Components of a Lonestar ATLAS-SFB System

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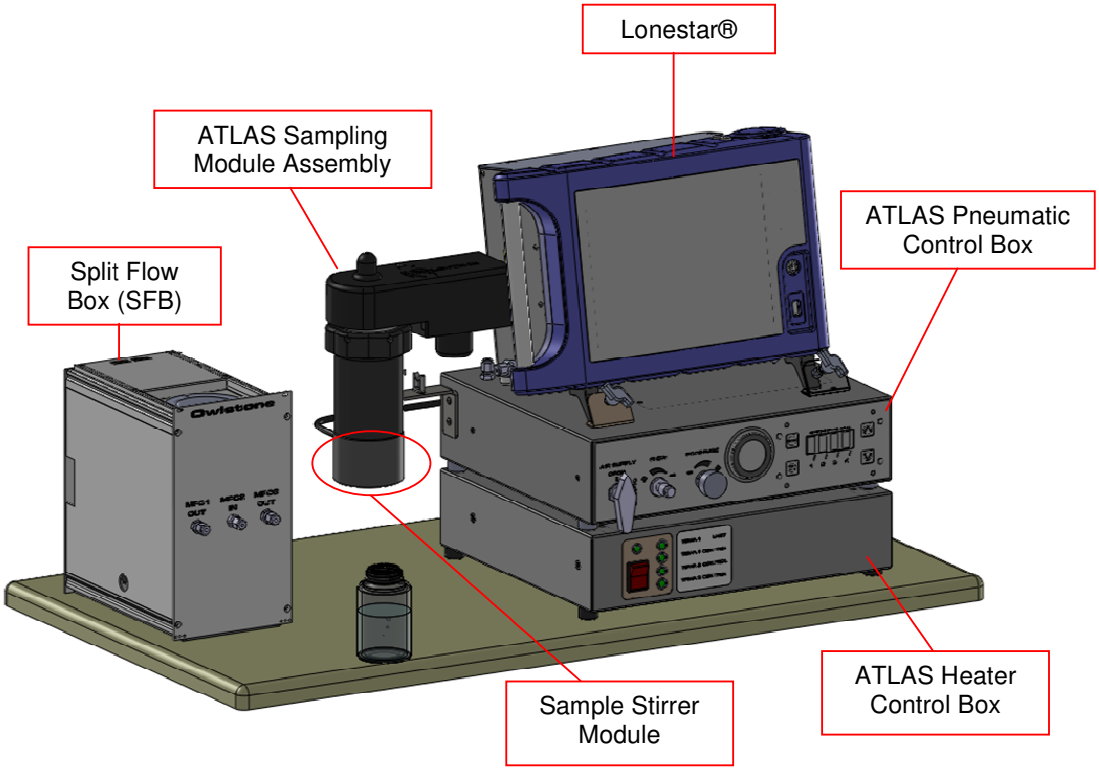

Figure 1 An example Lonestar ATLAS- SFB installation

The Lonestar ATLAS™ is comprised of four separate components, the ATLAS™ Sampling Module Assembly, the ATLAS™ Pneumatic Control Box, the ATLAS™ Heater Control Box and the Split Flow Box (SFB). An ATLAS™ Sample Stirrer Module is available when liquid samples are being analysed where stirring of the sample is required.

For information regarding the installation of the Lonestar ATLAS-SFB, or for sampling tips, please refer to the Owlstone website.

The individual components will be covered in more detail below:

Components: ATLAS™ Sampling Module Assembly

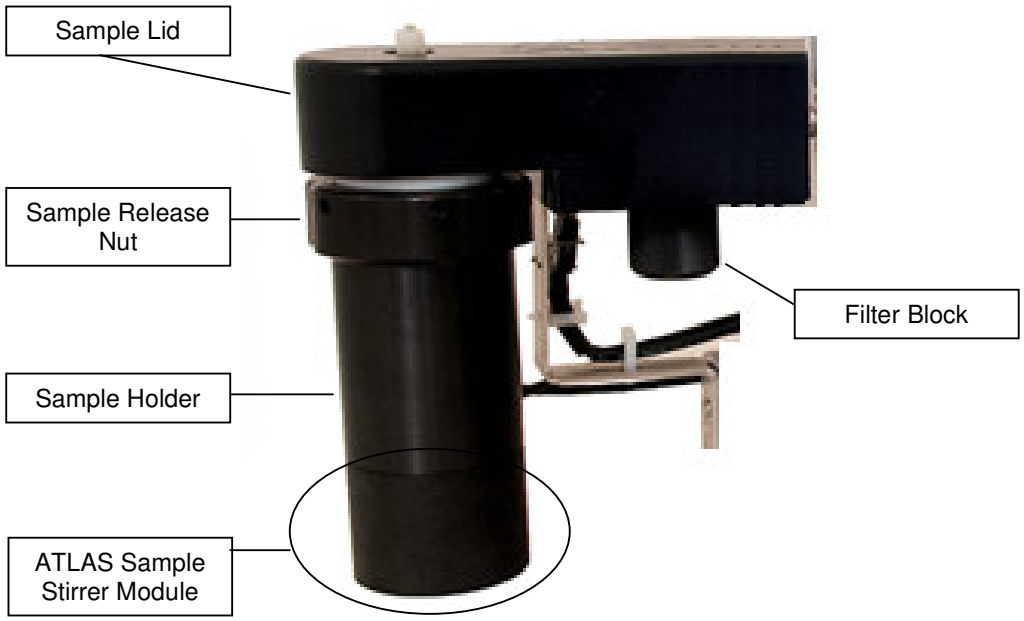

Figure 2 The ATLAS™ Sampling Module Assembly

The ATLAS™ Sampling Module Assembly is a temperature controlled sampling module that facilitates the headspace above a sample to be swept into the Lonestar for analysis. A portion of the sample gas flow can be split to waste, if required, and a makeup flow is used to increase the total flow through the Lonestar to achieve the required limit of detection.

The sample flow passes through a filter, held in the filter block, to ensure no particles greater than 1µm enter the Lonestar.

The sample holder was designed to use VWR Traceclean glass sample bottles (VWR US part number 89094-050) with an o-ring fitted to the neck (Owlstone part number 50-0879). However, metal inserts to replace the glass sample bottle are available which hold 10mL headspace vials (Fisher Scientific part number VGA-100-070K) or for holding 22mL scintillation vials (Fisher Scientific part number VGA-870-010P).

The ATLAS™ Sampling Module Assembly contains no parts that are maintained by the user, but some parts may be maintained by the Site Technical Lead. If in doubt about any ATLAS Sampling Module Assembly maintenance issues, please contact your Site Technical Lead before you contact the Support staff via the Owlstone website.

Components: ATLAS™ Pneumatic Control Box

Figure 3 The ATLAS™ Pneumatic Control Box with Sample Stirrer Module upgrade

During standard operation, clean, dry compressed air (see "Lonestar and ATLAS Technical Specifications") is connected to the ATLAS™ Pneumatic Control Box where the source air pressure is regulated. The compressed air then enters the hydrocarbon scrubber on the right hand side of the Lonestar® and is connected to the ATLAS™ Sampling Module Assembly via the clean gas outlet on the left hand side of the Lonestar®. The sample and makeup air then exit the Lonestar® system via the exhaust. If a split or makeup flow is required, these flows are controlled by the use of either rotameters or orifices; see "The Installation of a Lonestar ATLAS System" for more information.

As the flows are controlled by setting the pressure and flow on the ATLAS™ Pneumatic Control Box, adjusting either of these during an analysis will result in either an incorrect pressure or flow being used.

The ATLAS™ Pneumatic Control Box is used to control the pressure of the compressed air being fed to the ATLAS™ Sampling Module Assembly and the restriction of the exhaust flow, and hence control the flow and pressure within the Lonestar®.

