

Technological breakthrough in high flow biological aerosol sampling.

**To collect microorganisms  
 is one thing  
 not releasing nor destroying them  
 is another...**



> Wet cyclone air samplers sensitivity to unforeseen relative humidity and temperature changes during sampling solved !

> On unequalled field-proven capture, retention and concentration of viable legionella and other microorganisms, validated by independent published studies.

> No more dessication nor saturation inside impactors!

> Reducing microorganisms release and crushing.

> Remarkable enhancement of detection thresholds of rare pathogens.

> High flushing and decon capacity reducing cross-contamination risks.

> Improved sample representativity of air quality :  
 - 325liters/min indoor/outdoor sampling  
 - up to 20 hours continuous sampling in 5ml only



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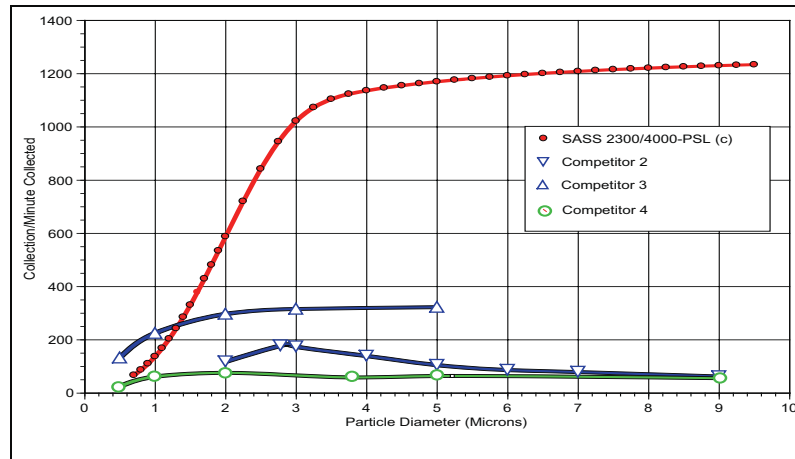
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**SASS 2300 capture, retention, and concentration efficiency of viable legionella and other microorganisms validated by published studies issued from world-reputed independent institutes.**

### **Sass 2300 optimized concentration rate increases drastically detection thresholds of rare pathogens :**

concentrated in only 5ml\*

compatible with most analytical formats : culture, PCR, Immunological methods, GCMS, microscopy, cyclometry and bacterial atpbioluminescence.



The SASS 2300 and SASS 4000 system collection rate versus the collection rate of three other samplers. Data from U.S. Army Edgewood Chemical and Biological Center, or from manufacturer. A 1.0 particle/liter aerosol concentration (1 ACPLA) is assumed.

### **A remarkable and reproducible concentration rate :**

with most biocollectors longer the sampling time increased the release of already collected microorganisms, Sass 2300 sampling technology reduces this risk to the minimum.

### **Improved sample representativity of air quality**

1 cubic meter is too small to be representative of a site air quality, influenced by aerodynamics during the sampling time.

Sass 2300 sampling 19,5cubic meters/hour up to 20 hours continuously sampled volum compensates aerodynamics fluctuations.

