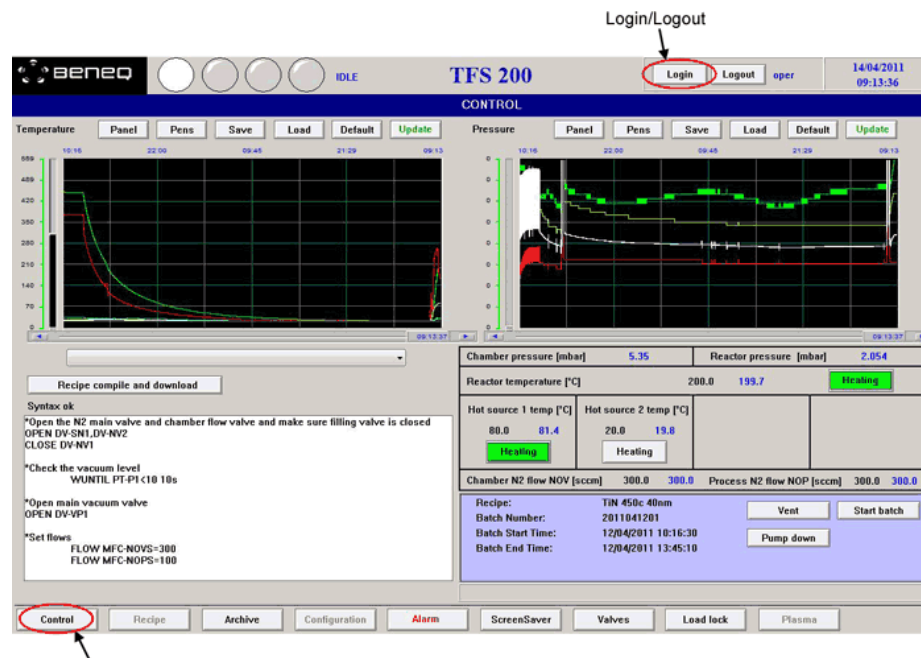# HOW TO USE THE SYSTEM (1)

I. Login / logout

1. Login on the PC zone 4

2. Click on "Control" tab to open the window "Control" on the Beneq laptop

3. Click on Login:
   Enter : *oper* and press return

4. Click on Password :
   Enter : *oper* and press return

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

1. Switch off the heating if you are the last user

2. Fill the notebook

3. Log out on the PC zone 4

HOW TO USE THE SYSTEM (2)

II. Setting of the reactor and precursors temperatures

On the control window, you click on the black number corresponding to the reactor temperature and to the precursor temperature and you enter the temperate requested for the deposition (see below). It takes roughly 30 min for the reactor to get 200°C from room temperature and 1 hour for the hot sources.
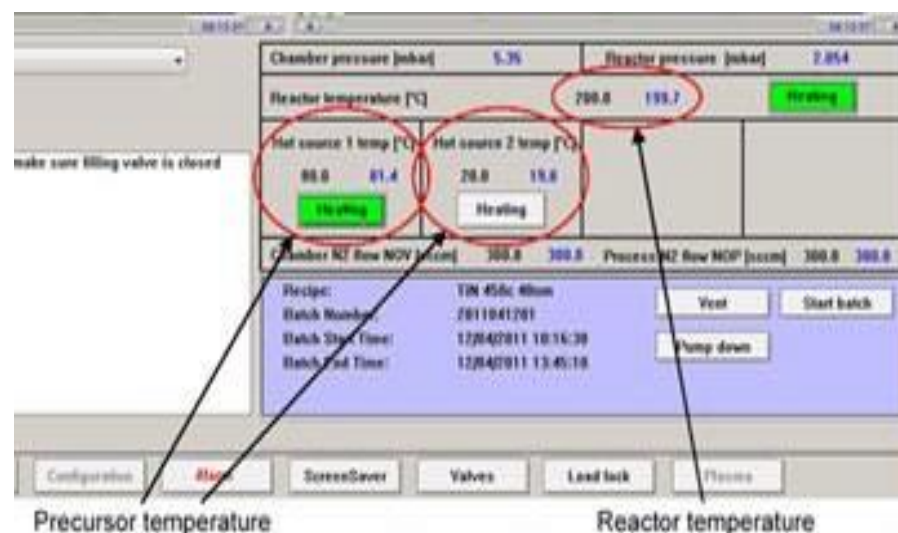
Al$_2$O$_3$: Chamber: 200°C
Liquid precursor 2 (TMA): room temperature

