

Insert CHTM Logo Here

SAMCO PECVD System

Insert digital photo of SAMCO here

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1 Introduction

1.1 The SAMCO PECVD System is used in the CHTM Cleanroom for depositing silicon nitride type films. It can also be used for simple fluorine based etches of silicon nitride as well as hydrogen anneals. It is currently plumbed with the following gases: 5% silane/95% argon, nitrogen, ammonia, carbon tetrafluoride, and hydrogen.

1.2 The SAMCO is pumped by a vacuum pump containing Krytox™. The vacuum pump is capable of pumping the chamber down to a few millitorr.

1.3 In the past, the SAMCO has been used for depositing silicon dioxide films, but the gases needed for this process have been removed.

2 Basic Safety Reminders

2.1 Because the SAMCO is an older process tool, it is not equipped with the safety interlocks one would expect on a tool such as this. Remember that you are able to flow gases while the chamber lid is opened. Use extreme care when flowing toxic and pyrophoric gases so that you do not flow them into the room air.

2.2 The SAMCO is plumbed with several hazardous gases. You should familiarize yourself with the material safety data sheets (MSDS) for silane, ammonia, carbon tetrafluoride and hydrogen before beginning to use the tool.

3 Qualification Procedures

3.1 In order to become qualified to use the SAMCO, cleanroom users must complete the following:

- Complete cleanroom orientation procedures. We will not begin training someone who has not gone through the cleanroom orientation process.
- Read and understand this operating procedure.
- Attend at least one SAMCO orientation session. These sessions are presented on a monthly basis. You must sign up with the cleanroom manager for the orientation session. Signup is limited and is on a first come, first served basis.

- Practice using the SAMCO with a qualified user until you feel confident in your operation abilities. The qualified user must remain with you at all times while you are being trained.
- Show the cleanroom manager or the designated qualifier that you are competent in the use of the SAMCO. The cleanroom manager or qualifier may ask you questions to further assess your abilities. Once all the above steps have been completed to the cleanroom manager and qualifier's satisfaction, your name will be added to the authorized user list. Only then will you be allowed to use the tool without supervision.

4 Idle Mode

4.1 While not in use, the SAMCO should be in idle mode. Idle mode consists of the following:

- System is being pumped by the vacuum pump with nitrogen flowing through the chamber to give a pressure of approximately 200 millitorr.
- System is currently not being heated, either by the continuous heater or the booster heater.
- All machine controls are off.
- No in use or warning notes are on the tool.

If these conditions cannot be verified, do not use the SAMCO. Contact the cleanroom staff immediately and place a note on the white board in the gowning area which will precisely describe the problem with the SAMCO.

4.2 This section should describe the idle mode of the process tool so the user can determine at a glance if the tool is functional or not. Remind the users that nonfunctional tools need to be reported as soon as possible.

5 Operating Instructions

5.1 Once you have signed up to use the tool, please arrive on time for your appointment, and make sure that your preliminary steps have been completed and you are ready to begin using the tool at the beginning of your appointment time.

5.2

5.3 This should give a step-by-step procedure for the user to follow from tool startup to tool shutdown. Provide sufficient instructions so that someone coming in and reading the process should be able to follow it without much problem. If needed, provide the user with "standard" processes that have been developed by the cleanroom staff as starting points.

6 Emergency Procedures

6.1 This section should provide some basic emergency procedures to follow in case the unexpected occurs. You need not be specific and attempt to come up with all possible scenarios, as this is just a guideline for possible actions.

7 Additional References

7.1 Direct the user to additional reference material on the tool. This should always include at least the user's manual from the manufacturer, the maintenance manual from the manufacturer, and any MSDS for chemicals used in the process tool. State the locations for each of these items. Once manuals are scanned and placed on disk, users should be allowed to check out electronic copies of the manuals from the cleanroom office.

8 Appendix

8.1 This is included to show examples of log sheets and other miscellaneous items that might be needed to operate the tool.