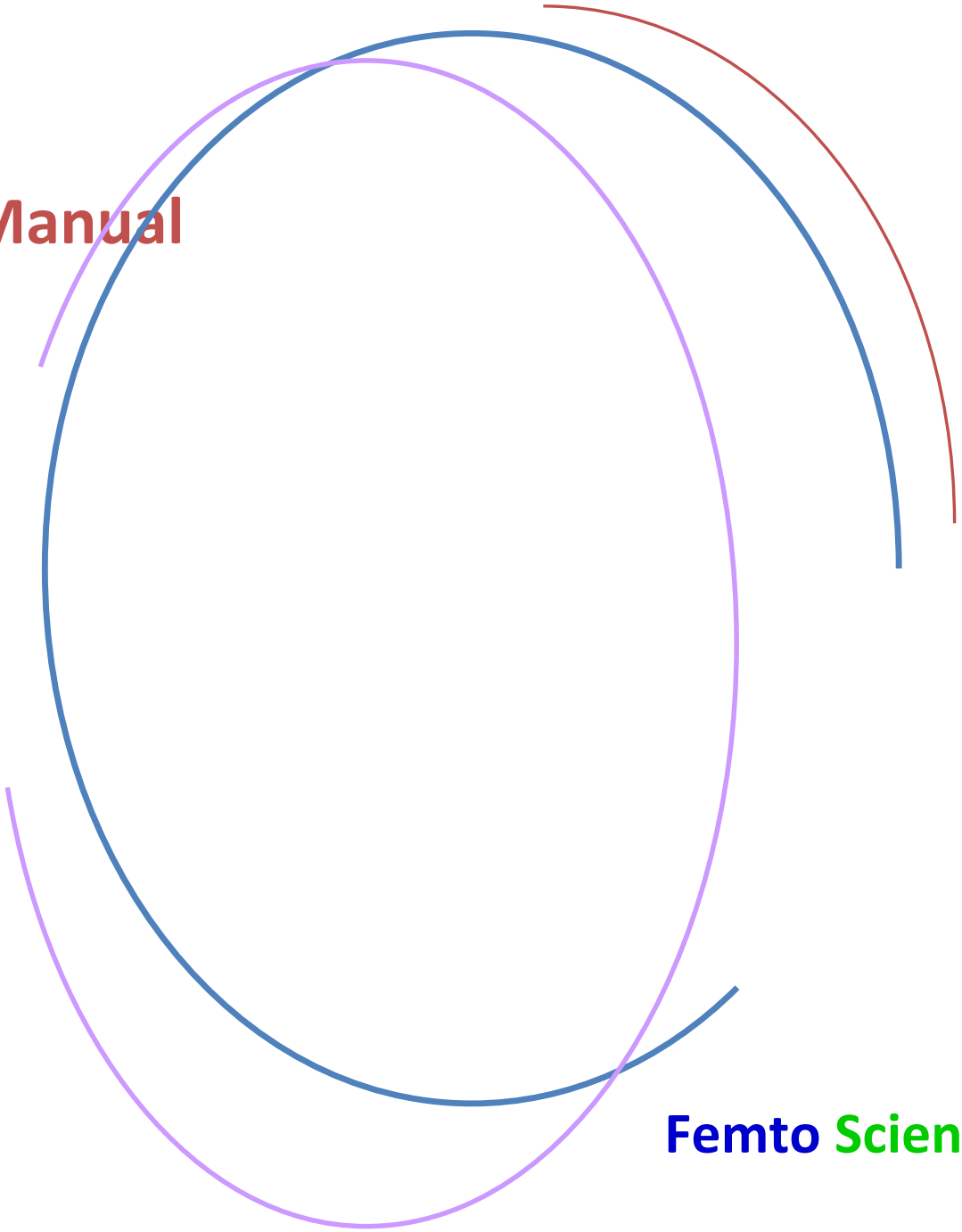
Manual



Femto Science Inc.