Where the Sample Stirrer Module has been purchased the ATLAS™ Pneumatic Control Box also houses the controls to control the magnetic stirrer, as shown in Figure 3. The individual components of the ATLAS™ Pneumatic Control Box are explained in detail below:

Air Supply Valve:

This is used to stop the flow of compressed air from the ATLAS™ Pneumatic Control Box to the Lonestar® scrubber. This is only set to "Closed" to perform maintenance to the scrubber, the filter or to alter the gas flowpath.

Flow Setting Dial:

This is used in conjunction with the pressure regulator dial to set the pressure and flow within the Lonestar® for a given method and should not be adjusted.

Pressure Regulator Dial and Display:

Once set, the dial should not need to be adjusted. If the pressure displayed in the dial falls from its setpoint, this suggests a leak in the air supply before the ATLAS™ Pneumatic Control Box or too high a demand for compressed air in the compressed air system.

Magnetic Stirrer Controls:

These are present only if the ATLAS™ Sample Stirrer Module has been purchased. This controls the stir speed and mode of stirring. The modes of stirring are detailed below. Typically modes 3 or 4 are used.

Magnetic Stirrer – Modes of Stirring

Mode 1: Bi-directional stirring with fast acceleration.
Mode 2: Bi-directional stirring with slow acceleration.
Mode 3: Clockwise stirring only.
Mode 4: Counter-clockwise stirring only.

The ATLAS™ Pneumatic Control Box contains no parts that are maintained by the user. If any error message appears in the stirrer display or for any other issue, please contact your Site Technical Lead before you contact the Support staff via the Owlstone website.

Components: ATLAS™ Heater Control Box

Figure 4 The ATLAS™ Heater Control Box

The ATLAS™ Heater Control Box controls the temperatures within the ATLAS™ Sampling Module Assembly. This has three heated zones, the Sample Holder, the Sample Lid and the Filter Block. The temperature setpoints for each of these regions is held within the method configuration, and are specific for each different chemical analysis method.

The ATLAS™ Heater Control Box is turned on using the switch. The green light above the switch is illuminated if the ATLAS™ Heater Control Box has power.

Temp 1 Limit: This is a safety feature that isolates the power from all the ATLAS™ heated zones if the set temperature is exceeded. This green light should be permanently illuminated.

Temp 1 Control: This green light shows the power being used to maintain the lid at the required temperature. It is normal for this light to be flashing once the set temperature has been achieved. If the desired temperature has not been reached, the software will alert the user that the system is not ready for use.

Temp 2 Control: This green light shows the power being used to maintain the filter region at the required temperature. It is normal for this light to be flashing once the set temperature has been achieved. If the desired temperature has not been reached, the software will alert the user that the system is not ready for use.

Temp 3 Control: This green light shows the power being used to maintain the sample at the required temperature. It is normal for this light to be illuminated when a sample is first added to the sample holder as the system heats the sample to the desired temperature.

The ATLAS™ Heater Control Box contains no parts that are maintained by the user. If either the power supply light or the Temp 1 Limit light are not illuminated but the power switch is on and the power cable is plugged in correctly, please contact your Site Technical Lead before you contact the Support staff via the Owlstone website.

Components: Split Flow Box

Figure 5 Split Flow Boxes showing the positioning of the bottle used for humidifying the sample flow or the makeup flow

The Split Flow Box houses three mass flow controllers that the Lonestar® software is able to communicate with to control the flows through the ATLAS Sampling module throughout the sample analysis and venting procedure.

The Split Flow Box is turned on using the switch on the rear. The MFC 2 exhaust fitting is also on the rear of the Split Flow Box to allow the exhaust to be vented to a fume hood.

If either the sample or makeup flows require uncontrolled humidifying, the relevant tube can enter the bottle containing water and a second length of tubing can then connect to either the sample inlet fitting or makeup flow fitting on the ATLAS Sampling Module.

The Split Flow Box contains no parts that are maintained by the user. If the power supply light on the switch is not illuminated but the power switch is on and the power cable is plugged in correctly, please contact your Site Technical Lead before you contact the Support staff via the Owlstone website.

If communication between the Lonestar® and the Split Flow Box is interrupted it may be necessary to re-boot the system to restore communication.