ALD IV (1)
General information

- **ALD IV has no loadlock**
- **Copper, Gold and organics compatible**
- **ALD IV is a thermal ALD system only**
- **Ozone (O_3) available**
- **2 layers available Al_2O_3 and HfO_2**

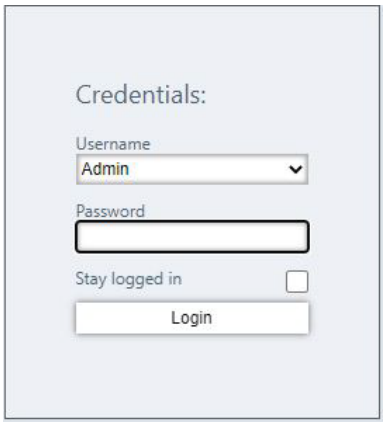
Al_2O_3 : Chamber: **200 or 250°C** (to be set) Liquid precursor 2 (TMAl): 40°C by default Liquid precursor 1 (H_2O): 40°C by default
Depositon rate @ 200°C : xxxx A/cycle Depositon rate @ 250°C : 1,05 +/- 0,05 A/cycle

HfO_2 : Chamber: **90°C** (to be set) Hot source precursor 2 (TDMAHf): **80°C** (to be set) Liquid precursor 1 (H_2O): 40°C by default
Depositon rate : 1.50 +/- 0,05 A/cycle

HOW TO USE THE SYSTEM (1)

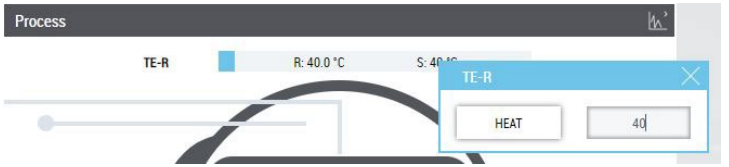
I. Login / logout

1. Login on the PC zone 4
2. Login on Beneq PC
   - Account : **Process**
   - Password : **process**
3. Click on « Dashboard » to have an overview of the system



Once all your depositions are finished, the equipment come back in idle mode:

1. Set the chamber temperature at 40°C (TE-R)
2. Set the Hot source 2 at 30°C (TE-HH2 & TE-HH4)
3. Pump down the chamber
4. Fill the notebook
5. Log out on the PC zone 4



HOW TO USE THE SYSTEM (2)

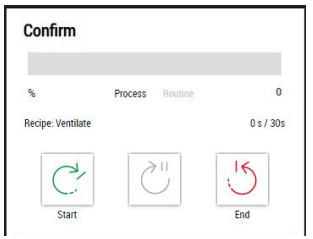
II. Wafer loading (1)

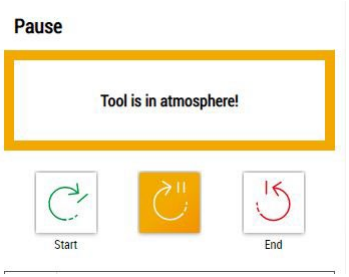
1. From the dashboard, select the mode maintenance

2. Select the recipe « Ventilate » and double click

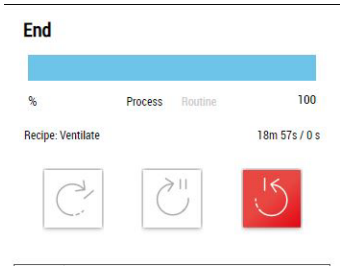
Title	Time
Pumpdown	2024-09-19 12:03:27.931
Ventilate	2024-09-19 12:03:17.756

3. Press « Start » and wait for the message «Tool is at atmosphere»





4. Release the recipe by pressing « End »



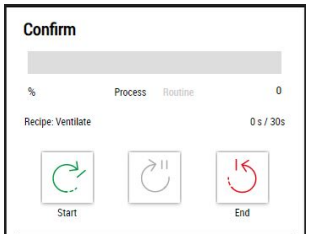
HOW TO USE THE SYSTEM (3)

