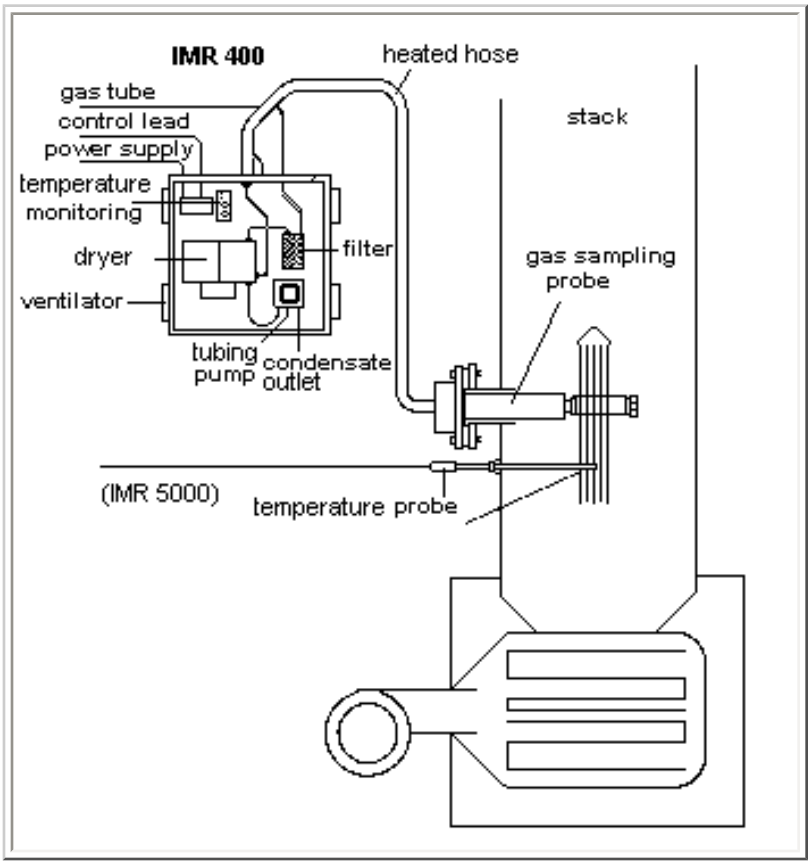
Environmental Equipment, Inc.

FLUE-GAS CONDITIONING SYSTEM
IMR 400

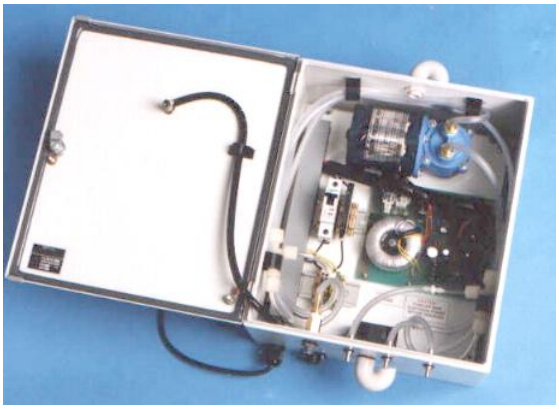
IMR 400
WALL-MOUNTED FLUE-GAS CONDITIONING SYSTEM

The IMR 400 is a wall-mounted flue-gas dryer,and is designed to prepare flue-gases for a wide variety of gas monitoring applications.
The IMR 400 is a 'stand-alone' system that works automatically.
The rugged wall mounted enclosure meets NEMA type 4 (IP65) classification.
The first step of the flue-gas conditioning process is filtering the gas sample.
The filtered flue-gas enters the system through a heated
hose. The heated hose keeps the sample hot until it reaches the IMR 400. The system then removes the water vapor with a permeation dryer or a peltier-cooler from the hot sample.
The IMR 400 is designed to prepare flue-gases for the IMR 5000 flue-gas analyzing sytem.

IMR 400 - FUNCTION DIAGRAM



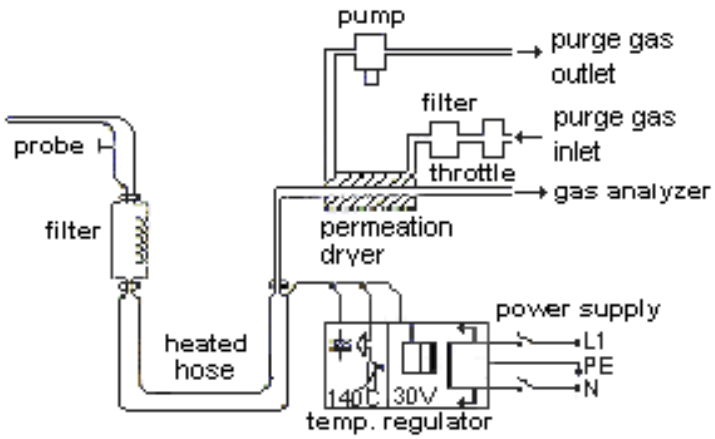
IMR 400 - PERMEATION DRYER



IMR 400 - DRYING PRINCIPLES

PERMEATION DRYER

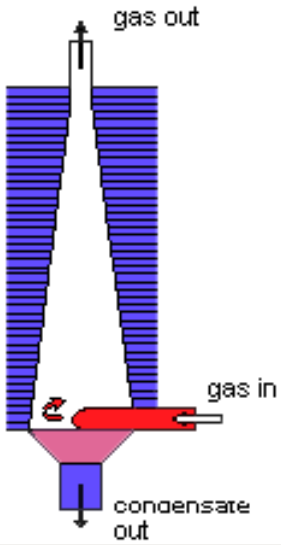
The selective and contiuous removal of water vapor is performed by leading the flue-gas through a tube. Water vapor is absorbed through the tubing walls and moves through it. Dry purge gas is flowing at the outside of the drying-tube in the opposite direction and carries the water vapor away. Virtually all elements of the flue-gas sample remain unchanged, only the water vapor is removed.
The filtered and dried flue-gas can now be analyzed by the IMR 5000 or any other flue-gas analyzer.