Model : COVANCE /CUTE

Contents

1. Technical Data

1) Mode

- Reactive Neutral Domination
- The top electrode is powered and the substrate is loaded on the tray

2) Reaction Chamber

- Type : Horizontal chamber with standard door
- Material
  a. Chamber : Al
  b. Door : Aluminum
- Size : 200mm x 240mm x 160mm (W x D x H)
- Viewport : Dia. 50mm, glass window

3) Generator

- Frequency : 20~100kHz
- Power : Up to 200W

4) Gas lines package

- Process gas line
  a. Number of channel : 1 (One) for O2
  b. Flow control : Automatic by Mass Flow Controller
- Gas line material : Stainless steel
- Fittings : 1/4", swagelok

5) Pressure measurement

- Sensor type : Pirani vacuum gauge
- Measurement range : 760 Torr ~ 1 x 10^{-3} Torr

6) Pumping package

- Oil rotary vacuum pump

a. Designed pumping speed: 150 ℓ/min @50Hz, 180 ℓ/min @60Hz

b. Ultimate vacuum: 1.0 x 10^{-3} Torr

7) Operation control

- 7" touch pannel interface for full process control
- Supporting the two mode (Auto & Manual Mode)
- Storing the process data
- Support the graph viewer (Including the graph control)

Demensions for the external components

- Main system : 540 x 580 x 310 (W x D x H / mm)
- Pump : 130 x 600 x 250 (W x D x H / mm)