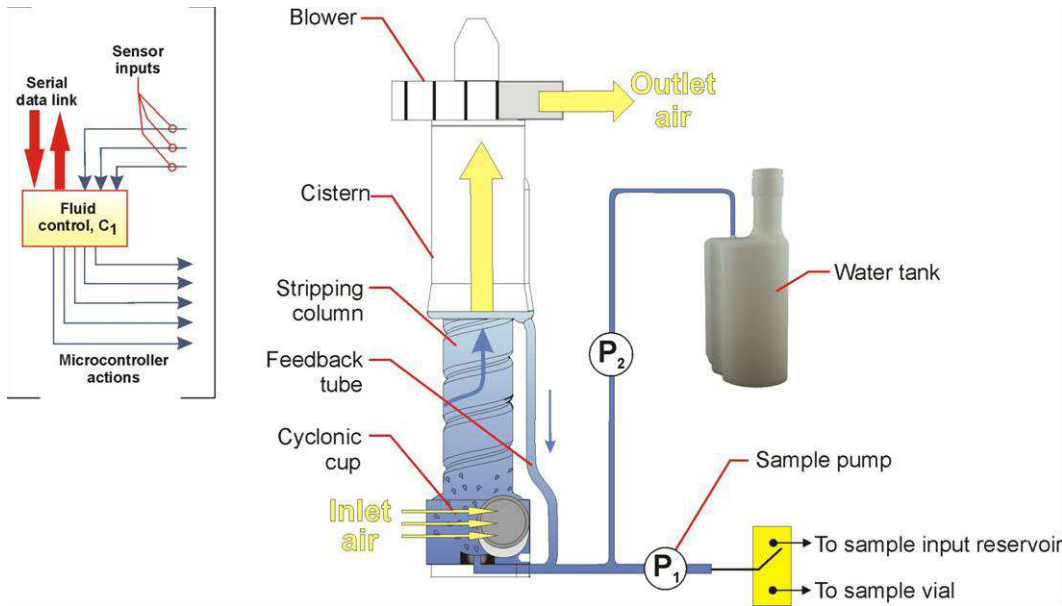
**SASS 2300 protects viable micro-organismes from dessication, and is not saturated many after a few hours of sampling.**

### **A technological issue to solve : wet cyclon air samplers sensitivity to relative humidity and temperature changes.**

Any liquid sampling is submitted to evaporation requiring liquid volume compensation. Relative humidity or temperature may unexpectedly change during sampling, and preprogrammed liquid volume compensation will become therefore unefficient. Collection efficiency will decrease, and liquid loss will increase the release rate of collected microorganisms.

**Sass 2300 : the answer to this issue through a proprietary technology...**

Initial sample liquid volume maintained by on-line liquid loss compensation even when relative humidity or temperature changes during sampling.



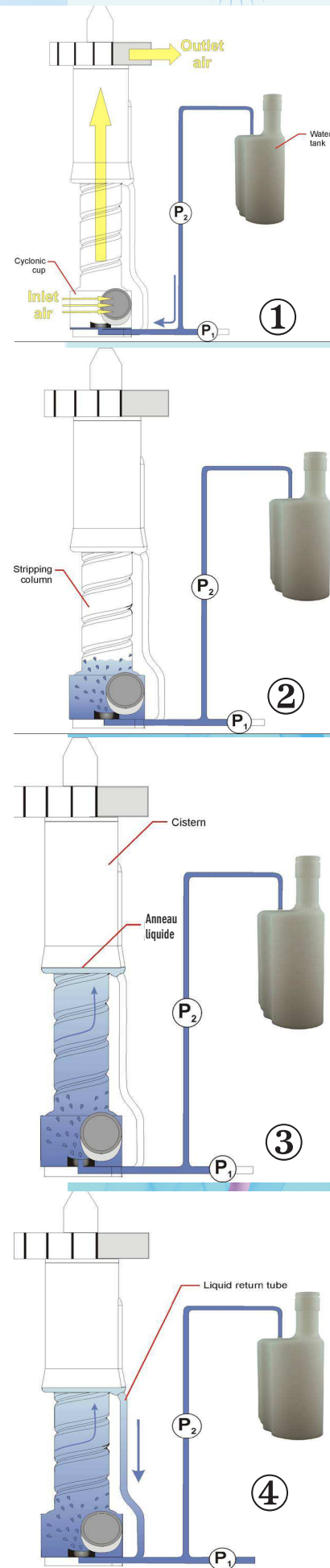
**Drawing ①** When the fan is initially actuated, air enters tangentially into a «cyclonic cup» at the base of the device, setting up high speed cycloning airflow pattern in it. 4 to 5 ml of water is simultaneously injected from the «water tank» using peristaltic pump P2.

**Drawing ②** A sample water pool initially forms at the bottom of the cyclonic cup. The rapidly rotating air mass in the «cyclonic cup» initially distributes sample water as a thick film on its interior surfaces. Some water is also driven into a smaller diameter «stripping column» situated immediately above the cyclonic cup as airflow increases towards its nominal value.

