

CMP II (Chemical Mechanical Polishing) - STEAG MECAPOL 460

User Guide

Summary

- I. Machine Start-up
- II. Starting the polishing
- III. Stopping the tool
- IV. Edition of recipes

**WAFERS WITH
METAL ARE
FORBIDDEN !**

I. Machine Start-up

1. Log on
2. Stop the standby mode (Fig. 1) by pressing "Return".
3. Select the "operator" menu to install the slurry.
4. Click on "operator manual commands" menu.
5. Click on "Slurry pumps" menu to open the window for manual operations (fig. 2).
6. Set at "100%" the slurry flow of the 4 pumps and set the "reverse sens" to "OFF".
7. Click on "transfer" to execute the operation.
8. Go behind the tool where you have 4 slurry pumps with 4 tubes/pipes (Fig. 3). Select the one you have in your recipe and put the tube/pipe from the water container in the slurry container (see below).

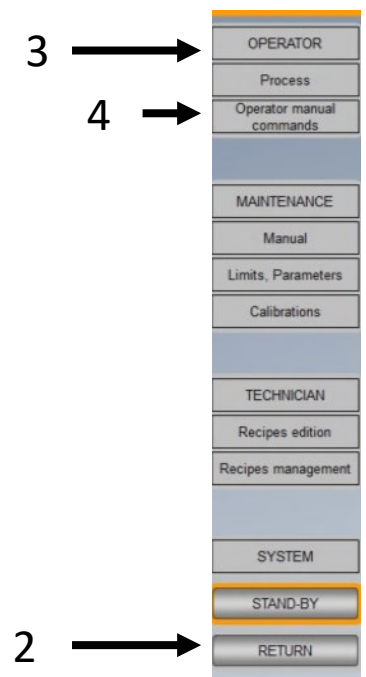


Fig. 1 : Command bar



9. Once you see the slurry on the pad, set at "0%" the slurry flows.
10. Click on "transfer" to execute the operation.
11. Close the window to exit the "Slurry pumps" menu.
12. Click on "Return" to exit the "Operator" menu.

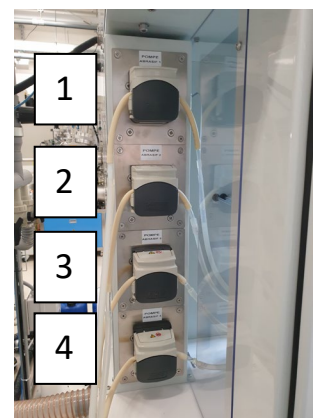


Fig. 3 : Slurry pumps

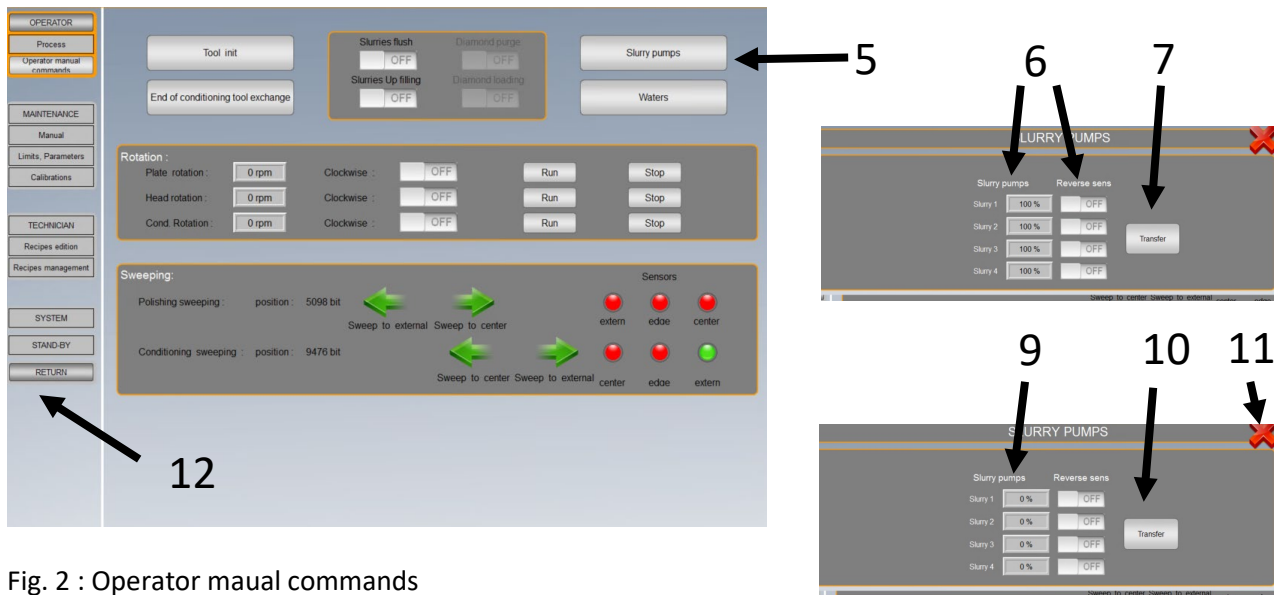


Fig. 2 : Operator manual commands

Available slurries :

30N50 or Ultra Sol 7A : Standard CMP slurry For SiO₂, polysilicon and aSi. Basic solution.