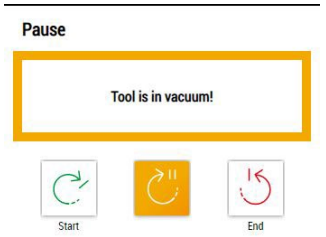
II. Wafer loading (2)

5. Open the door and load your wafer/samples and close the door

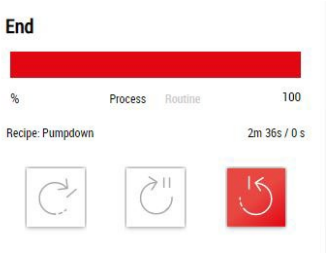
6. Select the recipe «Pumpdown» and double click

7. Press « Start » and wait for the message «Tool is in vacuum»





Release the recipe by pressing « End »

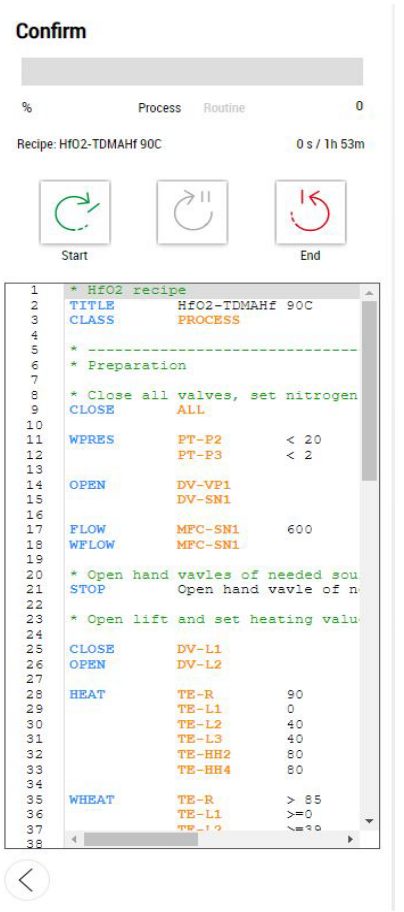


HOW TO USE THE SYSTEM (4)

III. Starting a recipe (1)

1. From the dashboard, select the mode **''Production''**

2. Select your recipe in the recipe folder on the left and double click to start the recipe

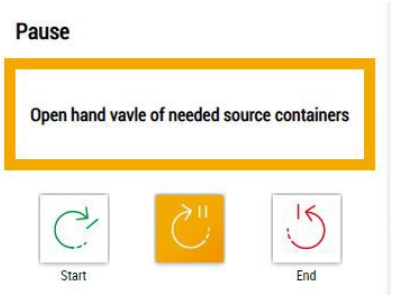


HOW TO USE THE SYSTEM (5)

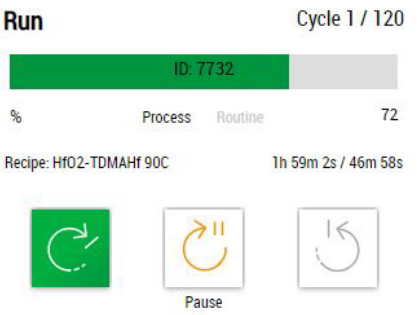
III. Starting a recipe (2)

3. Open the precursor hand valves when requested

4. Press “Start” to continue the deposition



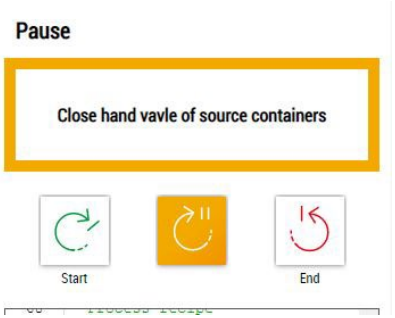
5. Once the cycling start, set the number of pulses you need by clicking on the cycle number and press enter to validate



