

## Temescal Operation Guide

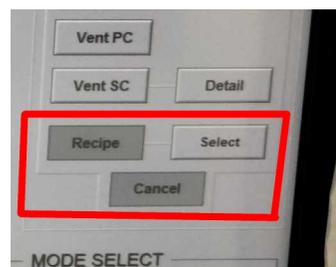
The Temescal is an electron beam deposition machine with 8 materials available for deposition. Those materials sit in a rotating hub at the bottom of the machine, the source chamber (SC). 7 of them are shielded by a copper plate. When your recipe requests a specific material, the hub rotates to expose that material.

The electron beam hits the material and heats it. Under vacuum, that hot material then evaporates.

The electron beam is guided by a magnetic and electric fields. The electric field is constantly adjusted by a computer to move the electron beam around the sample. This process makes sure the sample is heated evenly, which in turn prevents multiple problems.

Here are the steps for running a deposition process inside the Temescal:

1. Log in. You should have a username and password which is created when you receive in-person training.
2. Navigate to the “Auto” menu.
3. Click “Vent PC” and then “start.” Wait until the chamber is vented and load your sample.
4. If your recipe does not contain a pump step select “Pump PC” and start.
5. Load a recipe by clicking “Select.”
6. Click the “Recipe” button. Find the recipe that you need.
7. Click Start.
8. Enter a note for the log file. This can be anything, but a short descriptive note can be helpful for us when we are debugging the system.
9. Click Start again.
10. Now navigate to the system map.
11. Check the pressure inside the process chamber (PC) on the top. The machine will automatically pump the pressure down to vacuum. The deposition will not start until the ion gauges (IG) reach their setpoint.



12. You may wish to leave during the pump down. It takes about half an hour. You can click “hold,” and the machine will wait for your input after pump down.

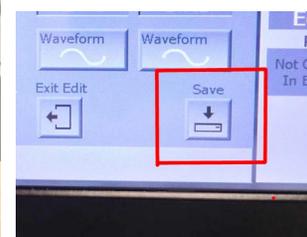


You should be present when the deposition starts, because sometimes there are errors at the beginning of the deposition step.

If you chose to click “hold,” then when pump down is finished you may click “resume” to begin deposition.

13. Wait for the power to stabilize after deposition starts. When power is stable, take the handheld EBC controller and click the “pos adjust” button.

Move the beam around with the joystick until you find a minimum power output. Changes might be very small.



After you find it, press “save” on the EBC touchscreen and put the handheld controller back.

Repeat this every 15 minutes or so.

14. When deposition is finished, the machine will close the gate valve and vent the PC assuming you have vent step in your process.
15. Unlatch the door and remove your sample.
16. In the auto menu, select “pump PC.” For the final gate valve position, select “down open.”

#### Common errors:

Error message	Solution
Power supply not on	Press “save” button on EBC controller
Minimum deposition rate alarm	Likely that the soak powers in your recipe are not high enough. If you are comfortable re-starting the deposition, you may abort and adjust your recipe. If you cannot afford extra deposition thickness from re-starting, click “resume” and it might work.