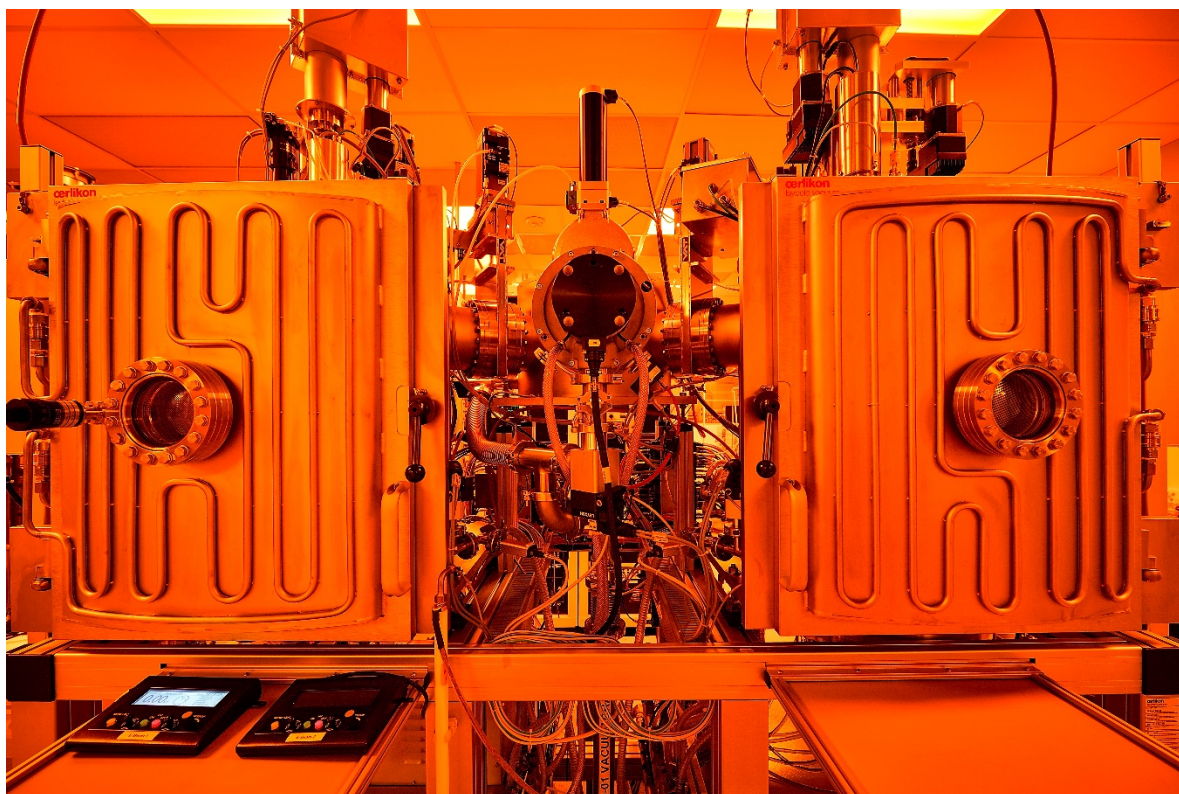


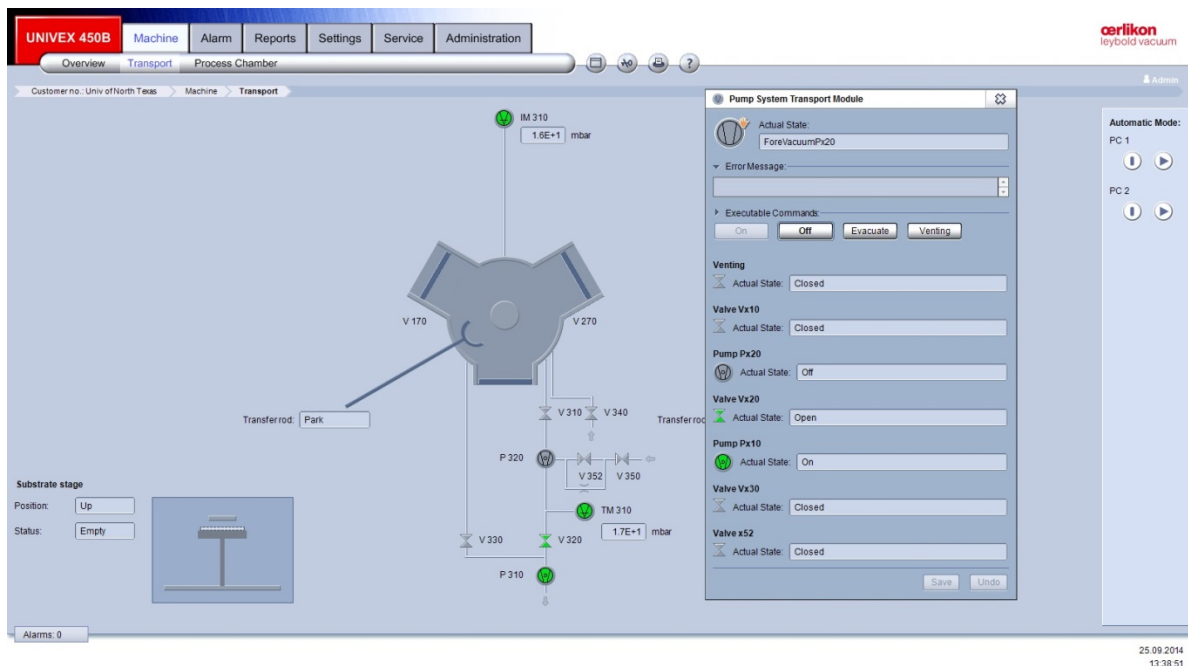
Oerlikon Ebeam Evaporator SOP short

4/22/2020



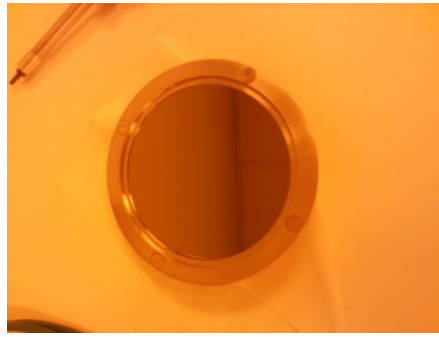
1. Transfer sample holder into process chambers:

- Log in FOM from general usage computer to access the tool software
- Go to the software and log in with “user1” and password “user1”
- Go to transport chamber page and click next to the p320 to “Venting” the chamber

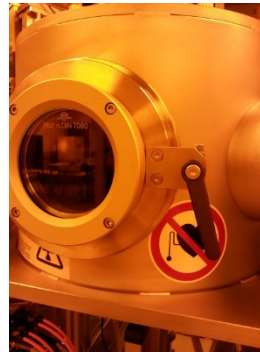
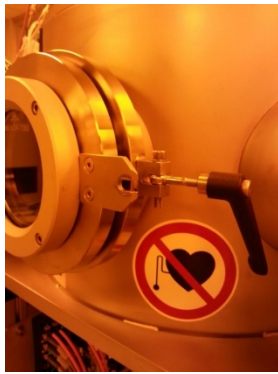


2. Prepare sample and load samples:

- For 4” wafer, the substrate holder has a ring to hold it. Loosen the screws and insert your wafer. Then tighten the screws.
- For small samples, Kapton tape can be used to load the samples.
- Place the substrate holder face down on the transport chamber table. The groove should fit in with the edge of the table