TiO$_2$: Chamber: 200°C
Liquid precursor 3 (TiCl4): room temperature

HfO$_2$: Chamber: 200°C
Hot source 1 (TEMAHf): 80°C

SiO$_2$: Chamber: 300°C
Liquid precursor 4 (BTBAS): room temperature

Pt : Chamber: 280°C
Hot source 2 (CpMePtMe): 75°C

Precursor temperature   Reactor temperature

HOW TO USE THE SYSTEM (3)

III. Wafer loading

1. Press on the load lock button (bottom right)
2. Press on load-lock vent and wait until the load lock is at atmospheric pressure
3. Open the load-lock door
4. Load your wafers / samples
5. Close the load-lock door and press on load-lock pump down
6. Checking of the wafer position
7. Open gate valve
8. Manual transfer of the wafers in the reactor with the substrate loader
9. Move up the substrate lifter
10. Move back the substrate loader in the Home position
11. Move down the substrate lifter
12. Move up the holder lifter
13. Close the gate valve
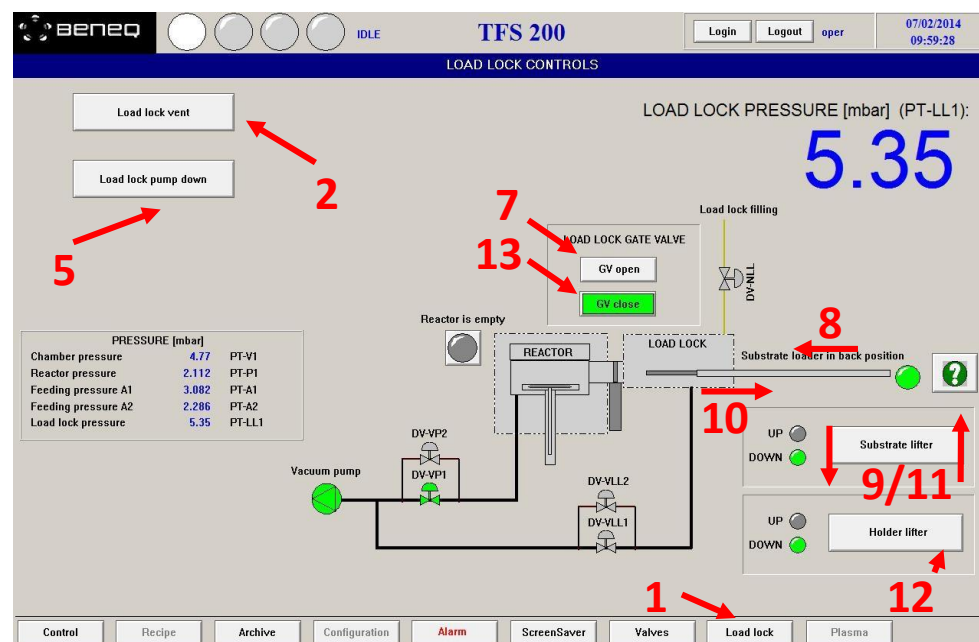
HOW TO USE THE SYSTEM (4)

IV. Starting a recipe

Before starting the recipe, the chamber pressure has to be higher than 4 mbar and the reactor pressure lower than 2 mbar for NOV and NOP at 300 sccm and reactor temperature around 200C.

If it's not the case move down and up the substrate lifter or restart the loading procedure.

