

# Sawatec LSM-250 and HP-200 User Manual

Version of 2024-11-26.

## 1. Introduction

This user manual explains how to operate the Sawatec LSM-250 manual coater and the Sawatec HP-200 hotplates for the coating and baking of SU-8 films.

## 2. Login

- Login on “Z13 Sawatec LSM250” or “Z13 Sawatec Hotplate” (left or right) with CAE on zone 13 accounting computer.

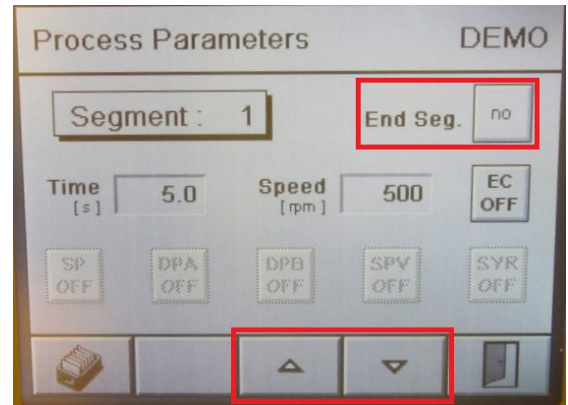
Z13 Sawatec Coater for SU8
Z13 Sawatec Hotplate for SU8 left
Z13 Sawatec Hotplate for SU8 right

## 3. Sawatec LSM-250 coater operation

- First, users should edit the spin profile recipe according to the SU-8 runcard.
- Recipe edition is accessed through the Sawatec touch-sensitive panel by pressing the following very intuitive ☺ sequence:



- Next, users will be able to edit the **Time [s]** and **Speed [rpm]** of all segments. Up/Down arrows are used to cycle through the segments.
- For the last step (usually segment N°8), make sure to activate **End Seg. YES** so that following segments are ignored.



- After edition, users can save (and later load) the recipe, with a name and description, by pressing this icon:



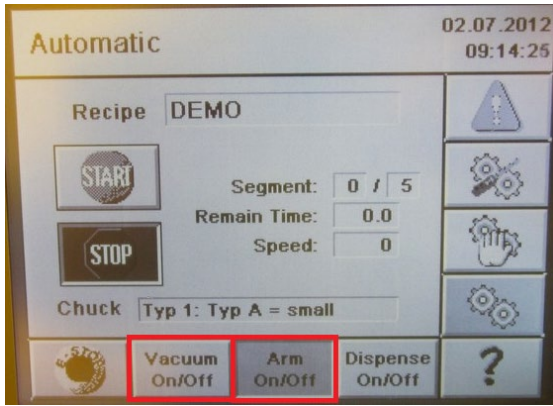
- After edition, users can go back in the menus with the “door” icon:



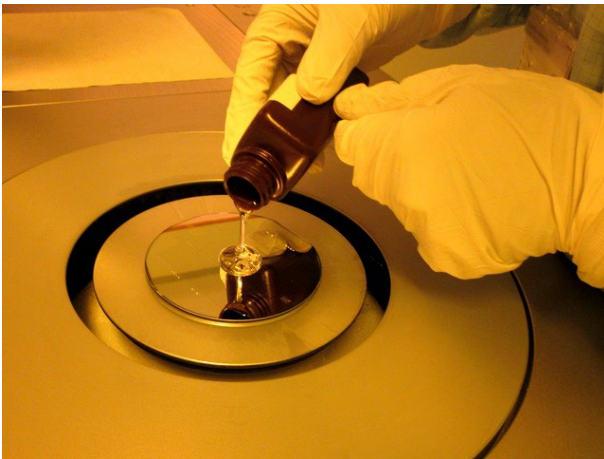
- Next, users will access the menu to start the spin-coating process with:



- Before going further, always check that the **“Arm” button is ON (greyed out)** so that the cover glass will cover the bowl during spin-coating.
- It is recommended to activate the “Vacuum” and check that the wafer chuck vacuum is close to -0.8 Bar.



- The SU-8 resists are dispensed directly from the bottle. The resist pool should be approximately 5cm diameter.



- Make sure that the cover glass is not obstructed by any objects and start the process:



- Wait for process completion. The cover glass will move back to standby position. The wafer is then ready to be transferred to the hotplate.

#### 4. Sawatec HP-200 hotplate operation

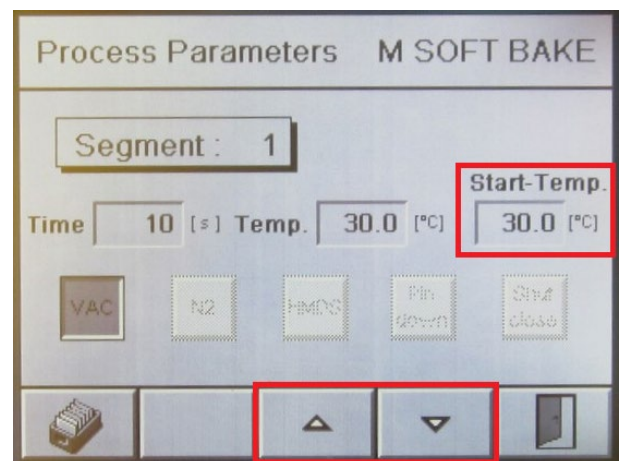
Depending on the SU-8 supplier (Gersteltec or Kayaku), the hotplates will be used either at fixed temperatures (usually 65°C and 95°C) or with ramps. The two operation procedures are explained below:

#### a) Process with ramps (for Gersteltec SU-8):

- Before transferring wafers to the hotplate, always double check that the actual temperature is not too high (from previous processed).
- Wafers are loaded on a new cleanroom paper. Maximum 4 wafers are processed in the same batch.
- First, users should edit the softbake or PEB recipe according to the SU-8 runcard.
- Recipe edition is accessed through the Sawatec touch-sensitive panel by pressing the following very intuitive ☺ sequence:



- Next, users will be able to edit the **Time [s]** and **Temp. [°C]** of all segments. Up/Down arrows are used to cycle through the segments. The 1<sup>st</sup> segment will have both starting and final temperatures, and it will be generally used to do a RT relaxation before softbaking.