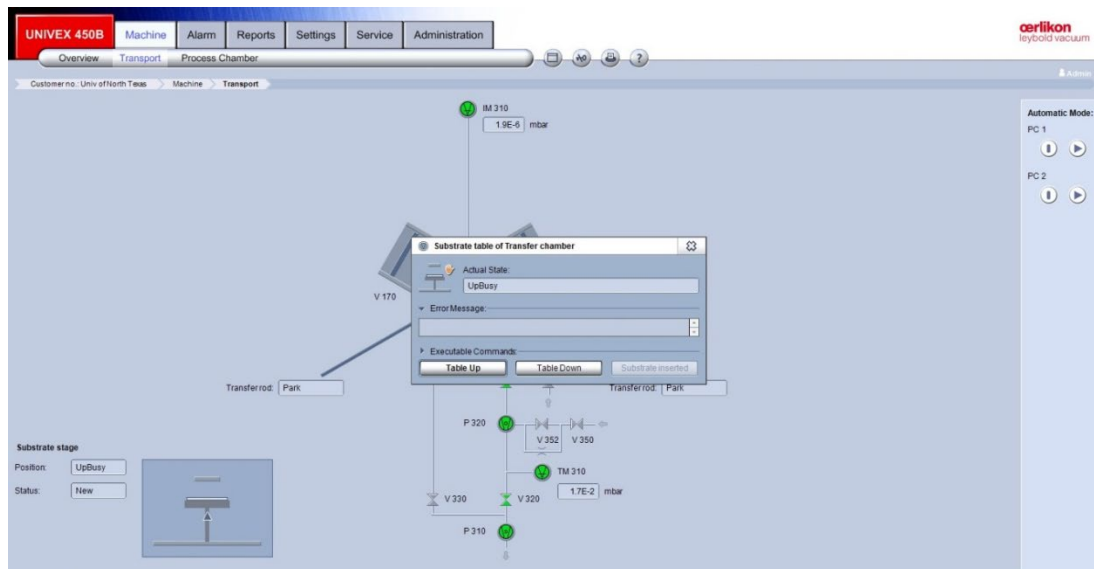
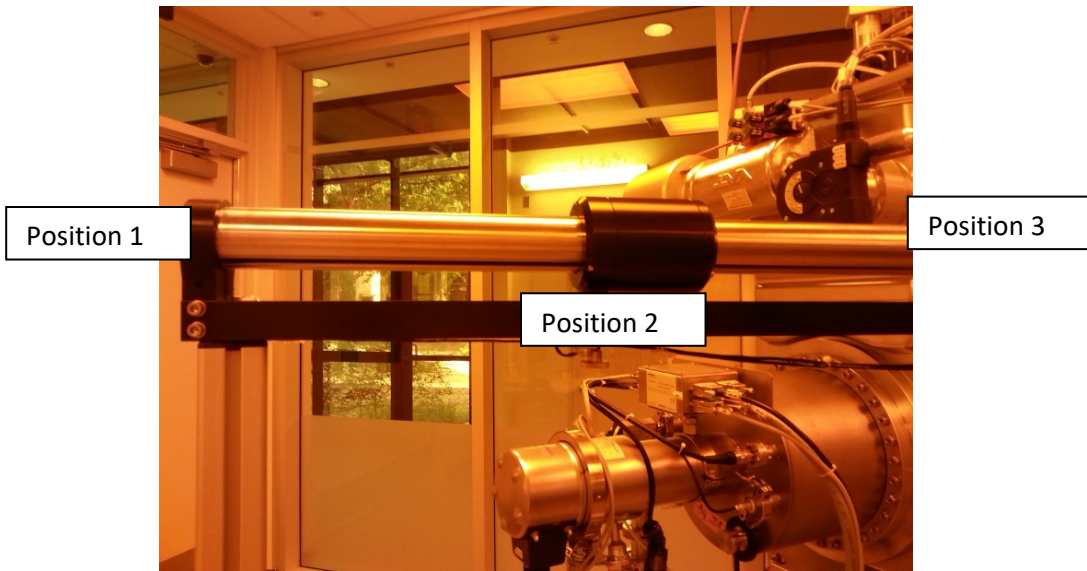


- Close the transport chamber door and tighten the latch knob a little



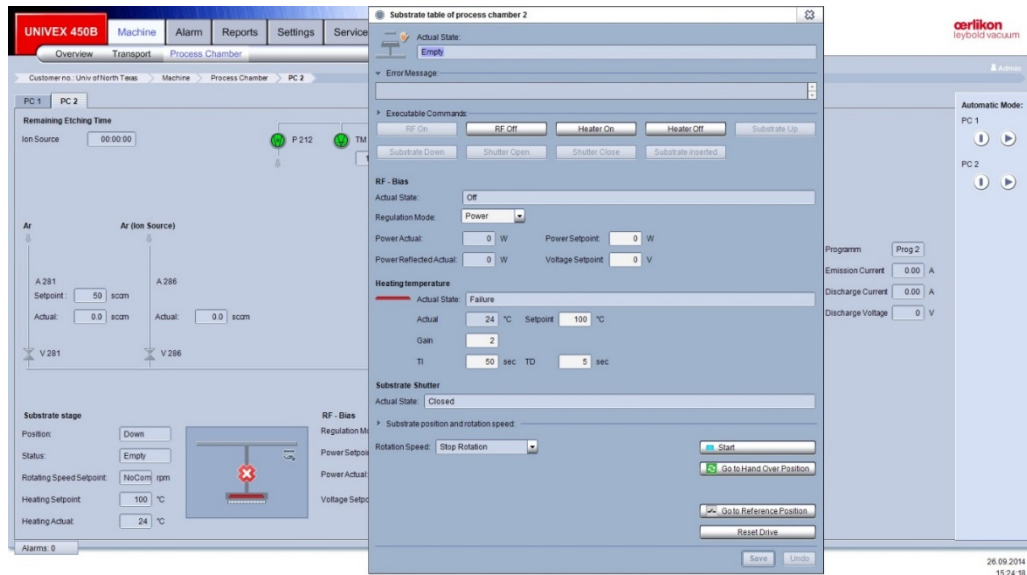
2.1 Loading sample:

1. Load the substrate holder back on the stage in transport chamber and make sure it properly sits.
2. Evacuate the transport chamber by clicking "evacuate" in "Pump system transport Module" page
3. Make sure Arm is at position sensor 2
4. Click "substrate inserted" at transport chamber at "Substrate table of Transfer chamber" page



5. Click "Table down". **Table has to be down** to enable the valve V270 "open".
6. Once the transport chamber vacuum is less than **E-5 mbar**, **Visual check to confirm shutter is out of the way inside Ebeam chamber!**, then open V270 valve.
7. Transfer the arm all the way to position sensor 3 **VERY SLOWLY!! Moving too fast will result in substrate holder falling off the arm.**
8. Go to PC2 (Ebeam process chamber page) and click "substrate up" on the "Substrate table" page.

9. Once the substrate is up, move the arm back to position 2 position sensor.



10. Click "Close" the V270 valve.

11. Click "Substrate inserted" on the "Substrate table" page.

12. Click "Shutter close".

3. Deposition Process

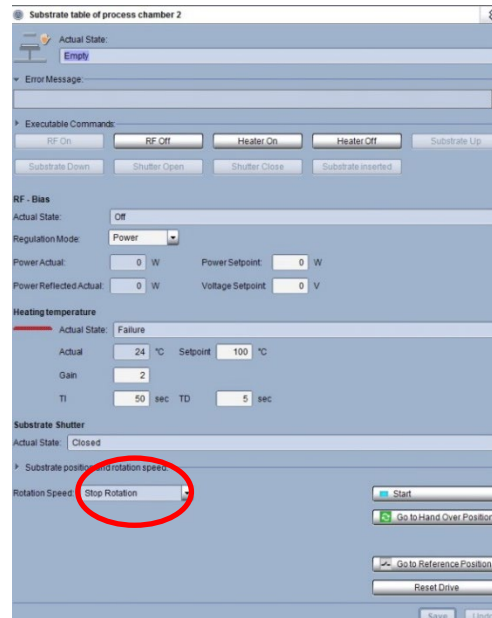
Utility connection:

1. Before deposition process, **MAKE SURE TO TURN ON THE CHILLER!!**
2. Push I/O to turn on the chiller.
3. Check the flow meters readings and ALL green lights underneath the readings should be ON!



Note: the cooling water flow limits are lowered to 3.5, 4.4, 1.8 due to chiller's capacity. **DONOT use substrate heater with this setting. Contact J.C. for instruction if heater is needed.**

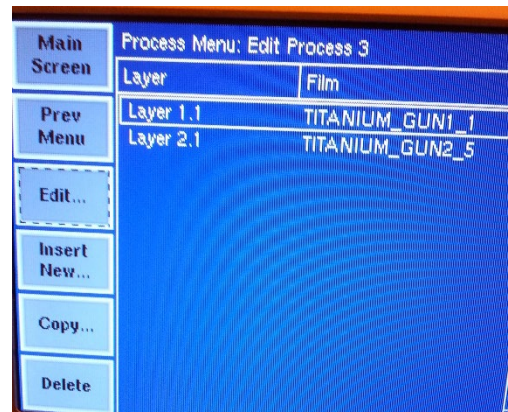
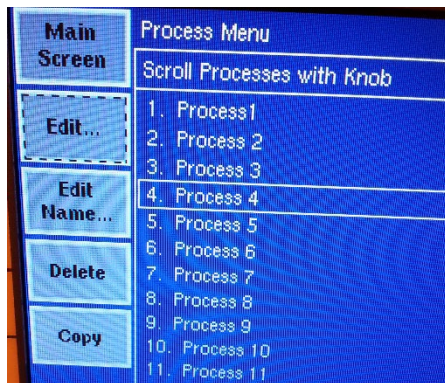
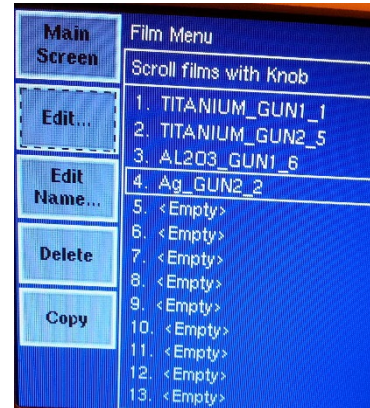
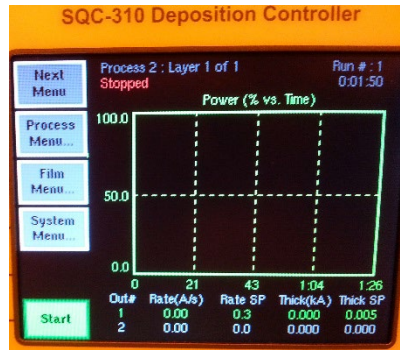
4. Verify all the powers supplies needed are on and gas valves are on.