3. Software

< Main screen >

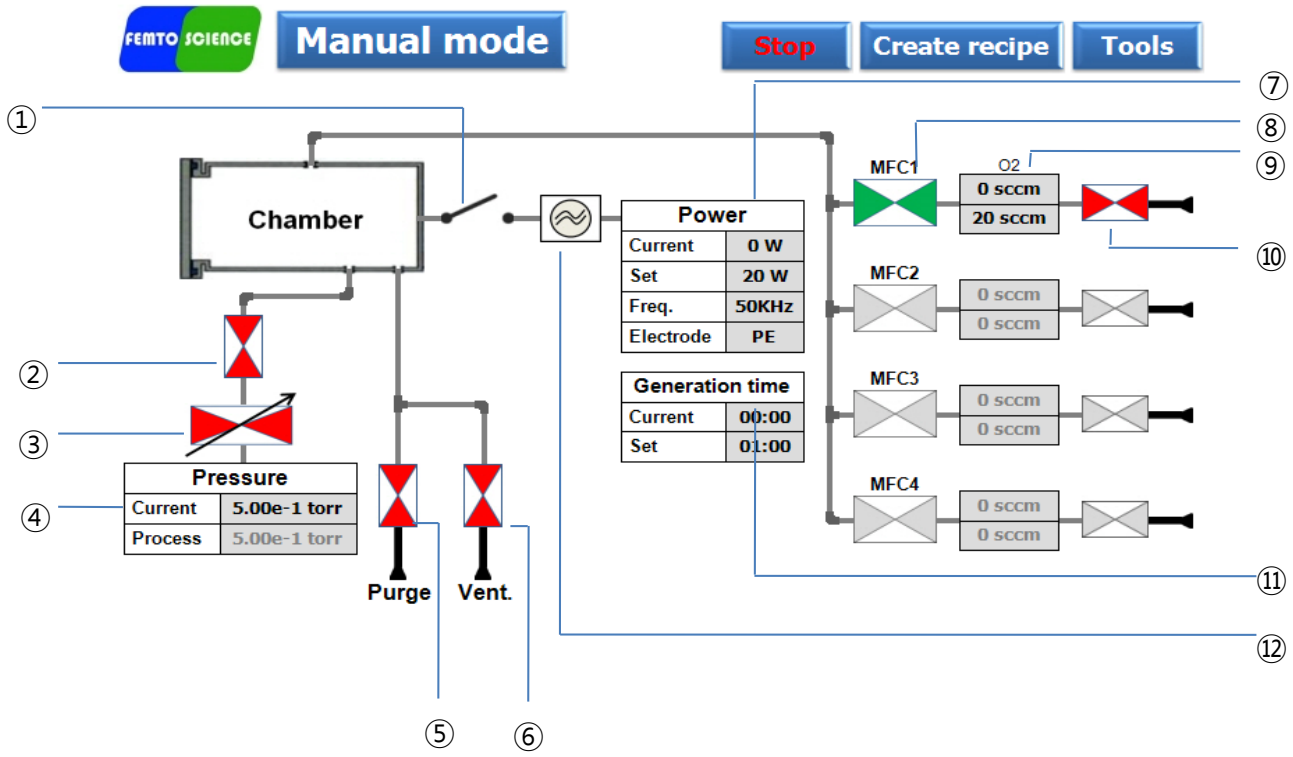


Figure. 1

① Generator power switch

② Pump valve

③ Pressure button

④ Pressure display

⑤ Purge valve

⑥ Vent valve

⑦ Generator power display

⑧ MFC setting

⑨ Gas flow display

⑩ Gas valve

⑪ Generation time display

⑫ Generation power/time controller

Functions of parts

① Generator power switch :

Control the generation power on/off.

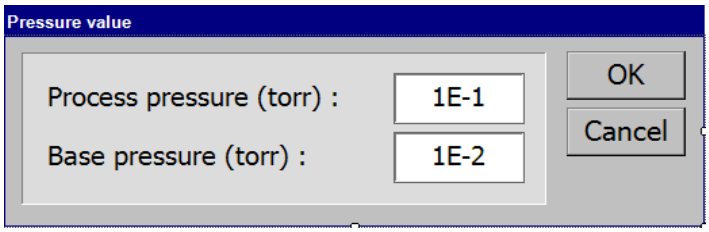
② Pump valve :

Control pump valve on/off

③ Pressure button :

User can set base pressure

and process pressure in this mode



✱ **NOTE : It is available to set the process pressure only in the PERCENT mode of MFC setting unit, not in the SCCM mode.(refer to ⑧)**

④ Pressure display :

Display current pressure, process pressure and base pressure.

⑤ Purge valve :

Control purge valve on/off

⑥ Vent valve :

Control vent valve on/off

⑦ Generator power / mode display :

Display generation power / mode selecte(RIE or PE mode)

⑧ MFC setting :

To adjust the amount of gas inflow into the chamber through each MFCs. It can be input either in PERCENT unit or SCCM unit on the following pop-up screen.

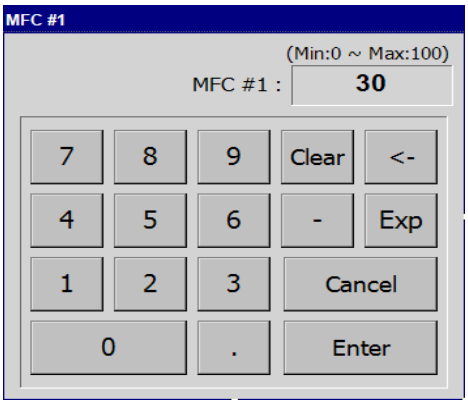
In case of PERCENT unit,

The amount of gas inflow from each MFC is

automatically controlled at the ratio you have set

so that the process pressure can keep stable

(the sum of percentage of MFCs should be 100%)



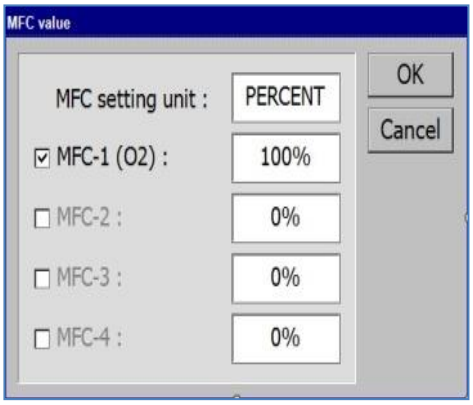
In case of SCCM unit,

The inflow amount of gas keeps as much as you set,

regardless of the process pressure.Press “Enter”,

and it will show you the following screen. If you set

the check box of each MFC, it begins gas inflow.



⑨ Gas flow display :

Display the amount of gas you set and the current gas amountflowing into chamber.

⑩ Gas valve :

Control gas valve on/off

⑪ Generation time display :

Display the generation time.