- For the last step (usually segment N°4 or N°5), make sure to activate **End Seg. YES** so that following segments are ignored.
- After edition, users can save (and later load) the recipe, with a name and description, by pressing this icon:



- After edition, users can go back in the menus with the “door” icon:

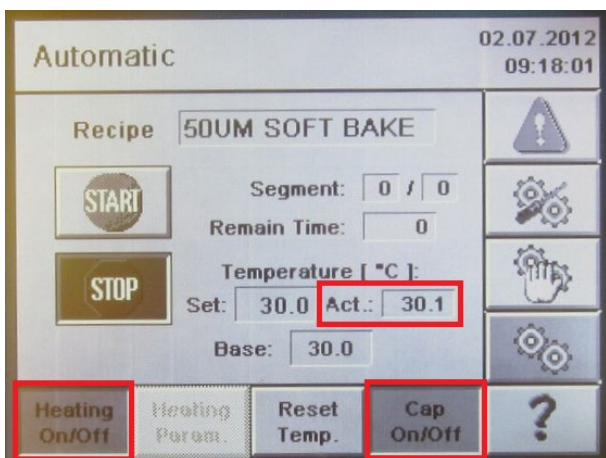
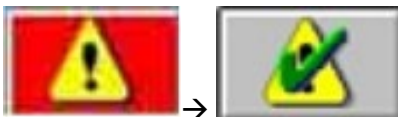


- Next, users will access the menu to start the spin-coating process with:

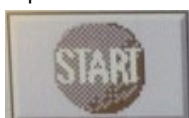


- Before going further, always check that the “Heating” and “Cap” buttons are ON (greyed out) so that the heating will be ON and the cap will close providing vapour confinement and exhaust during the bake.

In addition, make sure that the actual temperature is less than 5°C difference from the programmed starting temperature of the system will give an alarm. In case of alarms, acknowledge with:



- Start the bake process:



- Wait for process completion. The cap will open when done. The wafer is then ready to be stored in your box ready for the next step.

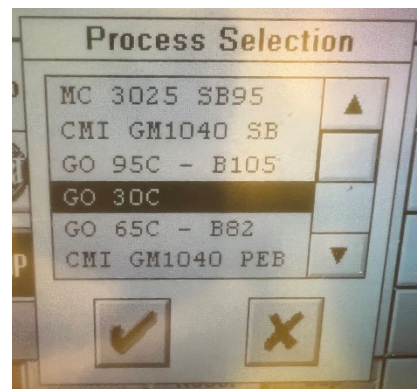
Note: The Sawatec hotplate does not have any active cooling so cooling down can take longer than programmed. It is safe to remove wafers when the temperature is < 70°C.

- Clean the working place properly.
- When done, logout with CAE on zone 13 accounting computer.

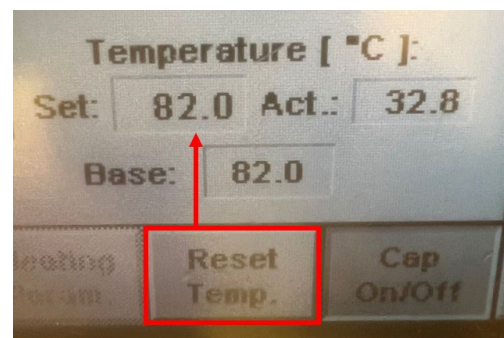
**b) Process at fixed temperature (for Kayaku SU-8):**

- Before transferring wafers to the hotplate, click on “Recipe” and select one of the two following recipes to heat the hotplates to either 65°C or 95°C:

- GO 65C - BXX
- GO 95C - BXXX



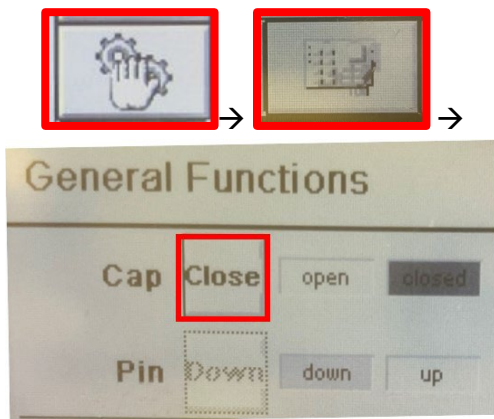
- DO NOT START! Instead click on the “Reset Temp.” button.



- Wait for the temperature to increase to the set base value. Base values are

optimized on both Sawatec hotplates so that 65°C and 95°C are measured on the glass plate using external TC probes!

- Wait ~5 minutes for the temperature to stabilize.
- Place your wafers on the hotplate and use a timer to record the bake time.
- The cap should be closed during the bake step. Closing (and opening) the cap is done by pushing the following buttons:



- When done, before the logout, the temperature of the hotplates should be brought back down to 30°C by selecting the "GO 30C" recipe and clicking on "Reset Temp."