ALD OPERATION

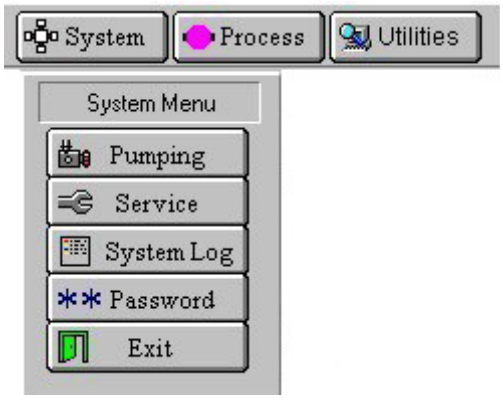
Introduction:

The Oxford FlexAL system is an ALD processing system that can be configured to deposit a wide range of materials. The system features an automatic vacuum loadlock which allows substrates to be loaded without venting the main process chamber. Currently, the loadlock wafer holder is configured for the 6" wafer as the carrier. Piece samples are manually loaded on to the 6" Si carrier wafer. The system automatically transfers the wafer carrier into the process chamber, runs the desired process, then returns the carrier to the loadlock.

Procedure:

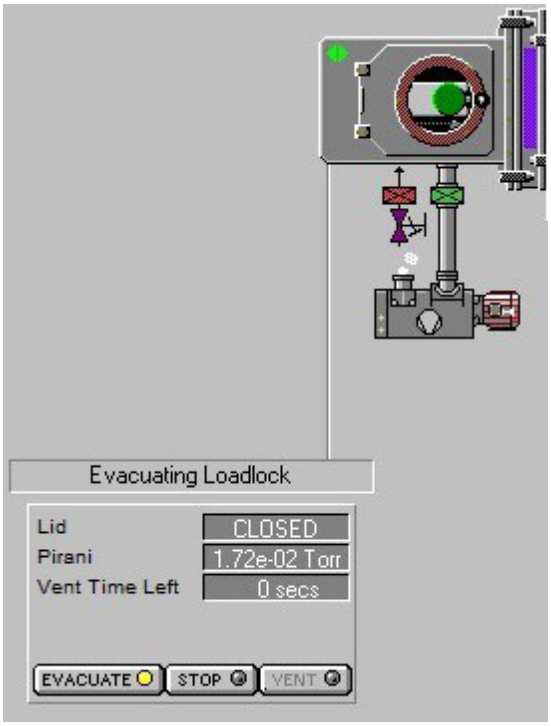
Log on to the system by clicking on the **System** button at the top of the screen and select **Password** from the drop down menu.