Purge gas = fresh air

PELTIER COOLER

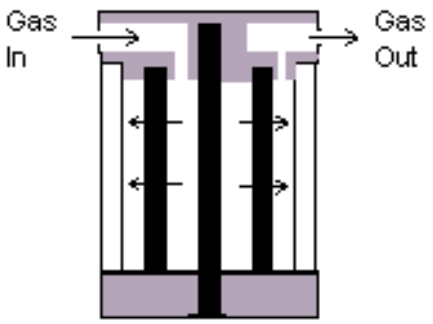
The peltier cooler is designed to reduce the dew-point of the flue-gas to about 5°C, this eliminates condensation. The hot flue-gas enters the heat exchanger and the flue-gas comes in contact with the cold wall of the heat exchanger. The immediate separation of the water vapor is the result. Again virtually all elements of the flue-gas sample are retained, except the water vapor. The condensed water exits through a tubing pump. The filtered and dried flue-gas can now be analyzed by the IMR 5000 or any other flue-gas analyzer.



IMR 400 - FILTRATION

Before the flue-gas enters the 'heated hose' it is cleaned by a filter that is designed for hot gas analysis.
The construction ensures a quick filter element exchange. The filter element is designed to remove 99.99% of 0.1 micron particles.
A special filter housing is available for dirty gas analysis applications.
The IMR 400 filtering system can be equipped with different grades of stainless steel elements.
The filter can be used as a coalescing filter or as a particulate filter simply by switching the input and output.

Coalescing filter



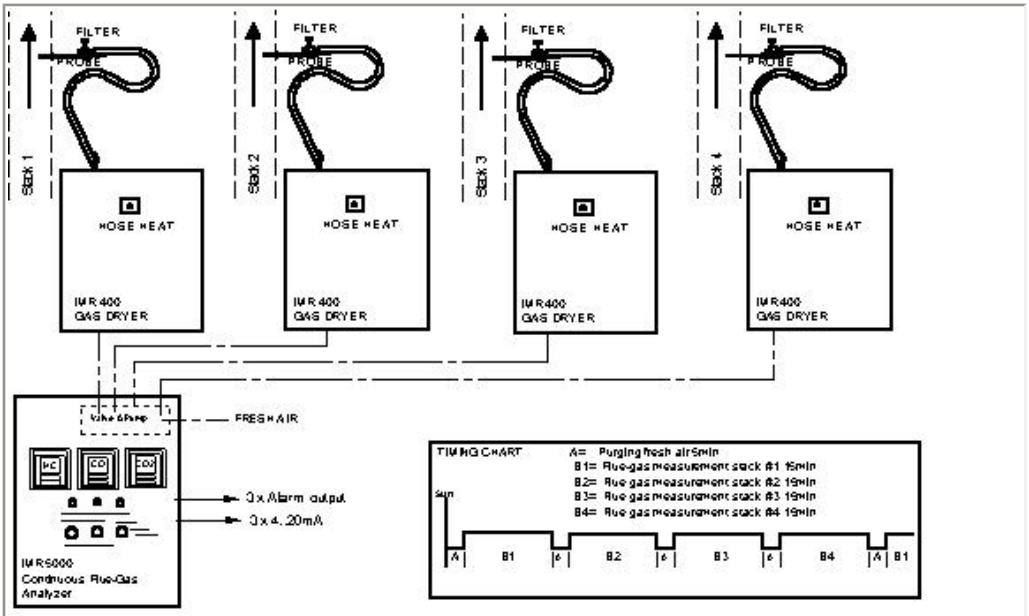
IMR 400 - HEATED HOSE

The IMR 400 is equipped with a 5 ft. (1.5m) heated sample line. This 'heated hose' ensures that the extracted sample does not cool down before it reaches the drying system. A temperature controller keeps the temperature of the 'heated hose' at approx. 140°C / 285°F.The temperature element is either a PT100 or a thermocouple Type K.

Heated hose with filter and probe

IMR 400 - APPLICATION EXAMPLE

4 x IMR 400 WITH IMR 5000 FLUE-GAS ANALYZING SYSTEM



IMR 400 - SPECIFICATION

Display	LED, green 10mm; temperature controller
Filter	Disposable element; 99.99% removal of 0.1 micron particles Optional: Stainless steel; 99.99% removal of 0.1 micron particles
Heated hose	Length: 5ft. / 1.5m; other lengths are optional available Temperature controlled at approx.140°C / 285°F Temperature element: PT100 or thermocouple Type K
Drying system	Permeation dryer; Part No. 05001 Optional: Peltier cooler; PartNo. 05002
Power supply	120VAC/60Hz or 240VAC/50Hz
Enclosure	Wall mounted, NEMA4/IP65 Dimensions in inch (mm): 13.8 x 11.8 x 7.9 (350 x 300 x 200)
Operating temperature	50°F to 104°F (10°C to 40°C)
Storage temperature	-4°F to 122°F (-20°C to 50°C)
Operating environment	90% RH non-condensing

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