



Engineering for
Health & Hygiene™



Ecas4® Ultrasonic Humidifier

Ecas4 is a company focused on engineering systems for Health & Hygiene, with a 20-year experience in *Legionella* control in Europe and Australia.

'ECAS' is the acronym for 'electrochemically activated solution' and '4' refers to the unique, patented design of our electrochemical reactor, which contains four chambers and a special management of hydraulic flows, in order to produce a consistently pH-neutral aqueous disinfectant.

The solution's active agent is Hypochlorous acid (HOCl), the product that is also synthesised in the human body when we have to fight infections caused by different invading pathogens. Since HOCl is an oxidiser with cytotoxic properties (i.e., a biocide), microorganisms are not able to develop a specific resistance.

At present, Ecas4 has installed systems in hospitals, aged-care facilities and food-processing companies, where it is used as a broad-spectrum disinfectant for the treatment of drinking water and diverse types of food.

Commonly, the Ecas4 Anolyte is dosed in the water network. However, the safe nature of the Ecas4 Anolyte allows it to be used also as a dispersion to sanitise environments and surfaces; while performing the nebulisation treatment, the operator can even remain in the room, without risk. Yet, the oxidation capabilities of the Ecas4 Anolyte can sanitise the whole environment.

The Ecas4 Anolyte is a rinse-free sanitiser; it is non-harmful and much less corrosive than other disinfectants (when used in concentrate form; in practice, the diluted solutions are even safer).

Benefits for Ecas4 Anolyte – Reduction in sanitisation costs:

- + as a normal liquid sanitiser, for hard surfaces, or
- + as a dry fog (through a proper nebulising device), to allow an effective treatment of every item present in the treated room (pieces of furniture, floor, walls, ceiling, areas not easily reachable and the environment in general), taking only a few minutes, depending on the size of the room, and leaving no residual effect on surfaces.

Ecas4[®] Ultrasonic Humidifier

Based on the capability of the humidification system, the size (volume) of the room to be treated, and the concentration of Ecas4 Anolyte used for the application (e.g., an Ecas4 Anolyte at 50% contains 150 ppm), the application time can be precisely estimated through a mathematical equation.

For example, by using a humidifier with a capability of 6 L/h, a room of 100 cubic metres shall be treated with Ecas4 Anolyte at 50% for 1160 s (a bit less than 20 min).

Depending on the size of the room to be treated, the humidification treatment can be realised either by an ultrasonic humidifier or by using special nozzles that are designed to spread droplets with a diameter comprised between 1 and 5 microns. In both cases, the dry fine mist does not wet the surfaces, as the tiny droplets are able to bounce when they hit a surface (in contrast, bigger particles crash and wet the surface).

Concerning ultrasonic humidifiers, Ecas4 has established a partnership with Contronics Engineering B.V. (www.contronics.nl), a company based in The Netherlands that designs and produces innovative, sustainable equipment in the areas of:

- + Keeping food fresh
- + Healthy living conditions

The Contronics humidification systems are realised in stainless steel (grade 316) and are available in different sizes/capacities, starting from 1.2 L/h and up to 100 L/h.



Spray nozzles are systems involving two fluids and in which atomisation is realised through the interaction of high velocity gas and liquid. Food-grade compressed air is most often used as the atomising gas.

Ecas4 has focused on internal mix nozzles that allow fluids to contact inside the nozzle; mixing between high velocity gas and low velocity liquid disintegrates the liquid stream into droplets, producing a high velocity spray. This type of nozzle tends to use less atomising gas with respect to an external mix atomiser.

The system can be implemented with automatic valves managed by a PLC, leading to a completely automated and remotely accessible sanitisation solution.



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