⑫ Generation power/time controller

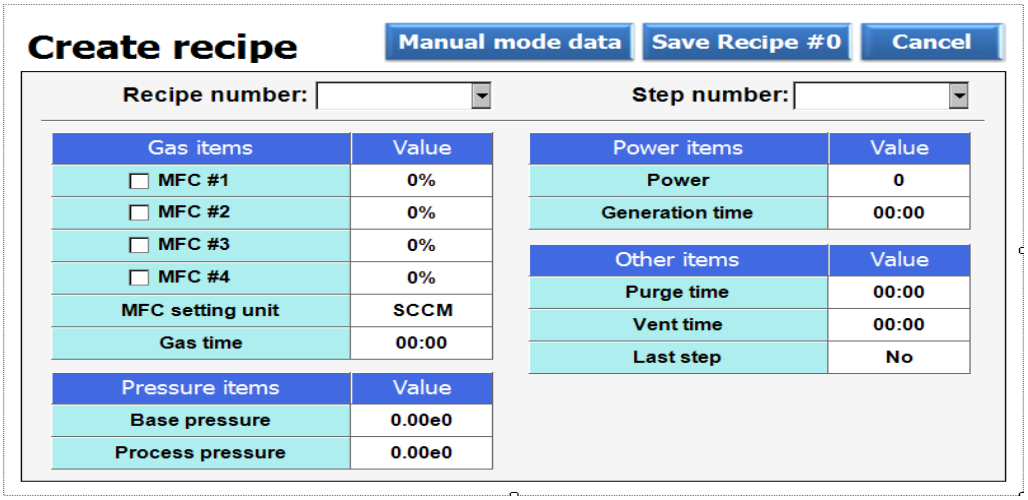
Set the generation power and time.

▶ Manual mode : Press this button, and it will shift between manual and auto mode.

▶ Stop : Click this button, it will stop all operations and return to the initial mode with the data saved.

▶ Create recipe : see the bellows

< Recipe screen>



1) All data in the last manual mode will be set in the current step.

2) Save Recipe : To save the current recipe.

3) Cancel : To close this screen.

4) Recipe number : This consists of 10 recipes (0~9), you choose one of them.

5) Step number : This consists of 10 steps (0~9), every single recipe has 10 steps each.

6) Gas items :

- MFC #1, #2, #3, #4 : to set the amount of gas flowing in through each MFCs
- MFC setting unit : to set the values in either PERCENT or SCCM unit.

  (in case of APC applied model, support only SCCM unit)
- Gas time : the gas stable time between the gas inflow and generator activate.

NOTE : Gas time is necessary to keep the chamber stable because the pressure of the chamber would be unstable for seconds at the moment the gas begins to flow in.

7) Pressure items :

- Base pressure : an appropriate pressure of the chamber required for vacuuming. This is also the indication of the moment of starting gas inflow.
- Process pressure : the required pressure for plasma operation. This is adjustable only in the case MFC setting is in PERCENT unit. (in case of APC applied model, also support this item)

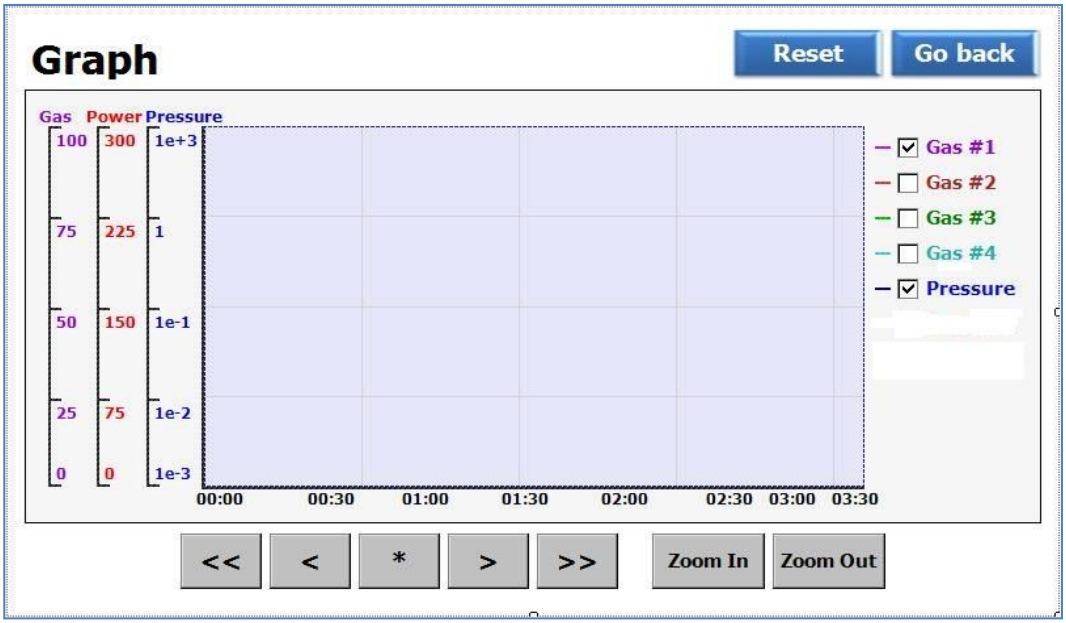
8) Power items :