40EA50 : For Si only. This slurry should be used in a 1:10 dilution with water. There is a bucket with pure 40EA50, and a bucket with 1:10 diluted 40EA50. If needed refill the diluted bucket. Prepare the diluted solution using the beaker with a "CMP" label near the sink. **Do not use the beakers labeled "TSV"**.

30H50 : Slurry reserved for specific applications. Contact staff for information.

II. Starting the polishing

Remark 1 : It is strongly recommended to proceed to about 3 to 5 polishing runs with wafers "dummies" to stabilize the operating conditions of the machine.

Remark 2 : Polishing heads are designed for 525 µm thick wafers. For other dimensions, it is essential to change the black ring of the polishing head (contact staff).

1. Stop the standby mode (See fig 4) by pressing "Return".
2. Select the "Operator" menu.
3. Click on "Process" menu.
4. Select your recipe
5. Click on the 2 fields "Batch name" and "Comment" and fill them
6. Click on the yellow arrow

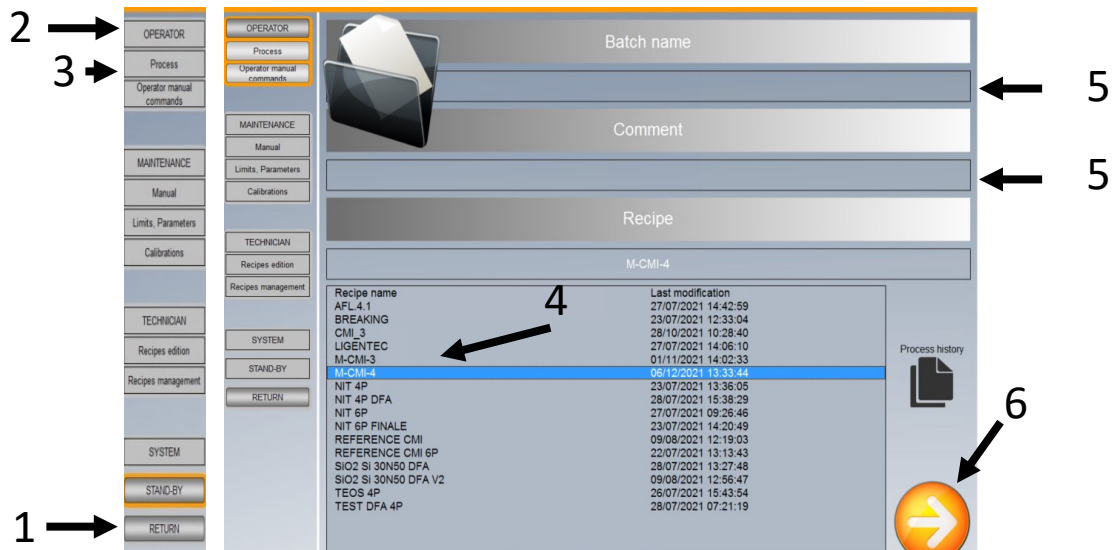
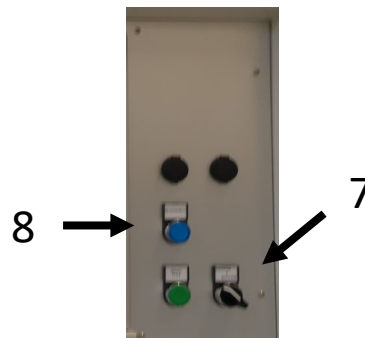


Fig. 4 : Loading recipe

- Open the door, **wet the backside of the wafer** and load it (polishing face down) on the head. Switch on the vacuum "Aspiration".
- Close the door and **don't forget to reset the safety mechanism "Rearmement"**.



- On the new screen, you have 3 choices, click on "Initial conditioning run".

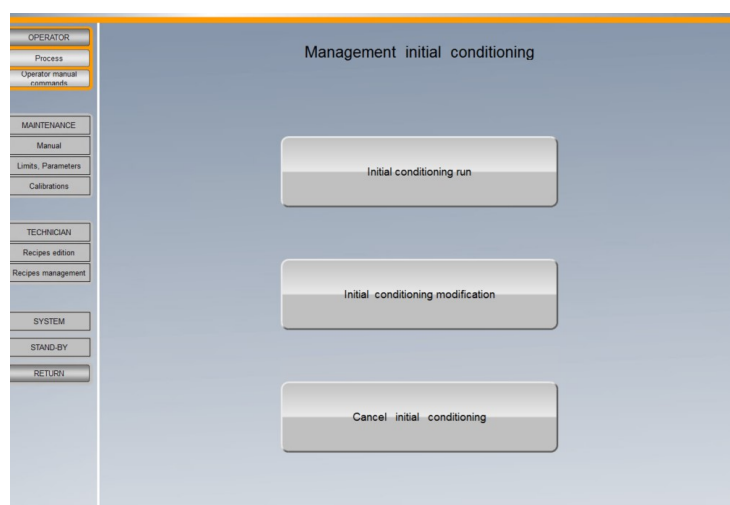


Fig. 5 : Initial conditioning

NB : Once the conditioning is done, your recipe is in edition mode and you can modify all the parameters of each the step by clicking on the step n° (see Recipe edition).