HOW TO USE THE SYSTEM (6)

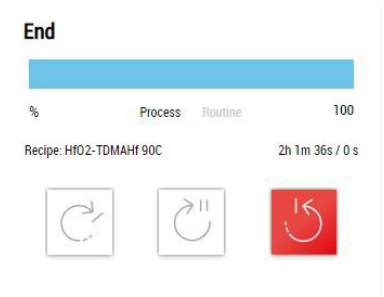
III. Starting a recipe (3)

5. At the end of the deposition, close the hand valves when requested



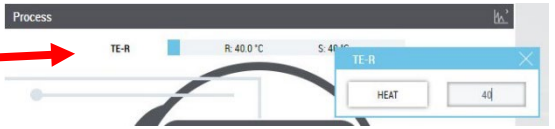
6. Press “Start” to continue the process

7. Release the recipe by pressing « End »



8. Put the system in standby

- Set the chamber temperature @ 40°C



(double click on the TE-R line, enter the temperature in the pop window and press heat)

- Set the precursor temperature TDMAHf @ 30°C

(double clic on the TE-HH2 and TE-HH4 lines, enter the temperature in the pop window and press “HEAT”)

HOW TO USE THE SYSTEM (7)

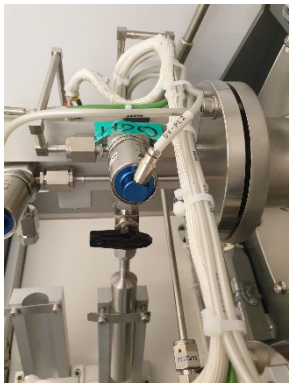
Valves setting during deposition

HfO_2 : Open the hand valves of liquid precursor 1 (H_2O) & hot source precursor (TDMAHf)
(Liquid sources cabinet is on the left of the chamber)
(Hot sources cabinet is on the right of the chamber)

Open the cap of the hot source

Unscrew the valve (2 turns)

Close position



Open position

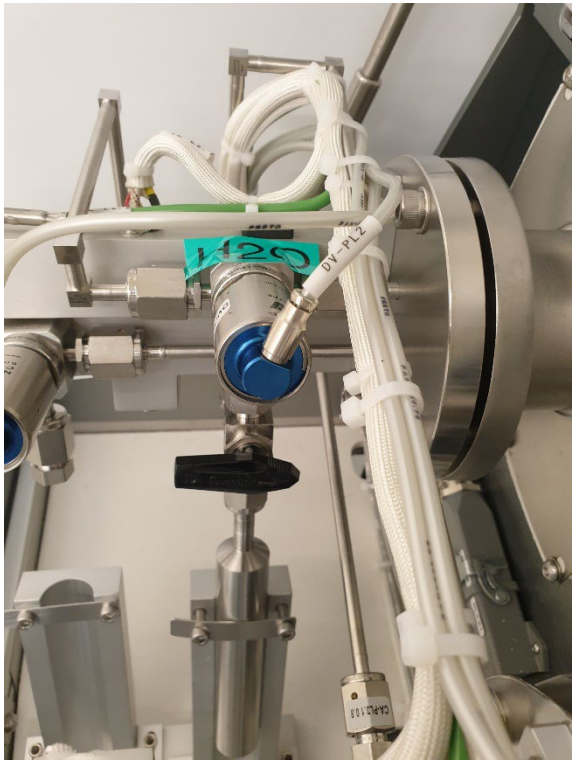
HOW TO USE THE SYSTEM (8)

Valves setting during deposition

Al_2O_3 : Open the hand valves of liquid precursor 1 (H_2O) & liquid precursor 2 (TMA)
(Liquid sources cabinet is on the left of the chamber)

Turn counter-clockwise to open the precursor

Close position



Open position