Foamtec International
Wilshire Contamination Control Division
cleaning critical surfaces

BEFORE **AFTER**

VACUUM CHAMBER PM TECHNIQUE
LAM 2300 METAL ETCH
CHAMBER PM: HEAVY DEPOSITION

OBJECTIVE:

TO EFFECTIVELY PM THE LAM 2300 METAL ETCH CHAMBER IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY AND PARTICLE PERFORMANCE

Vacuum Chamber: LAM 2300 METAL ETCH
Vacuum Chamber Process Residue: PROCESS INDUCED RESIDUE
Vacuum Chamber Components: CHAMBER, SLIT VALVE, CHUCK AND PARTS

Old Procedure: **6 HOURS, THREE TECHS**, using ScotchBrite®, DI water, 150+ wipes & IPA

New Procedure: **2 HOURS, ONE TECH**, Foamtec HT4500-LAM23-1 PM Kit, DI water & IPA

Vacuum Chamber Products:

LAM2300 METAL ETCH CHAMBER PM KIT
PM Kit P/N: HT4500-LAM23-1 PM KIT
Heavy Deposition

- (1) HT4754 UltraSOLV® Sponge
- (4) HT4536D-10-1 360 Grit Diamond ScrubPAD
- (1) HT5790S-25 MiraWIPES®

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE:

View "How to" instructional videos on http://www.foamtecintlwcc.com/flash/

Step 1: Using proper procedures and safety guidelines, shutdown and prepare LAM 2300 Metal ETCH Chamber for wet clean

Step 2: Properly stage a container of DI water next to the chamber and place a HT4536D 360 Grit Diamond ScrubPAD and HT4754 UltraSOLV® Sponge into the container (See Fig 1)

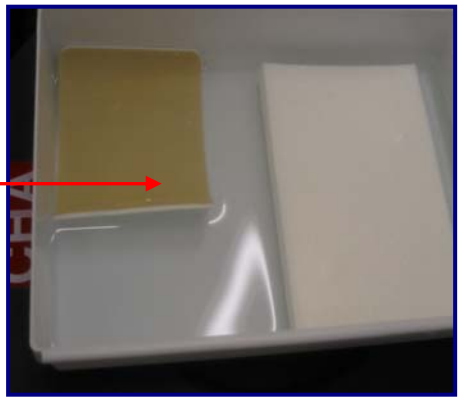

Fig 1: Container of DI water with ScrubPAD and UltraSOLV® Sponge

Step 3: Take damp UltraSOLV® Sponge and begin wiping Metal ETCH Chamber allowing the water to react with the process induced residue. Remove as much of the deposition as possible with the sponge (See Fig 2)

This initial wipe portion of PM will take 20-25 minutes, and if performed properly, will be able to remove much of the deposition with just the sponge

Fig 2: Dampened UltraSOLV® Sponge wiping Metal ETCH Chamber

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 4: It will be important to keep the UltraSOLV® Sponge moist and clear of excess deposition by replacing the sponge into the container of DI water and rinsing clear (See Fig 3)

NOTE: The Metal ETCH Chamber will be very hot; therefore, it will require rinsing the sponge **frequently** in the DI water in order to keep it moist

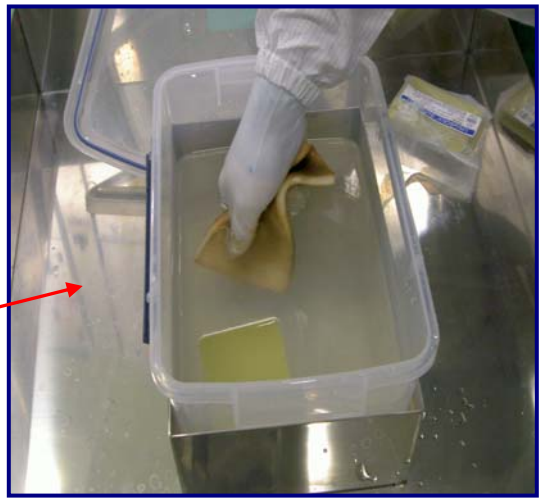

Fig 3: Rinsing UltraSOLV® Sponge in container of DI water

Step 5: After performing initial wipe with the UltraSOLV® Sponge for at least 20 minutes, take the moist 360 Grit Diamond ScrubPAD from the container of DI water and begin scrubbing the Metal ETCH Chamber (See Fig 4)