username: OPT
password: OPT



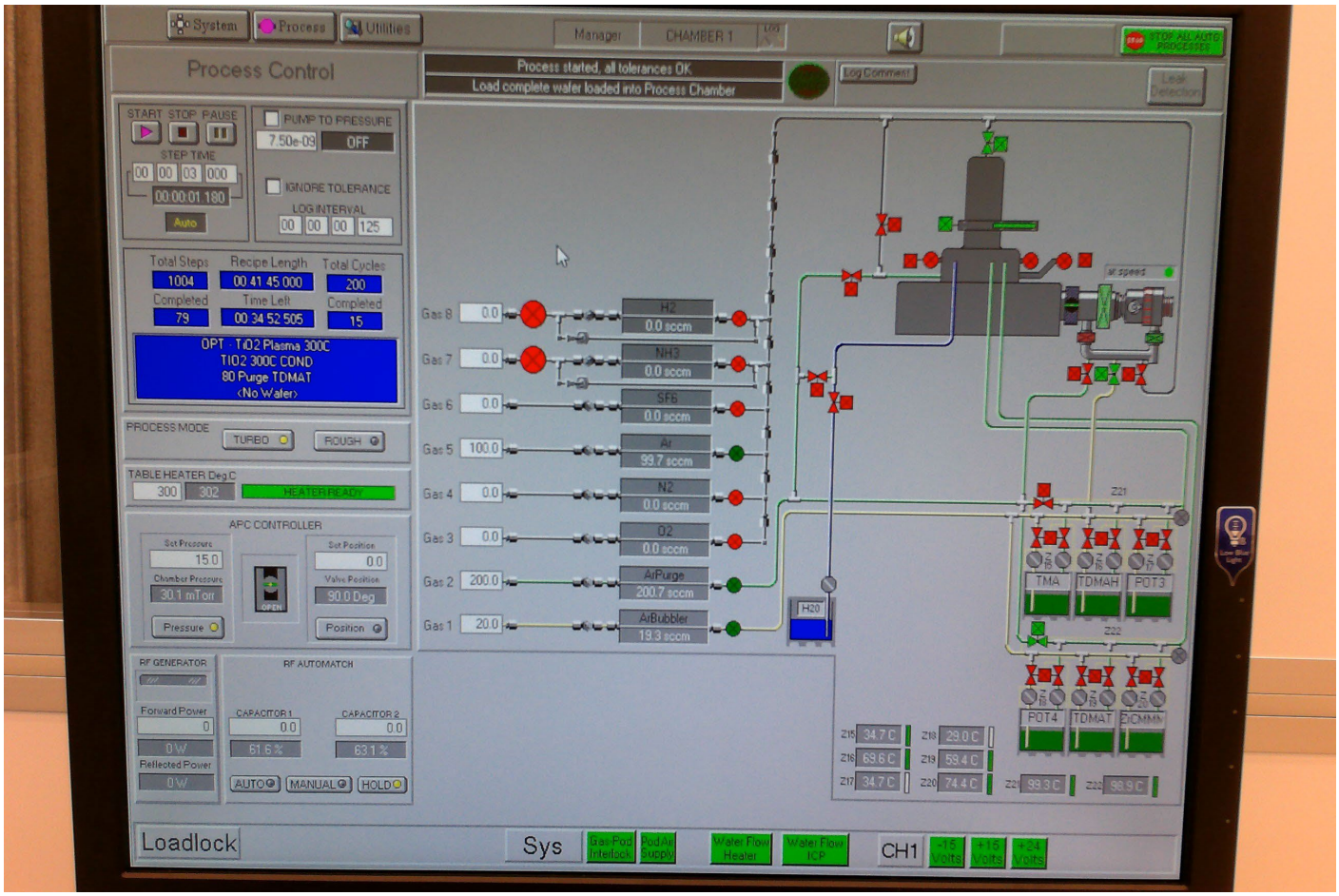
To load a wafer into the system, click on the **Pumping** button from the **System** menu.

Under the Loadlock image, click on the **STOP** button, and then click on **VENT**.



The Vent Time Left feedback will start counting down. When the loadlock reaches atmosphere and the Vent Time Left is 0 secs, open the loadlock lid and place your samples on the 6" Si wafer carrier in the loadlock. Verify that the 6" Si wafer carrier flat is right against two screw stops (adjust as needed). Close the lid and pump the chamber down by pressing **STOP** and then **EVACUATE**. Enter the wafer ID and click OK. When the Green dot appears, it indicate it is ready to run the process.

The default process chamber temperature is 130°C; if a different chamber temperature is required it may be changed on the Chamber screen. To go to the chamber screen, click on **Process** button at the top of the screen and select **Chamber 1** from the drop down menu.



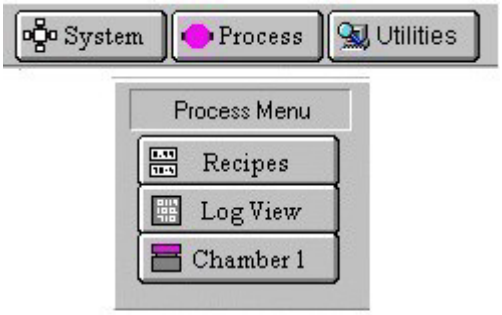
Adjust the process temperature using the Table Heater setting.

Note: Loadlock needs to be under vacuum in order to change wafer table heater temperature.