**Drawing ③** Air flows from the cyclonic cup into the stripping column as a rapidly rotating air mass as airflow approaches its nominal value. A water film forms over the stripping column's interior surface due to air shear and a favorable geometry. Sample water then flows upward into a large diameter «cistern» section. Air shear there causes sample water to flow outwardly, forming a rotating fluid ring.

**Drawing ④** Water flows back downward to the cyclonic cup via a 'liquid return tube,' driven by gravity and a low pressure region in the cyclonic cup. Particulates are captured by the water film that now covers the critical interior surfaces. At nominal airflow, the water circulation process repeats several times per minute. Water is added as needed to maintain a constant sample volume. All or part of the circulating water sample may be withdrawn at any time using peristaltic pump P1.

Sass 2300 patented technology allows automatic compensation of evaporation loss, adapting to unforeseen relative humidity or temperature changes during sampling time, preserving initial sampling volume.





## Technical specifications

**Air collection rate** 325 LPM using 30.000h. Life brushless fan

**Particulates collection range** 1-10 µm. Contact us regarding vapor collection applications. **Concentration ratio** 65.000/min, nominal

**Liquid inventory** : 4-5 cc range, adjustable by user Proprietary control loop maintains a constant liquid volume in the sampler, independent of collection time, temperature, or humidity; useful for concentrating trace airborne analytes.

**Make-up water**: 1 liter on-board reservoir; supplemental offboard reservoirs may be used in fixed installations: 0.8 cc/min typical evaporation rate at 20C/50% RH.

**Physical size** : 18.4 cm x 21.3 cm x 34.3 cm (7.2» W x 8.4» D x 13.5» H). **Weight** 3.7 kg without battery, 4.7 kg with battery (8.2/10.4 lbs). Add 1 kg (2.2 lbs) for 1 liter of water.

Air inlet Industry-standard threaded adapter. It is recommended that third-party accessories have an airflow channel 2.54 cm diameter or larger.

**Humidity range**: Non-condensing conditions. **Operating temperature**: Above freezing conditions to 66° C.

**Power source** 12 VDC BA-5590/U primary battery; or BA-/U extended life primary battery; or UBI 2590 rechargeable battery; or 82-265 Volt (47-63 Hz) AC lump-in-cord power supply. Power consumption 1.33 amps @ 12 V, 16 W.

**Sample extraction** On-board 12 cc/min peristaltic pump, manual or remotely controlled. Vial filling module included. Air sampling may continue during extraction.

**System controls** : Microprocessor controlled. RS-232 or optional wireless link for remote operation or reprogramming. Additional TTL and motor drivers available. **Sound level** 60 dB (A).

**Package** Lightweight two-piece molded plastic shell with swivel-style carrying handle.

**Decontamination** Auto-flush protocol using onboard water, or manual flush with detergent and/or disinfectant. Disposable high-performance pullthrough fan module.

**Accessories** Carrying case; inlet hose; 8cc sample bottles; sample bottles; rechargeable battery and charger.

Approvals U.S. Dept. of Homeland Security certified under U.S. Safety Act of 2002



## Accessories (in option)

Sass 4000 aerosol pre-concentrator

## Field of use

- Hospital hygiene
- Cooling tower aerosol monitoring (legionella)
- Waste water aerosols (legionella)
- Indoor air quality
- Clean rooms
- Agro-food factories or confined livestock facilities
- Pharmaceutical and cosmetic industry
- Public events and Civil Defense
- Mail rooms
- Visits of officials
- Airports, train and subway stations

## Scientific bibliography

Tracking airborne legionella and legionella pneumophila at a biological treatment plant. Environ. Sci. Technol. 2008 Blatny et al.

Environmental air sampling to detect exotic Newcastle disease virus in two California commercial poultry flocks J. Vet. Diagn Invest 2005 Hietala

Autonomous Detection of aerosolized Bacillus anthracis and Yersinia pestis Analytical Chemistry 2003 Venkateswaran et al.

## User references

The only wet cyclone air sampler certified by Homeland Security Dpt (Safety Act of 2002)

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EDF National Laboratory of Hydrology and Environment



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