1. Go to the window Control
2. Select your recipe in the recipe folder
3. Press compile and download the recipe
4. Press start batch and follow the instructions (open precursor valves)

Recipe folder   Start recipe
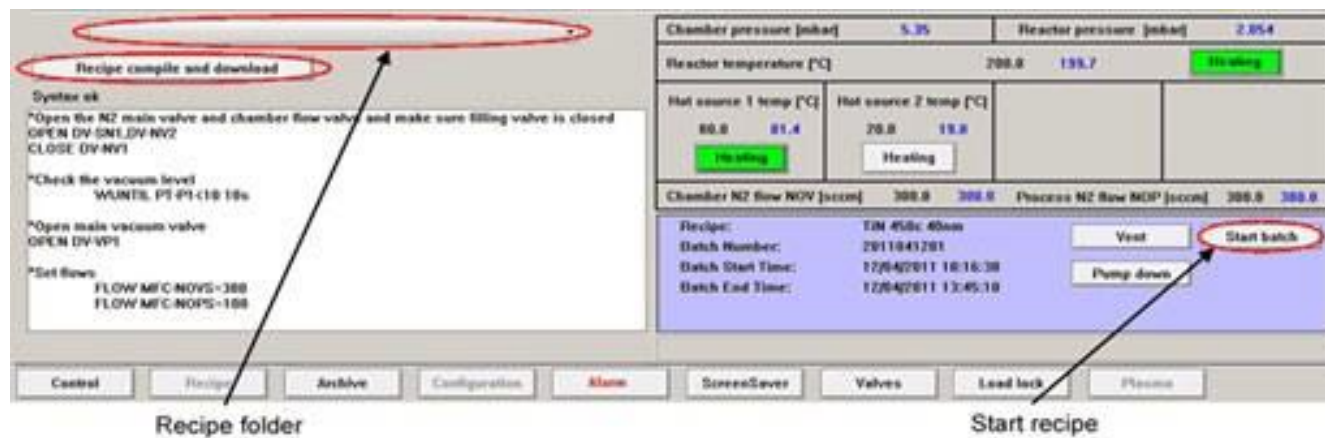
HOW TO USE THE SYSTEM (5)

5. As soon as the recipe starts, a "Loop counter" button will appear on the bottom right. Click on it, and set the desired pulse number in the window that opens, by clicking under the "Set" Label, entering the number of pulses, and pressing the enter key on the keyboard.
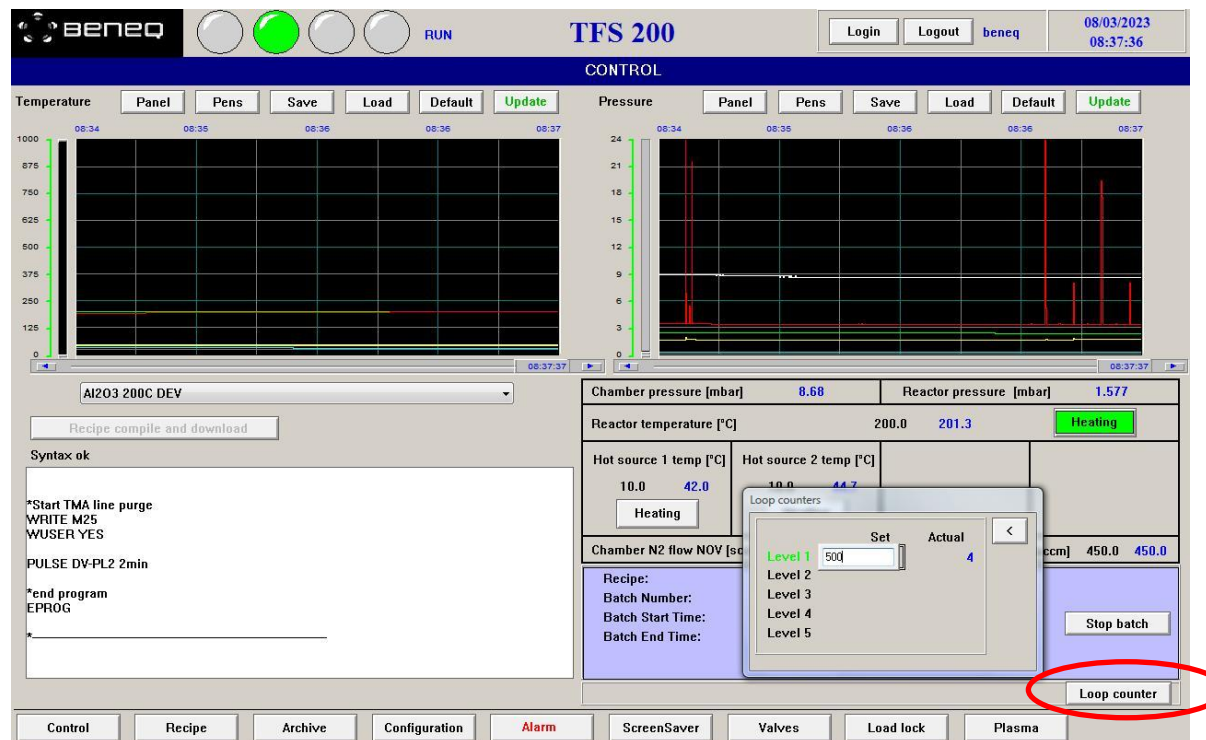
6. At the end of the process close the hand valve if requested