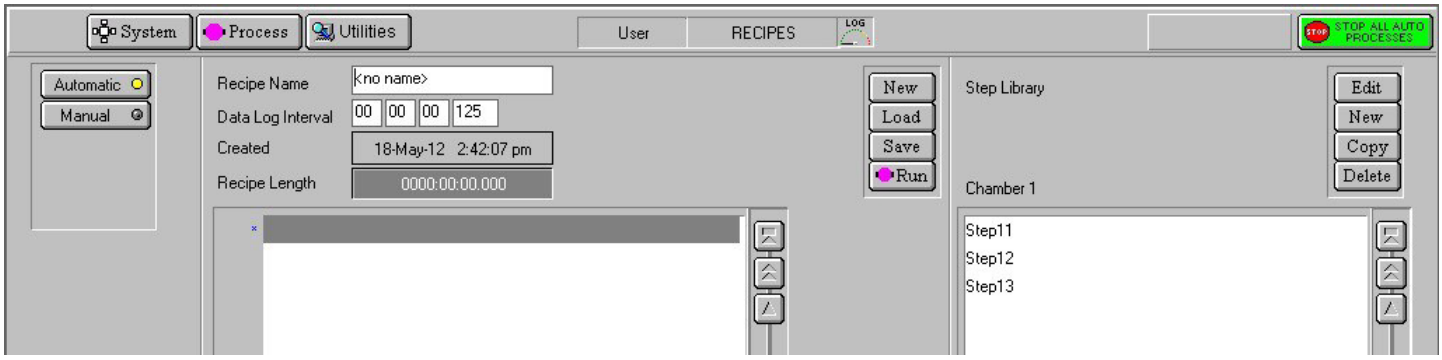
Enter the desired temperature, click SRART & STOP to activate temperature change. The table temperature will start to change. Verify the actual temperature in grey is the same as the desired temperature before running any process.

Note: it will take a long time to cool than heat up, so planning is important for running at temperature other than default 130C.

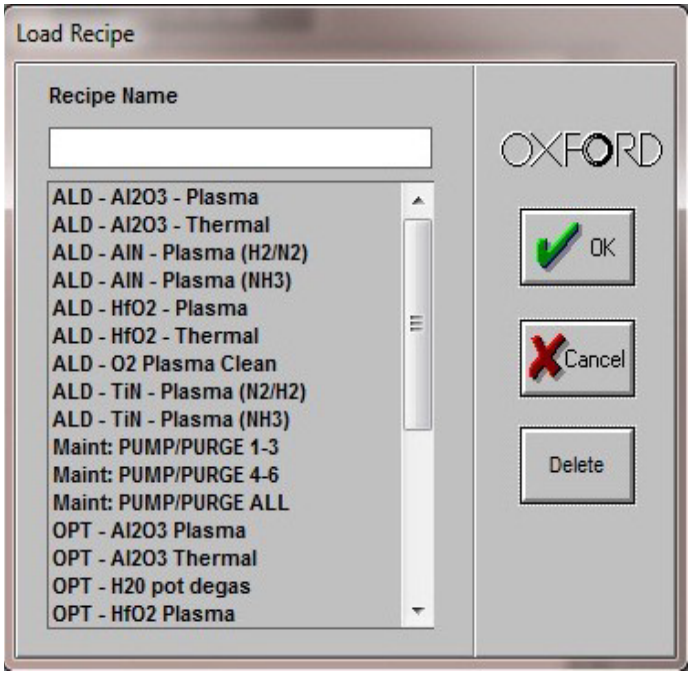
To process a wafer, click on the **Process** button and select **Recipes** from the drop down menu:



Click on the **Load** button to pull up the list of available recipes.

