How to change a sample with the gas-flow furnace:
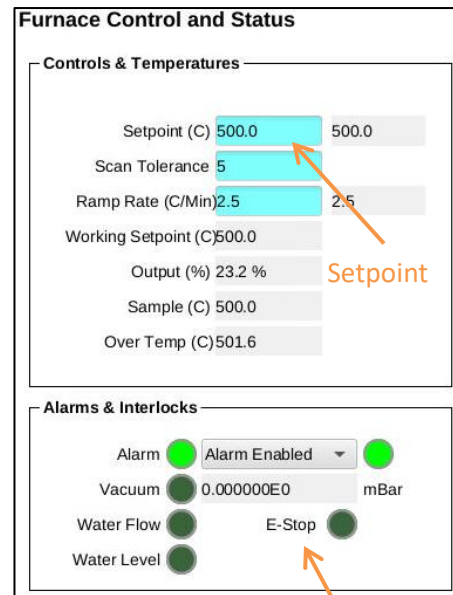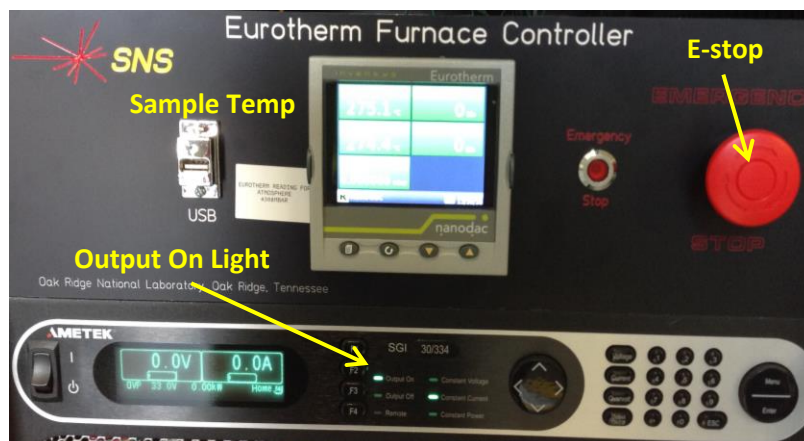
1. Prepare the system for a sample change.
   a. Stop gas flow by setting flow rates to 0 sccm and pressing the ON/OFF button for the appropriate gases on the AGES software.
   b. If a hazardous gas has been flowing, ask instrument staff or IHC to complete the clean out routine.
   c. Set temperature setpoint to 0°C.
   d. Disable furnace alarm by pressing the button on the dashboard.
   e. Turn off power to the heating elements by pressing the e-stop on the controller.

   Sample temperature must be ≤100°C before removing sample stick.

2. Remove the previous sample.
   a. Carefully disconnect both thermocouple leads on the stick.
   b. Disconnect the gas inlet and outlet hoses at the fittings from the stick.
   c. Unscrew the compression fitting completely.
   d. Carefully remove stick and hang from stick holder in the sample pit.
   e. Scan sample with RadEye G radiation monitor. If it alarms, call the RCT (865-274-8658).
   f. **Caution: Sample may be hot. Wear thermal gloves.** Free sample from stick by removing bottom pin.

3. Load new sample.
   a. Hang new sample on stick using pin.
   b. Carefully place stick into furnace.
   c. Screw on compression fitting, keeping the gas fittings oriented correctly with the gas lines.
   d. Reconnect the gas inlet and outlet hoses.
   e. Reconnect both thermocouple leads, being careful to match the orientation marks.

4. Prepare the system for gas flow.
   i. If a hazardous gas will be flowed, ask instrument staff or IHC to complete the clean out routine.
   b. Open sample valve "111B" by clicking on the valve picture in the AGES software so that it is green.
   c. Start gas flow by pressing the appropriate ON/OFF button and setting a flow rate on the AGES software.
   d. Verify that the desired flow rates are being measured on the AGES software and that the expected results are seen in the RGA and pO2 sensor.
   e. Re-enable furnace alarm by pressing the button on the dashboard.
   f. After verifying that the setpoint is 0°C, twist the e-stop to release it.
   g. Check that the furnace output power is on.

Furnace Control and Status

Controls & Temperatures

Setpoint (C) 500.0   500.0   **Setpoint**
Scan Tolerance 5
Ramp Rate (C/Min) 2.5   2.5
Working Setpoint (C) 500.0
Output (%) 23.2 %
Sample (C) 500.0
Over Temp (C) 501.6

Alarms & Interlocks

Alarm   Alarm Enabled
Vacuum   0.000000E0   mBar
Water Flow   E-Stop
Water Level

Furnace Alarm Enable/Disable

Eurotherm Furnace Controller

SNS
Sample Temp
USB
Output On Light

Oak Ridge National Laboratory, Oak Ridge, Tennessee

E-stop

nanodac

AMETEK   SGI 30/334

0.0V   0.0A

LogPO2 -20.8918   PO2   0.0000

Advanced   User Mode ON

A H2   B 4%H2   C CH4   D CO

Sample AREA

sample valve

16B

111B

20B

20A

15B

113B

113A

16A

19B

Wet   DRY ->   Dry

PI-03
-14.38 PSI

14B

ON/OFF button

19A

112A

18B   18A   17B   17A   15A

112B

MFC 1   MFC 2   MFC 3   MFC 4

21B

10 SCCM   0 SCCM   0 SCCM   0 SCCM

SP 10 SCCM   0 SCCM   0 SCCM   0 SCCM

flow 10.00 SCCM   0.50 SCCM   0.0000000000   -0.50 SCCM

A-ON   B-OFF   B-OFF   A-OFF   C-OFF   D-OFF   D-OFF   C-OFF

Inert Cabinet

H2 1.01   H2 1.01   CH4 0.72   CH4 0.72

To inert gas controls

21A

23B   23A   22B   22A

UGA panel

thermocouple leads

manual outlet valve

gas hose connections

compression fitting

clamp