

Tool Identifier	General purpose Forming gas/Ar Annealing furnaces
Document version 1.1	September 2012
Documented by	Karthick Murukesan

SYSTEM INFORMATION

Forming gas/Ar gas annealing furnace – General purpose forming gas annealing furnace.

System owner

Karthick Murukesan

Email: karthick31388@gmail.com

Mobile: +91-9920732851

Authorised users:

KaushikMidya(8828831814), Piyush Bhat(9076461470), Krishnakalli(9920748698), kalaivani, sudipta das.

Operator:

Vijay Mistari, Sunil kale.

Training

For training please contact system owner.

LOG BOOK:

Separate log book has been maintained please make a entry in the log book.

STANDARD OPERATING PROCEDURE

EQUIPMENT SPECIFICATIONS- CMOS specific FGA furnace

1. Naturally cooled open tube furnace.
2. Available gases: Ar, N₂, Forming gas [H₂(5%) + N₂(95%)].
3. Ability to process up to (about 10) 2" wafers simultaneously
4. Max Stable Temp: 600° C.
5. Process tube inside diameter: 3 inch.

➤ **Start Up**

1. Turning on necessary gases.
 - First open the cylinders [Ar (connected locally) or N₂ or FG] at the micro 1 service corridor, set the line pressure to 4 bar (sometimes varies depending upon the number of instruments using the same cylinder simultaneously).
 - The gas flowing into the furnace can be controlled by flow meters present near the tube.
2. Switch on the chillers (mostly on 24*7) & exhausts.[Present there is no exhaust it exhausts inside the same room].
3. Open water inlet corresponding to furnace for cooling.
4. Flip the furnace power switch (to power the heating coils).
5. Flip the furnace control power switch (to power the control unit of the furnace).
6. Now the temperature requirements of centre, right, left zones of the furnace can be set (ramp up rate, mode of ramping up can also be set).

➤ **Process**

1. Manually open the door of load in chamber, load your wafers - typical load in temperature is process temperature as it is low around 400 degree Celsius
2. Use the appropriate long pull rod to slowly push the boat until centre of tube and close the furnace load in door (approximately 30 seconds to reach the centre of the furnace). Each furnace has its own long pull rod.
3. Close the Nitrogen flowing completely and open the forming gas simultaneously. Start the timer, once the annealing time is over close the forming gas and open the nitrogen. Unload the samples and allow it to ramp down.
Note: Check that only nitrogen is flowing in the furnace during ramp down and ramp up.

➤ **Shut Down**

1. Unload your wafers and the boats after your process (boats may be kept inside the tube itself).
2. Close the furnace door.
3. Switch off the furnace power (as it is naturally cooled).
4. Set the furnace for ramp down to room temperature.
5. Once the temperature becomes less than 100 in all the zones, Then the gases can be closed .
6. Then the water lines & exhaust can be switched off (Chiller is 24*7 on).

SAFETY INSTRUCTIONS & PRECAUTIONS

1. When working with the furnaces make sure you are wearing the appropriate gloves.
2. Never touch the hot furnace components and the wafers with gloves as it will contaminate the furnace.