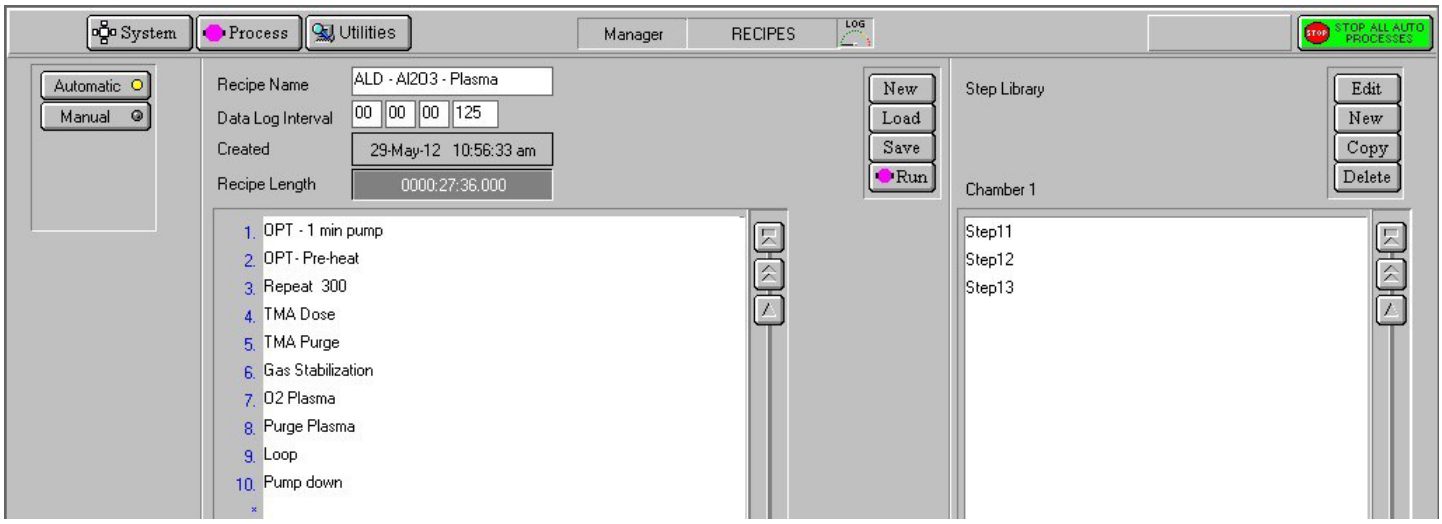


Click on the desired recipe and click **OK**.

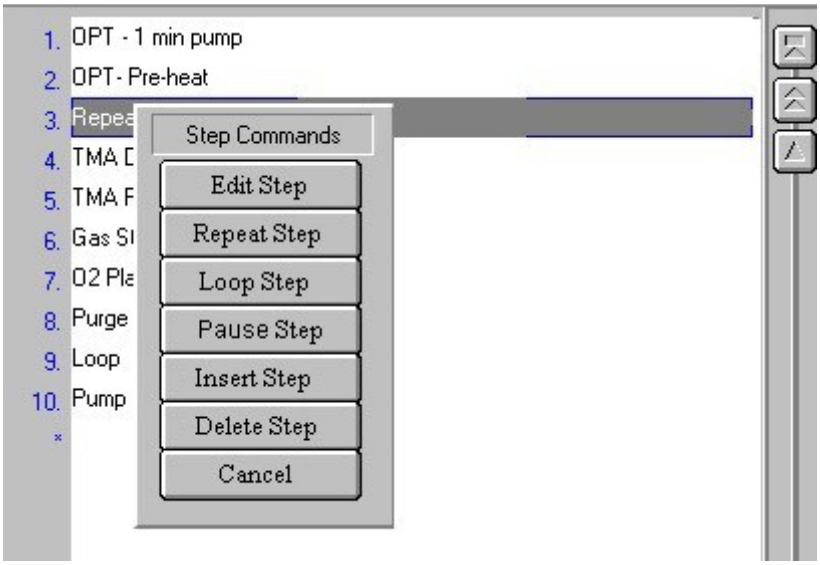


Click "yes" to overwrite previously loaded recipe.

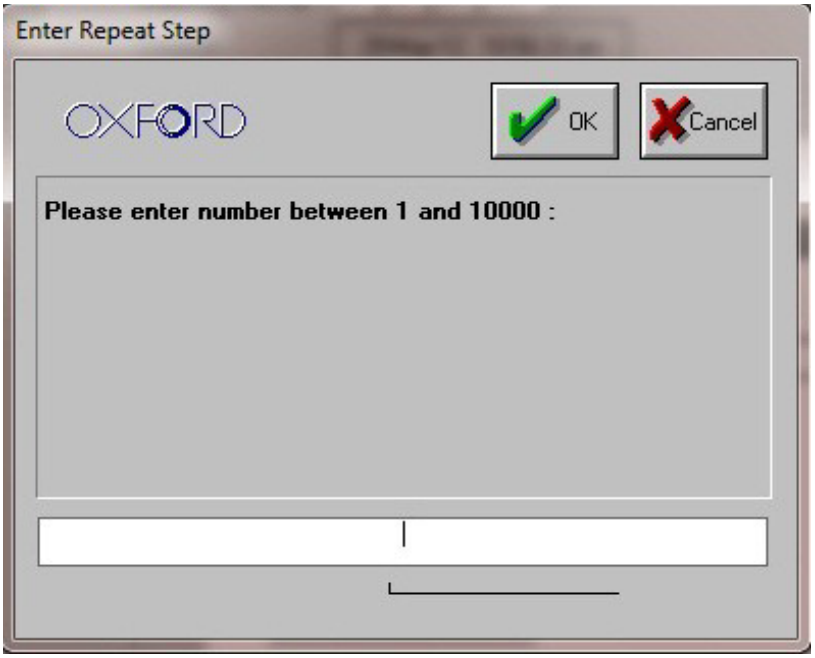
The recipe steps will be displayed on the screen.