- Power : To set generation power.
- Generation time : To set the generation time.

9) Other items :

- Purge time : To set purge time.
- Vent time : To set vent time.
- Last step : To set Yes or No, whether the current step is the last one or not.

< Graph screen >



1) Reset : To initialize graph data

2) Go back : To move to the precious screen

3) Channel check box : To determine the appearance on the graph by marking in the check box

4) << : To move the graph view fast to the left side

5) < : To move the graph view to the left side

6) * : To move the graph view to the end of the right side

7) > : To move the graph view to the right side

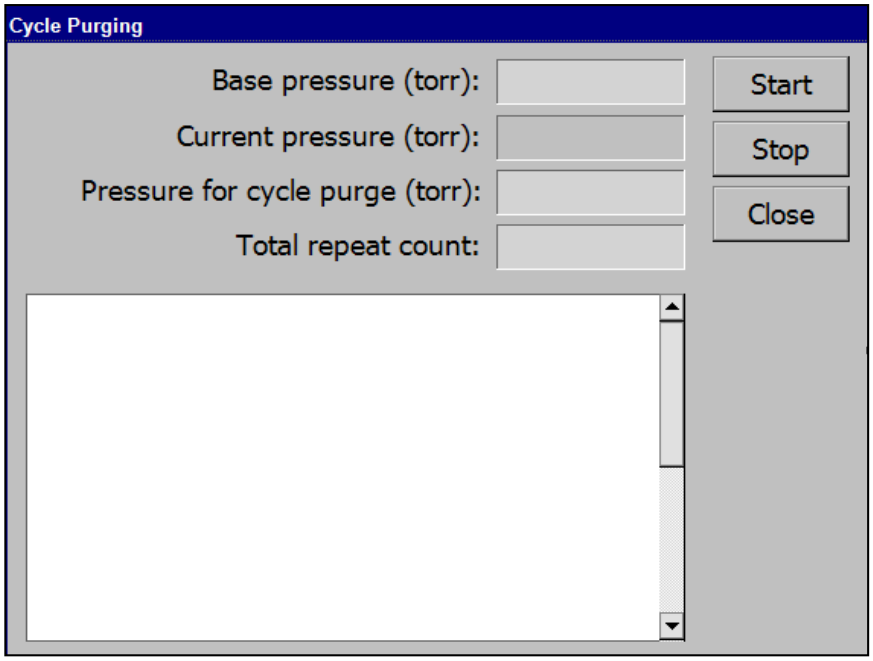
8) >> : To move the graph view fast to the right side

9) Zoom In : To zoom in the graph view

10) Zoom Out : To zoom out the graph view

11) Save to USB : To save the graph data into USB storage.

< Cycle Purging >



1) Start : To start the cycle purging.

2) Stop : To stop the current cycle purging.

3) Close : To close the current cycle purging screen.

4) Base pressure : To set the base pressure for cycle purging.

5) Current pressure : To display the current pressure of chamber.

6) Pressure for cycle purge : To set the pressure for cycle purging.

7) Total repeat count : To set the total repeat count of cycle purging.