Ensure to keep the ScrubPAD moist during scrub portion of PM by replacing it in the container of DI water as necessary

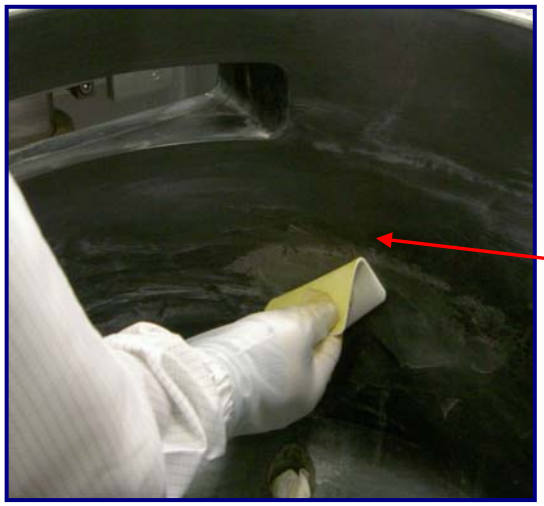

Fig 4: 360 Grit Diamond ScrubPAD Scrubbing chamber wall

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 6: Be prepared to wipe the scrubbed portion of the chamber with the dampened UltraSOLV® Sponge immediately after scrubbing with the 360 Grit Diamond ScrubPAD, ensuring not to let the wet deposition dry onto the chamber wall (See Fig 5)

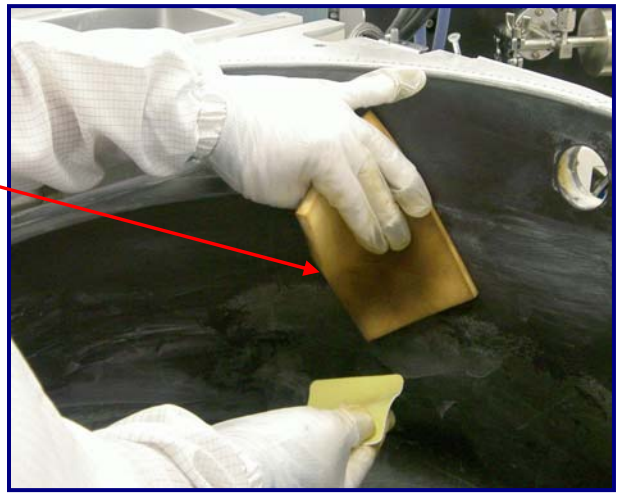

Fig 5: UltraSOLV® Sponge wiping Metal ETCH Chamber during scrub portion of PM

Step 7: Pull ScrubPAD across the UltraSOLV® Sponge in one direction to free ScrubPAD of deposition (See Fig 6, 7 & 8)

Fig 6: ScrubPAD loaded with deposition

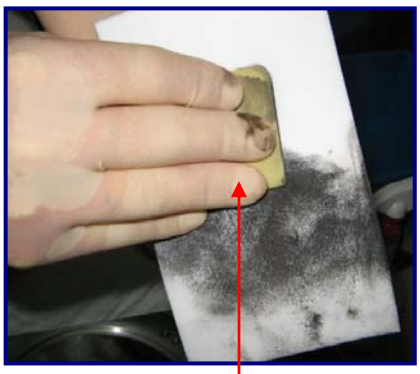

Fig 7: Pull ScrubPAD across UltraSOLV® Sponge

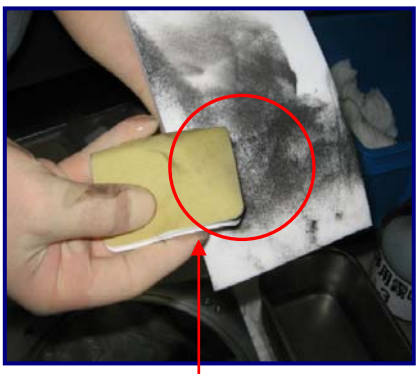

Fig 8: Unloaded ScrubPAD

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 8: Continue to return UltraSOLV® Sponge and 360 Grit Diamond ScrubPAD to the container of DI water to rinse free of deposition (See Fig 9 & 10)