10. In the “Commandes” menu, select the sequence “conditioning + polishing” (see fig 6).
11. Press “start”. First a new conditioning step is done and then your polishing recipe.

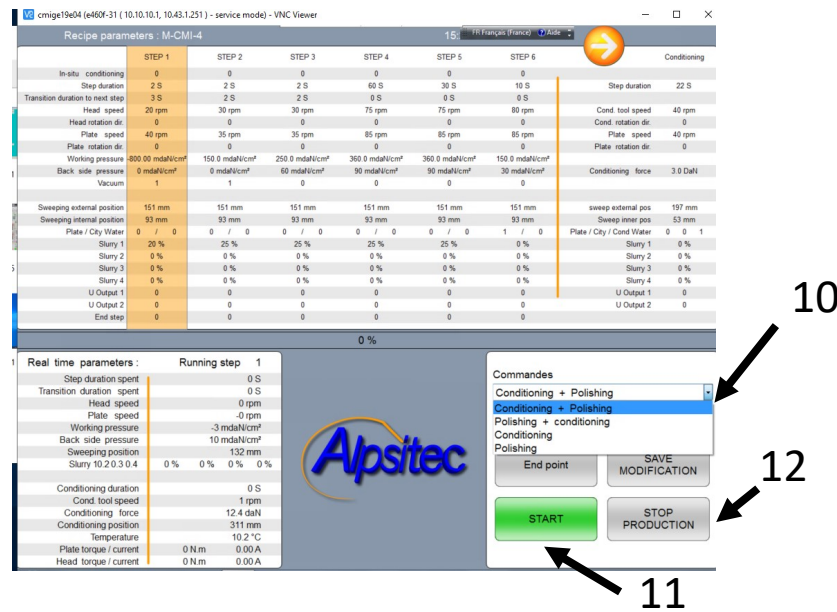
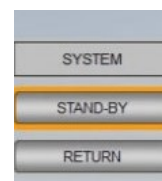


Fig. 6 : Start recipe

12. Once all the polishing runs are done, to stop the tool, press “Stop production” to exit the “Operator” menu

III. Stopping the tool

1. Select the “Operator” menu to purge the slurry line
2. Click on “Operator manual commands” menu.
3. Click on “Slurry pumps” menu to open the window for manual operations.
4. Set at “100%” the slurry flow of the 4 pumps and set the reverse sens “OFF”.
5. Click on “transfer” to execute the operation.
6. Go behind the tool where you have 4 slurry pumps with 4 tubes/pipes. Remove the pipe from the slurry container, rinse it and put it back in the water container. If needed, refill the water container.
7. Once you see water on the pad, set at “0%” the slurry flows.
8. Click on “transfer” to execute the operation.
9. Close the window to exit the “Slurry pumps” menu.
10. Click on “Return” to exit the “Operator” menu.
11. Click on “Standby”
12. Log out



IV. Edition of recipes

The polishing recipe is composed of 3 parts:

- The initial conditioning recipe: to restart the tool after standby
- The conditioning recipe: to do between each polishing
- The polishing recipe:

The initial conditioning recipe is set by the staff. Please contact CMi staff if you want to modify it. For the polishing parameters and for the conditioning, it's strongly recommended to do it on the staff supervision.

The polishing recipe can have up to 17 steps. In each step, you can associate a transition step which is characterized by a linear variation of the pressures and speeds (Back pressure, polishing pressure, head and pad rotation speeds) at the end of the step and before the beginning of the next the step.

To edit a recipe (from standby mode)

1. Click on "Return"
2. Click on "Technician" mode
3. Click on "Recipes edition" mode
4. Select your recipe
5. Click on "Load"
6. On the first window, you have access to the setting of the machine for the 4" wafers. **Please don't change them.** Press "next" (Yellow arrow) to go to the next window.
7. On the second window, you have access to the setting of the initial conditioning **Please ask to CMi Staff to change them.** Press "next" (Yellow arrow) to go to the next window.
8. On the third window, you have access to the setting of the polishing recipe. You can change them by double clicking on the numbers. Press "next" (Yellow arrow) to go to the next window.
9. On the fourth window, you have access to the setting of the conditioning. You can change them by double clicking on the numbers. Press "next" (Yellow arrow) to go to the next window where you 3 options:
 - a. "Save" to save the modifications of one of the 3 parts of the recipe in the same recipe
 - b. "Save as" to save the modifications of one of the 3 parts of the recipe in a new recipe
 - c. "Exit" to exit without saving
10. Press "Return" to exit the "Technician" menu.
11. **Click on "Standby"**

