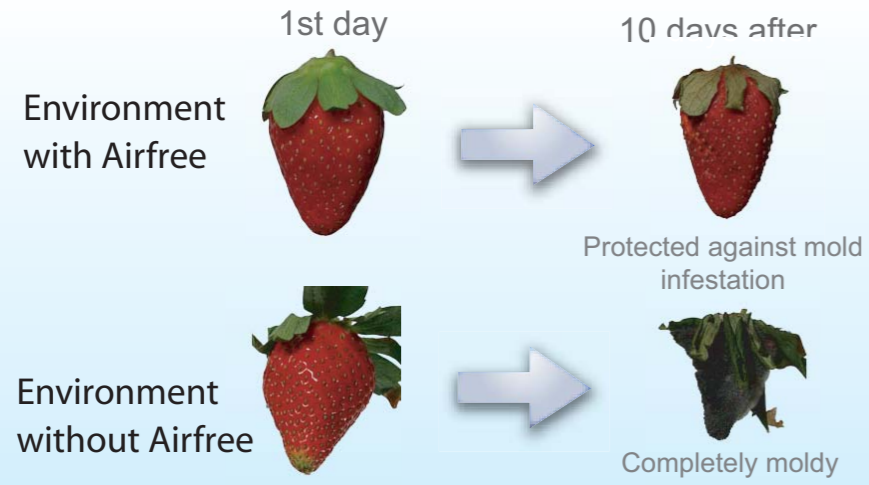
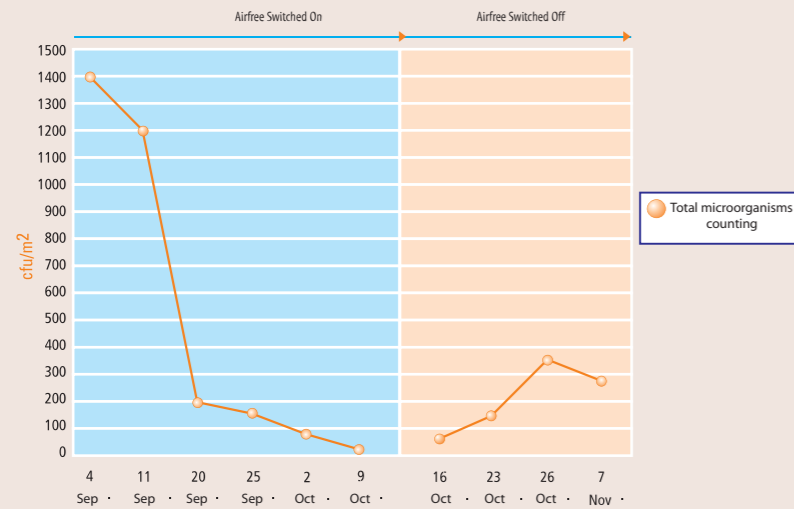


See the strawberries 10 day test\*:



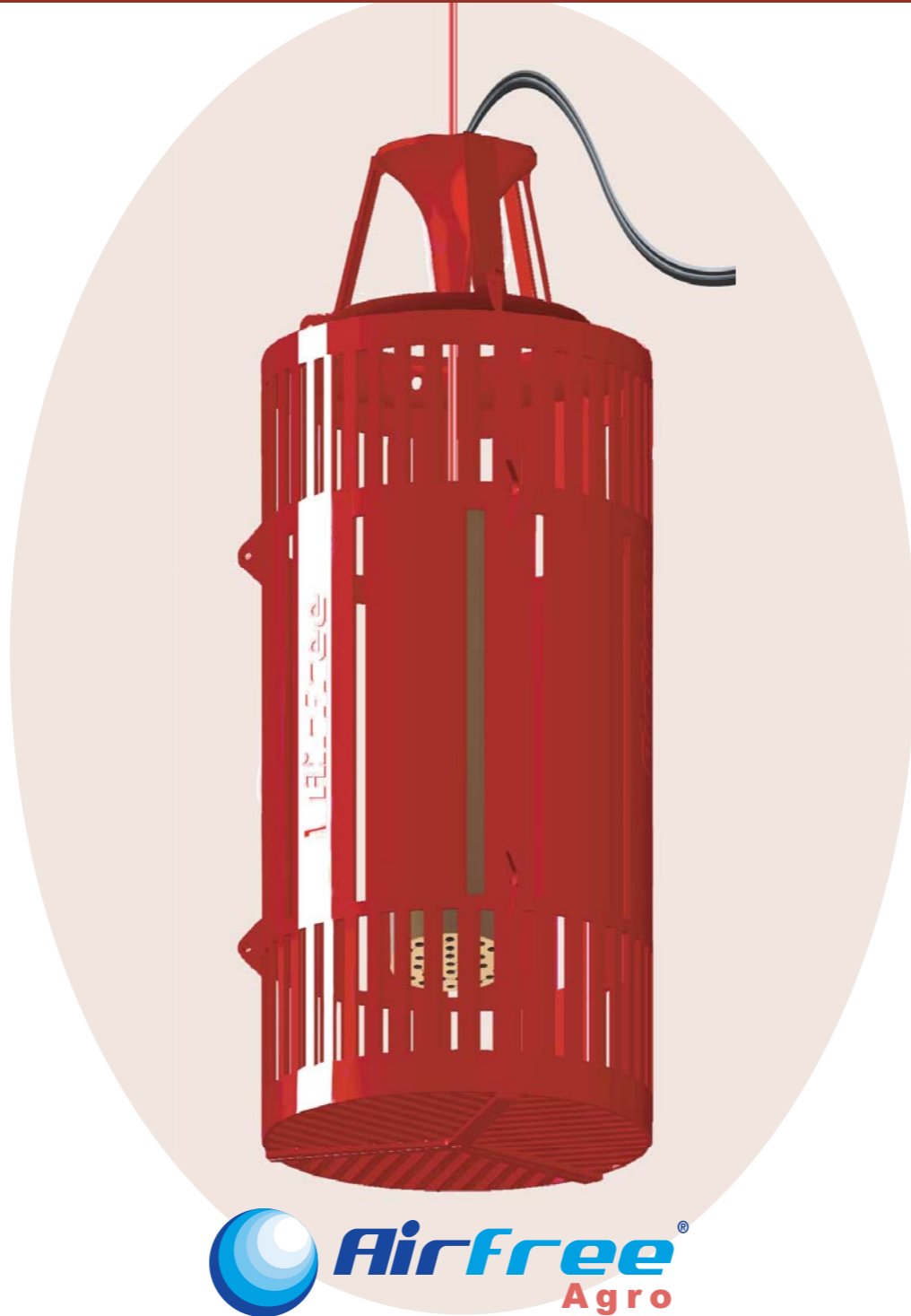
\*test made in two separated closed chambers

Efficiency Test: microorganisms reduction



Test realized by SGS Natec - Germany - Test M00-4990  
Independent Laboratory ISO 17025

See the complete list of test reports at:  
[www.airfree.com](http://www.airfree.com)



# Airfree Agro

## The new millennium sanitary concept



The biological weapon  
indispensable for the modern  
Industrial Aviculture



# Airfree Agro

## Pure air - Healthy Flocks

One of the main concerns in modern Industrial Aviculture is breathing pathology.

The majority of airborne virus, bacteria and fungus find their way into the target cells through the airways to achieve the continuation of its life cycle. The simultaneous conjunction of virus and bacteria associated to adverse environmental conditions, develop extremely complex clinical situations of difficult solutions with clear performance interference, risking in many cases the exploration economical survival.

For instance the presence or absence of certain pathogenic agents like for instance the Mycoplasma can determine the success or failure of the business. It is up to the entrepreneur and poultry technicians to be aware of those facts and to establish needed strategies to reduce the risk of infection pressure to a minimum as well as the pathology risks in their explorations via adequate prophylaxis, disinfections and correct sanitary vacancies.

**Airfree Agro** electric devices provide a priceless contribution to the reduction of infection pressure and consequently of the effective general pathology. Through this new air sterilization concept, based on a new patented revolutionary thermal process, a dramatic viral, microbial and fungal pollution reduction is achieved in the chicken house ambience with consequent reflex in the flocks sanitary status.

The **Airfree Agro** action mechanism is a natural process characterised by: being innocuous, no Microbial Induction resistance and guaranteed efficiency provides a safe product to the final consumer.

### Safety & Efficiency

Airfree Technik patented technology is absolutely safe, produces no emissions and delivers pure air continuously.