HOW TO USE THE SYSTEM (6)

Valves setting during deposition

Al_2O_3 : Open the hand valves (right ones) of liquid precursor 1 (H_2O) & liquid precursor 2 (TMA)

HfO_2 : Open the hand valve (right ones) of liquid precursor 1 (H_2O) / Hot source 1 already open (TEMAH)

TiO_2 : Open the hand valves (right ones) of liquid precursor 1 (H_2O) & liquid precursor 3 ($TiCl_4$)

SiO_2 : Open the hand valves (right & left) of liquid precursor 4 (BTBAS) / Gas precursor (O_3) already open

Pt : Hot source 2 is already open (CpMePtMe) / gas precursor (O_2) is already open
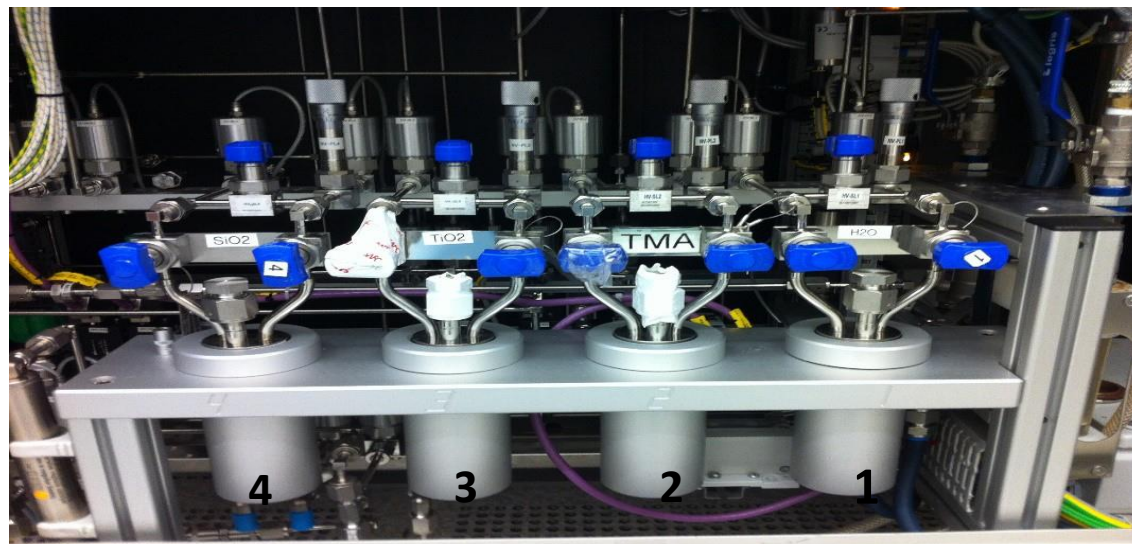
HOW TO USE THE SYSTEM (7)

V. Wafer unloading

1. Go the window Load lock

2. Open the gate valve

3. Move down the holder lifter

4. Move up the substrate lifter

5. Transfer of the substrate loader in the reactor

6. Move down the substrate lifter

7. Move back the substrate loader in home position

8. Close the gate valve

9. load-lock vent / wafer unloading

10. Open the load-lock door and take your wafers

11. Close the load-lock door and then clic on load-lock pump down

12. Wait for the message "Load-lock Vacuumized, Close load-lock lid, Press yes to continue" and press "Yes"

13. Wait for the message "Load-lock Vacuumized, Gate valve can be opened, Press yes to continue" and press "Yes".