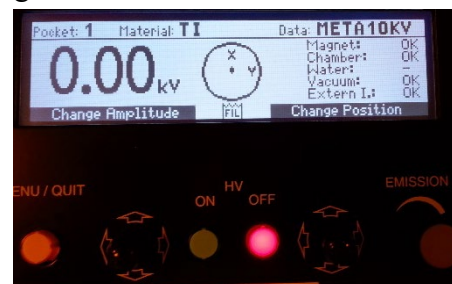
5. “Rotation Speed” at “Substrate table” page. The rotation will start automatically by choosing “4-6 rpm”. **DO NOT click “start”. It is for other function!!**

3.1 Ebeam Deposition Operation:

The Ebeam deposition control is through “SQC-310 Deposition Controller”. It can do automatic single/multi-layer deposition by one or two Ebeam guns. User needs to setup their specific films in “Film Menu” and deposition setting in “Deposition Control”. Then add the films into one “process menu”. The SQC-310 manual is next to the system for user to reference to.



1. Once select correct process, Press “Start” at the main screen to start the auto process. The Ebeam remote will show the HV and emission current in “automatic”. Steps showing on the controller during processing:
2. pocket rotation.
3. Rise 1, soak 1 and rise 2, soak 2
4. Shutter delay if added, deposition
5. Reach set thickness and deposition stopped and shutters closed.

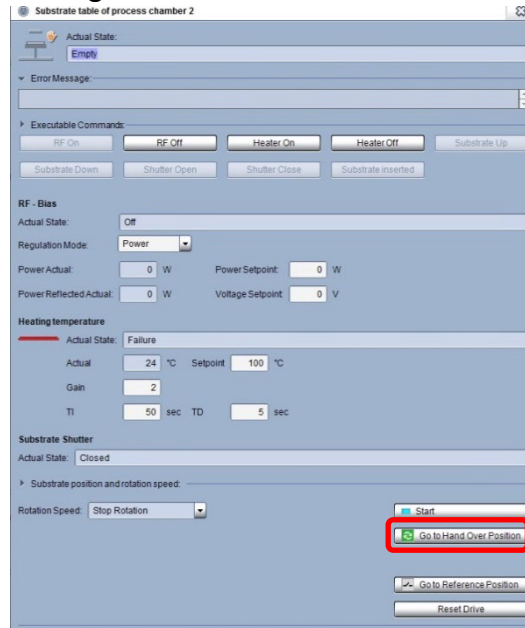


To adjust the beam location:

1. Press “Menu/Quit” button on the handset
2. Joy stick (Left) to move down to “Set Data”
3. Joy stick (Left) to move to Right to “position”
4. Joy stick (Right) to move the beam position (very careful!!)

4. Retrieve the sample from process chambers

1. Click "substrate shutter open" on "Substrate table" page
2. Choose "Stop Rotation" if rotation is used.
3. Click "Go to handover position". The shaft for latching substrate holder rotates to hand over position. The icon became green.



4. If transport chamber pumps are off, evacuate the transport chamber first.
5. **Visual check to confirm shutter is out of the way!** If not, redo step 1.
6. Open the V270 valves.
7. Move the transfer arm into the process chamber and to engage position sensor 3.
8. Click "substrate down" in the "Substrate table" page. The shaft will lower to latch on the substrate holder stem.
9. Move the arm back to load-lock at position sensor 2 **VERY SLOWLY!!**
10. "Close" V270 valve
11. Click "Table up" at transport chamber to enable the "Vent" function.
12. Venting the transport chamber to retrieve the sample.
13. Put sample holder back and on the table.
14. **Evacuate the transport chamber and wait until the pressure <E-4.**

15. Turn off the transport chamber pumps by click “off” on “Pump system transport module” page.

5. Shut down procedures:

1. Turn off the chiller.
2. Turn off the Ebeam power supplies.
3. Go to general usage computer and log out FOM.