Fig 9: Loaded-up UltraSOLV® Sponge

Fig 10: UltraSOLV® Sponge AFTER rinse

NOTE: Continue to repeat this **SCRUB – WIPE – RINSE** procedure outlined in steps 5 - 8 for the remainder of the Metal ETCH Chamber. The KEY POINT is to **not** let the wet deposition dry onto the chamber wall

Step 9: Replace container with fresh DI water after completing half of Metal ETCH Chamber scrub

Step 10: Replace HT4536D 360 Grit Diamond ScrubPAD with a new one when ScrubPAD appears worn (expect to use three on chamber, one for e-chuck and door assembly)

Step 11: Using same procedure as described above, proceed to SCRUB – WIPE – RINSE the bottom portion of the e-chuck assembly and chamber door mount (See Fig 11 & 12)

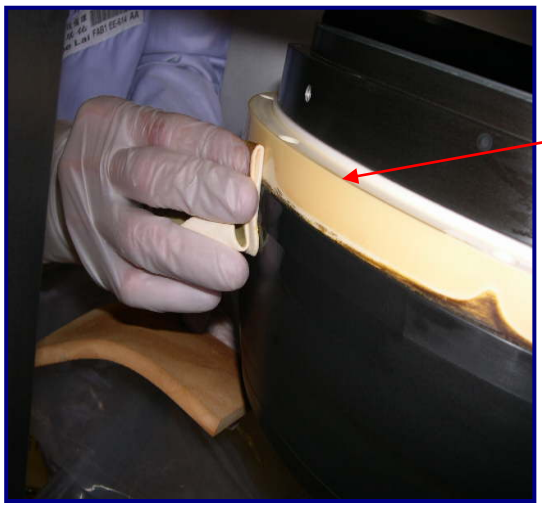

Fig 11: Diamond ScrubPAD removing deposition from bottom of e-chuck

Fig 12: UltraSOLV® Sponge removing scrubbed deposition from e-chuck

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

NOTE: May remove deposition buildup on e-chuck ceramic ring if desired (See Fig 13)

Fig 13: Clean ceramic ring

Step 12: Rinse out UltraSOLV® Sponge in fresh DI water. Prepare Metal ETCH Chamber for FINAL WIPE PROCEDURE by wiping all areas of chamber completely with dampened UltraSOLV® Sponge

FINAL WIPE PROCEDURE:

IMPORTANT NOTE

THE USE OF HT5790S MiraWIPES® DURING FINAL WIPE PORTION OF PROCEDURE IS A CRITICAL STEP TO EFFECTIVELY REMOVE PARTICLE DEFECTS FROM THE LAM 2300 METAL ETCH CHAMBER

NOTE: Figure below shows how much more deposition the Foamtec International MiraWIPE® can remove from a critical surface compared to the standard fab wiper, making the MiraWIPE® FINAL WIPE PROCEDURE the most **CRITICAL STEP** of the PM procedure (See Fig 14a & 14b)

Fig 14a: What the MiraWIPE® was able to remove, AFTER the standard fab wiper

Fig 14b: The last standard fab wiper used to wipe out a chamber

MiraWIPES® are the KEY STEP for DEFECT REDUCTION and IMPROVED TOOL RECOVERY

LAM 2300 METAL ETCH CHAMBER PM PROCEDURE (CONT'D):

Step 13: Ensure to remove gloves and replace with a fresh set prior to FINAL WIPE PROCEDURE

Step 14: Using 100% IPA, dampen the HT5790S MiraWIPES® and perform a **THOROUGH AND EFFECTIVE FINAL WIPE PROCEDURE** of the entire LAM 2300 Metal ETCH Chamber, e-chuck, slit valve, pump ports, view ports, and all associated parts being replaced under the hi-vac within the chamber

TOOL RECOVERY:

Follow proper **Tool Recovery** guidelines as outlined by LAM Research Corporation