

Quintel Contact Printer

Daily Startup Checks & Operational Verifications

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Purpose

This document defines daily startup procedures and performance checks for the Quintel Contact Printer in the NSERL Clean Room. The purpose is to make sure the tool is operating properly so that a user can operate the tool without encountering operational problems.

Daily PM Tasks

Startup & Operation Verification

This section deals with tool startup and checks, as well as operating performance and assuring that the system is ready for users to process material. This does not verify spec performance of the tool process.

- Sign in to the logbook
- Turn on the system power.
- Turn on the lamp power supply under the table
- Turn on the Video Camera electronics – (monitor and video processor box behind system)
- Turn on the camera illumination lamps – knob on left side knob panel
- Load clean clear field photomask matching the fixture size – press Mask Vacuum button on right panel to clamp mask
 - Check the tightness of the fixture screws – firm, but not over tight.
- Load clean wafer
 - First check for left over tape, resist, etc on wafer chuck – remove if necessary
 - Load clean wafer, push slider in and hit “LOAD”
- Check Wafer-Mask contact for air gap interference rings.
 - Unlock and Rotate Lamp head out of the way to look for air-gap interference fringes
 - If air-gap interference rings are few, widely spaced and randomly wavy, things are good.
 - If air-gap interference rings are many, closely spaced and parallel, there may be a problem, stop and investigate.
 - Rotate lamp head back to normal and lock (Button under power button on upper right front face under lamp housing.

- Fire up the UV Lamp
 - Lamp needs about 15 minutes to stabilize before use
- Move alignment cameras over features on the mask
 - Set magnification to at least 4X
 - Focus the cameras
- Move the alignment joystick and observe features on the wafer moving about
 - Look for the features to move freely in all directions and stop when the joystick stops.
 - Also press the “COARSE” alignment button and make sure the stage moves much faster and farther.
- Test Contact Alignment
 - Move the joystick in fine adjust mode and watch a wafer feature move.
 - Stop the joystick and press the “CONTACT” button
 - The wafer feature should not move out of overlay position during the banking step – just press against the mask
- Measure the lamp Parameters after 15 minutes has expired from the time you started the lamp.
 - Lamp Intensity
 - Fetch the intensity meter from the bottom drawer on the roll-around cabinet next to the Blue M ovens.
 - Turn it on and set the “A” or “B” sensor in the middle of the mask
 - Press “ENTER”
 - Press “4 CONTROLS”
 - Press “3 EXP TEST” – the optics will open up ready to expose
 - Press “2 MAN SHUTTER” to illuminate the intensity meter sensor
 - Read the light intensity for both the 400 nm and 365 nm wavelengths
 - Record these numbers in the logbook
 - Press “2 MAN SHUTTER” again to close the shutter
 - Press “3 EXP TEST” to retract the optics
 - This should leave the controller with the lamp exposure time screen displayed ready to expose.
 - Turn off the intensity meter and return it to its home in the drawer
- Clear the wafer out of the machine
 - Press “CLEAR” to remove the wafer
 - Pull the wafer stage drawer out and remove the wafer
- Record the Lamp Power Parameters
 - Read the Voltage and Current on the Lamp power supply box under the table
 - Note meter switch to change between voltage and current under the meter.
 - Record the numbers in the logbook
- Record the lamp hours in the logbook

- Remove the Photomask
 - Press “MASK VACUUM” to release the mask
 - Remove it and place it in its box and return it to its home in the little cabinet by the Blue M Ovens.
- If all inspections indicate that the tool is operating properly, then leave a note in the Logbook that the “System is ready for operation.”

Quarterly Qual Tasks

This level of performance checks involves verification of a full lithography process that assures a user would receive spec performance from the standard process flow. The tool evaluation will be a part of a full lithography process involving mask making, and exposure of the pattern onto a wafer via the Quintel contact printer and then development via CPK spin processing. Evaluation of the results and interpretation of defects and faults will be required to identify which tool caused the problem.