### Patented Airfree Technology

U.S. Patent 5,874,050 - EPO Patent Application EP 0 815 877 A2 1

### Emissions (VOC) and Particles

**Airfree Agro** uses just heat to sterilize the air. No emissions nor particles are created or increased with the use of Airfree Technik SP Swedish National Institute tests show a small reduction and assure not additional emissions. Please see Tests.

### Bacteria and Fungus Reduction

**Airfree Agro** was tested in several countries in Europe and in the USA. In all those tests a minimum 85% airborne micro-organism reduction was achieved. Laboratories such as SGS Natec in Hamburg, INETI in Lisbon, Universidad Complutense de Madrid, Technical Micronics Control in the USA, Universidade Nova de Lisboa and many independent institutions have proven above reduction.

The **Airfree Agro** action mechanism is a natural process characterised by: being innocuous, no Microbial Induction resistance and guaranteed efficiency provides a safe product to the final consumer.

### Viruses and heat Inactivation

While viruses are not considered living organisms they depend upon living cells to replicate. The structure of the virus includes an envelope constituted by proteins and genetic material of DNA or RNA. All of these components are thermo-sensible. The genetic material and the proteins have complex structures regulating their function, and change in this structure may result in a loss of function known as denaturing. There are two basic means by which denaturing occurs: a change in PH or temperature.

### Some examples: viruses and heat inactivation

Numerous studies have focused on virus inactivation through heat application. For example, HIV virus in the blood will die when exposed to 77 degrees C for as little as 0.006 seconds<sup>1</sup>. In another study, parvovirus and phage phiX174 were completely inactivated when exposed to 103 degrees C for 90 seconds<sup>2</sup>. In the case of the Herpes virus, high temperatures inhibit the release of proteins necessary for the success of the infection<sup>3</sup>. Airborne viruses are no different. One study of respiratory syncytial virus (the major cause of wheezing in children less than

2 years old) showed that when the virus is exposed to 65 degrees C for 45 minutes, the infection capacity is diminished and conformational proteins are transformed, resulting in a reduction of of substances responsible for the inflammation, hyper-responsiveness and damage to air passages<sup>4</sup>. The SARS virus (causative agent of severe acute respiratory syndrome) has thermo-sensible proteins in its envelope, which can be totally denaturated at 55 degrees C, the same temperature at which SARS virus was also reported to be inactivated<sup>5</sup>. The influenza virus (the following information is redundant I believe) contains proteins essential for infectious transmission that are sensible to variations of pH and temperature between 55-70 degrees C<sup>6</sup>.

### The avian flu

The virus, responsible for the bird flu, can be spread from the poultry to humans and until now, about 20 millions of chickens have been slaughtered in order to control the spread of the virus<sup>10</sup>. Since 1997, it has been reported more than 100 cases of the disease in humans, resulting in more than 50 deaths<sup>8</sup>. Experts are very concerned about the rising of a pandemic new strain of the virus because of the mixing between avian and human viruses. It's suspected that the virus could infect someone who is already infected with a human flu virus like A, resulting in genetic rearrangement and a novel pathogen that could be highly virulent<sup>11</sup> and easily transmitted human-to-human<sup>13</sup>.

### Transmission and symptoms.

All birds are susceptible to the avian virus and some types of wild birds are natural reservoir of influenza type A virus. They have a large amount of avian virus in their secretion, saliva and feces that can contaminate domestic poultry when in contact. Furthermore, their dropping or saliva may contaminate water, rivers, feed and even human shoes<sup>8</sup>. Infected droplets may settle on conjunctival, nasopharyngeal or other respiratory mucosal epithelium in humans<sup>12</sup> leading to symptoms ranged from typical influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches) to eye infections (conjunctivitis), pneumonia, acute respiratory distress, viral pneumonia, and other severe and life-threatening complications<sup>13</sup>.

### Avian Flu characteristics and your heat instability.

The avian virus, H5N1, is a negative-sense single-stranded RNA virus<sup>12</sup>, which has two types of proteins in its surface: hemagglutinin (HA) and neuraminidase (NA)<sup>13</sup>. It is known from the literature that the virus can be inactivated by 56°C in 3 hours and 60°C in 30 minutes<sup>8</sup>. Thus, only four degrees of temperature elevation reduced the time of inactivation exposure about 85%.