Fig.1 H301-HM-ACTIVE

Fig.2 H301-HM-ACTIVE + CO2 UNIT BL

Technical Specifications

Relative Humidity range	50% - 95 %
Humidity sensor resolution	1 %
Humidity sensor accuracy	±2 %
Humidification technique	Water permeable membrane immersed in water at controlled temperature
Dry gas input	From any Bold Line Gas Controller
Humid gas output	In temperature controlled tube
Compatible with	CO2 UNIT BL CO_2 O_2 UNIT BL [0-10; 1-18] CO_2 O_2 UNIT BL [0-20; 1-95] CO_2 O_2 UNIT BL [0-10; 0-1]
Power	55 W
Voltage	24 V
Certification	$C\epsilon$

Features

- Feedback From Humidity Sensor
- Control od Relative Humidity inside Chamber
- Water Permeable Membrane
- Heated connection tube to prevent condensation
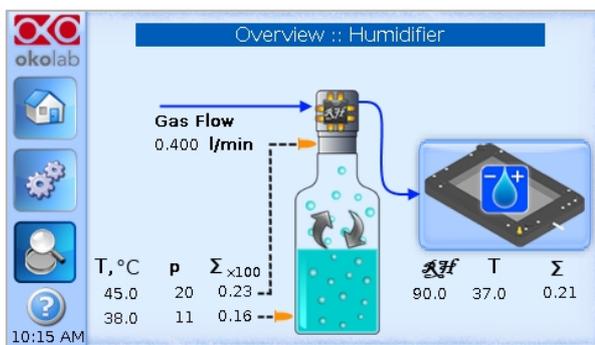- Water Heater
- OKO Touch operated

Fig.3 Humidty Controller OKO Touch Page

Assessment of Humidification Performance

Methods

Humidification performance was assessed by measuring water evaporation in a Top Sage Incubator loaded with 4 35mm Petri Dish (with no lid), each one initially containing 3 ml of water. The top stage incubator was kept at 37°C and was positioned on a 1 mg precision balance, connected to a PC for data acquisition. A continuous flux of 0.4 l/min of 5% CO_2 in air was sent to the Top Stage Chamber after being humidified by the Active Humidity Controller. Relative Humidity inside the chamber was varied from 55% to 95%.

Experimental apparatus

Figure 4 reports a picture of the experimental apparatus. The equipment tested was (numbers in parenthesis refer to Figure 4):

- Top Stage Chamber: H301-EC-BL (1); T set at 37.0°C
- Specimen Holder: H301-EC-4x35
- Petri Dish: 4 x 35 mm Petri Dish
- Initial water content: 3 ml in each Petri Dish
- T controller: H301-T-UNIT-BL (3)
- CO_2 Controller: CO2 UNIT BL (3)
- Gas Flow rate: 0.4 l/min, at 5.0% CO_2 in air
- Humidity Controller: H301-HM-ACTIVE (4)
- Balance: Precisa Gravimetrics AG-XB 620 M (2)

Fig.4 Experimental apparaturs

Results

Figure 5 reports the weight loss of the Top Stage Chamber due to evaporation as a function of time. Relative Humidity was varied from 55% to 95%. Data were shifted to the same origin for the sake of clarity. The Dry Gas data were obtained by by-passing the Active Humidity Controller.

Evaporation rate (ê) reported in Figure 5 was calculated by dividing the weight loss (in micrograms per hour) by the air /water contact area (surface of four petri dish). Data are therefore reported as µg/hr/mm^2.

Data show that evaporation in the chamber becomes negligible when Relative Humidity in the chamber is set to 95%.
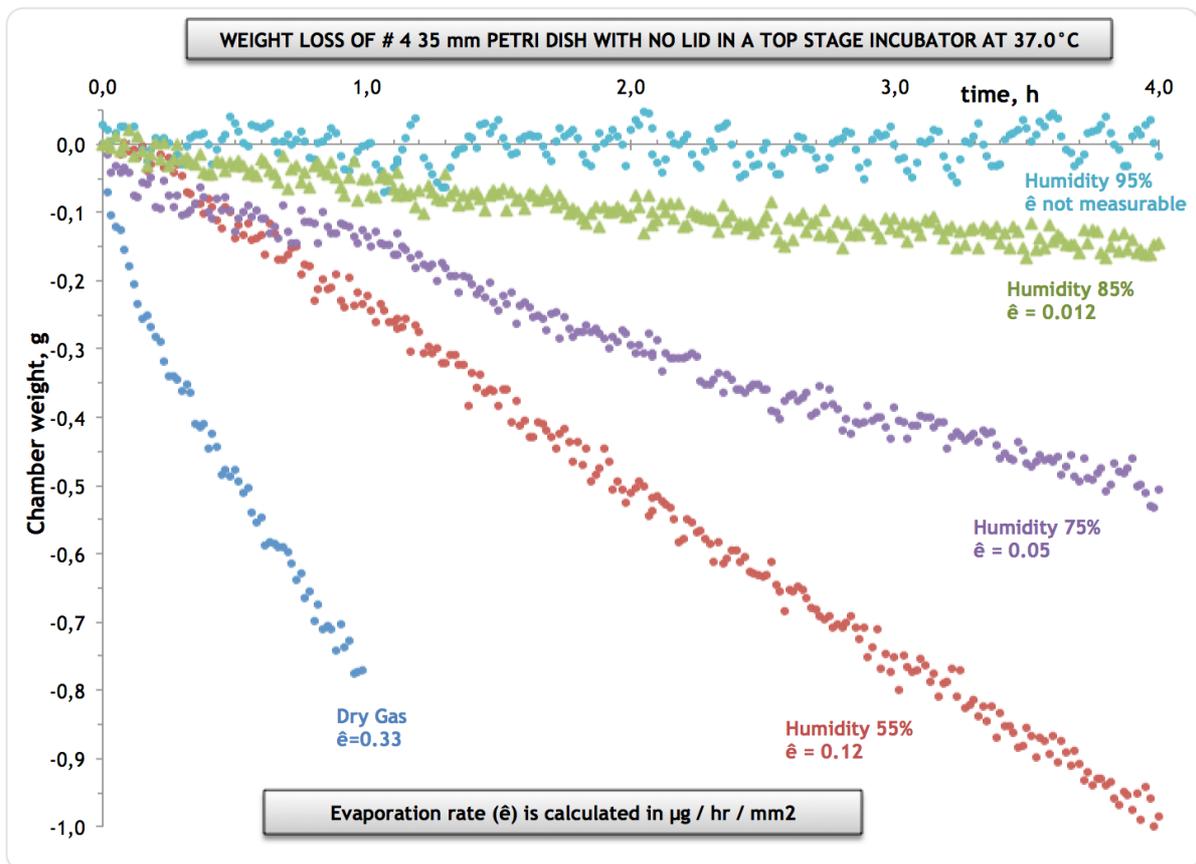

Fig.5 Weigth loss due to evaporation in a Top Stage Incubator loaded with 4 35mm Petri Dish as a function of Relative Humidity inside the chamber