Click on the **Repeat Step** button.

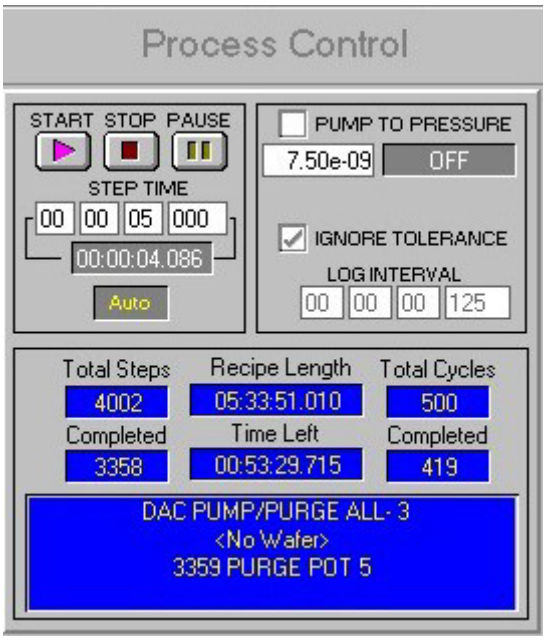


Enter the number of cycles you require for the desired film thickness.

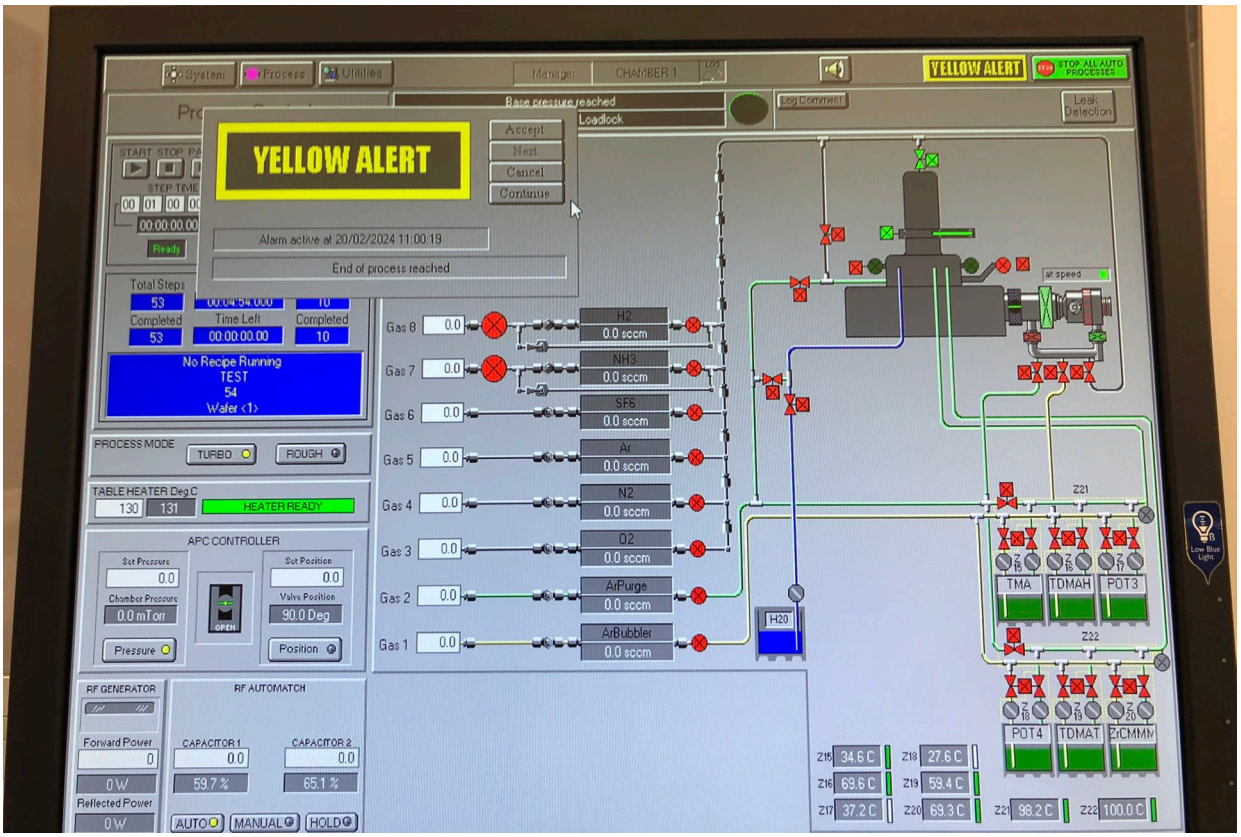


Click on the **Run** button to begin processing the wafer.

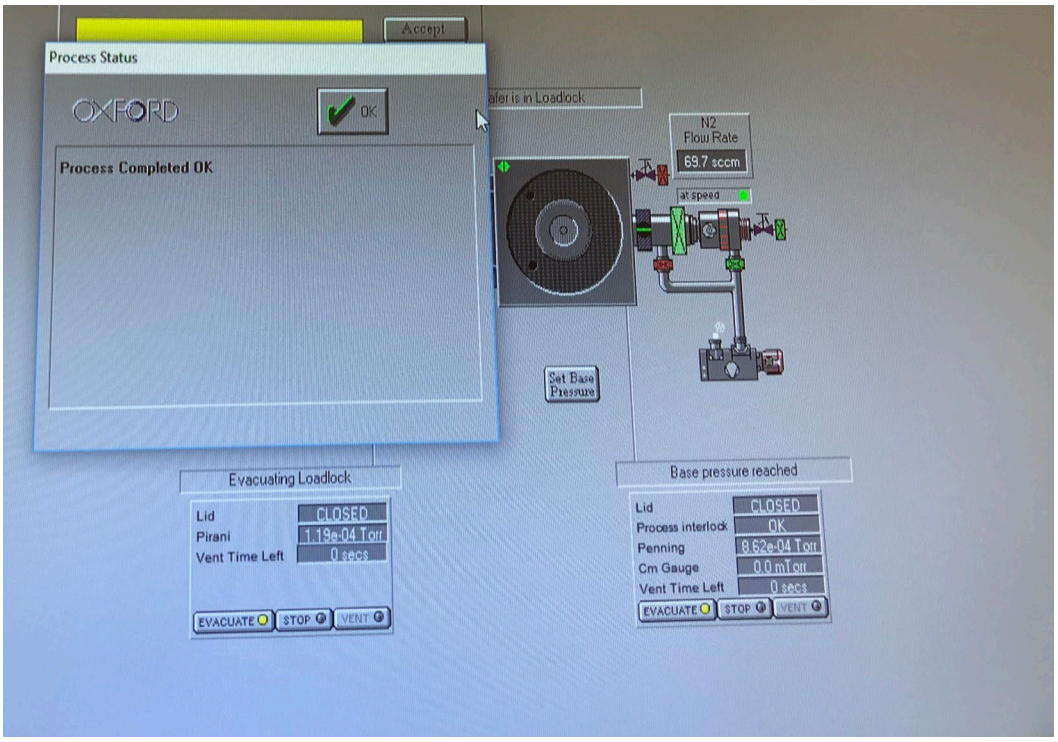
The wafer progress may be monitored from the main chamber screen, and the time to completion is detailed in the Process Control section.



When the process is complete, a yellow alert will appear, **DO NOT ACKNOWLEDGE IT:**



Wait until the process complete message appears:



Click ok, the wafer will be returned to the loadlock automatically for removal.

To unload a wafer from the loadlock, click on the **Pumping** button from the **System** menu. On the load lock image Press **STOP** and then **VENT**. The Vent Time Left feedback will start counting down. When the loadlock reaches atmosphere, open the loadlock lid and remove your wafer on the load arm.

Close the lid and pump the load lock down by pressing **STOP** and then **EVACUATE**.