Air Quality
Easy solutions for protected environments
Airinspace™
Space technology serving to protect patients

Airinspace is a company that specializes in air treatment for healthcare environments. Its mission is to provide innovative solutions that give high-performance and cost-effective protection against airborne contamination. Airinspace helps you manage and maintain optimum air quality to reduce the risk of infections.

Airinspace products employ the same technology developed to ensure the air quality in the MIR space station and which is now used in the International Space Station. The technology has been transferred to devices suited for healthcare applications. Since its creation in 2002 the company has adapted this technology and now offers a broad range of air decontamination equipment for critical healthcare environments, enhancing the safety of patients around the world.

Dedicated to customer satisfaction and ISO9001 certified, the Airinspace multidisciplinary team possesses leading edge expertise to supply you with high quality, extremely robust products and services.
The HEPA-MD™ Technology
High Efficiency Particle Arrestation with Microbial Destruction

**REMMOVES CONTAMINATION**
- HEPA filtration levels.
- Eliminates particles, microbes and VOC’s.
- High performance with low noise levels.
- Reduces ozone levels in the environment.

**DESTRVYS MICRO-ORGANISMS**
- Inactivation and destruction of microorganisms using electrostatic fields and cold plasma.
- Effectiveness independently validated on fungi, bacteria, viruses and spores.
- Microbiological abatement up to 99,999% in one pass.
- Stable long term performance.

---

**Module 1**
**Plasmerisation™ Microbial Destruction**
Destruction of microorganisms by exposure to strong electric fields and oxidizing species created in unique non-thermal plasma chambers.

**Module 2**
**Biological decontamination and HEPA particulate reduction**
Highly charged matter from the plasma chambers is captured by an electrified collection media. Organic material is continually exposed to the plasma ions to ensure total biological decontamination.

**Module 3**
**Molecular conversion**
Removal of oxidative chemicals by a catalytic converter.

**Module 4**
**Molecular adsorption**
Organic volatile molecular pollutants are adsorbed onto an activated carbon medium.

---

- Eliminates risk associated with the storage and disposal of viable microorganisms.
- Decreases the concentration of volatile organic compounds (VOCs) in air.
- Maintains high airflow through media with less noise, and lower power consumption.

**Technology validated by key international research institutes:**
Harvard School of Public Health (Boston, MA, United States of America), Health Protection Agency (Porton Down, United Kingdom), French National Scientific Research Center - CNRS (Lyon, France).
**plasmair Sentinel**

> **LIGHT AND EASY**

**HIGHLY PORTABLE**

- Exceptional maneuverability.
- Easy to use (plug & play).
- Small footprint.
- Low noise level.
- Low energy consumption.
- For use with 100-230 V.

**CASE STUDY**

- Decontamination of a 35 m³ room from ISO9 to ISO7 in 10 minutes.
- Log reduction of particle load in 10 minutes.
- 24 air changes per hour (ACH).

**Performance range (for rooms up to 50 m³)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airborne Bacteriological class</td>
<td>&lt;100/&lt;10 CFU/m³</td>
</tr>
<tr>
<td>ISO Particulate cleanliness class</td>
<td>ISO8/ISO7</td>
</tr>
<tr>
<td>90% Decontamination kinetics</td>
<td>Within 20/10 minutes</td>
</tr>
</tbody>
</table>

**Dimensions and weight**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>150 cm</td>
</tr>
<tr>
<td>Width</td>
<td>70 cm</td>
</tr>
<tr>
<td>Depth</td>
<td>45 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>100 kg</td>
</tr>
</tbody>
</table>

**Technical specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airflow range</td>
<td>400-600-850 m³/h</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>130 VA</td>
</tr>
<tr>
<td>Sound levels at 1m</td>
<td></td>
</tr>
<tr>
<td>400 m³/h</td>
<td>37 dB(A)</td>
</tr>
<tr>
<td>600 m³/h</td>
<td>41 dB(A)</td>
</tr>
<tr>
<td>850 m³/h</td>
<td>47 dB(A)</td>
</tr>
<tr>
<td>Frequency and voltage</td>
<td>~ 100 V/230 V – 50Hz/60Hz</td>
</tr>
</tbody>
</table>

**Regulatory**

- CE marked
- Class 1 Medical Device
The reference plasmair T2006

Performance Range (for rooms up to 100 m³)
- Airborne Bacteriological Class: <100/<10/<5 CFU/m³
- 90% Decontamination kinetics within 20/10/5 minutes

Dimensions and Weight
- Height: 194 cm
- Width: 91 cm
- Depth: 57 cm
- Weight: 140 kg

Technical Specifications
- Airflow range: 500 à 2000 m³/h
- Max power consumption: 540 VA
- Sound level at 1 meter: 500 m³/h – 39 dB(A); 1000 m³/h – 48 dB(A)
- Frequency and voltage: ~100V/230V- 50 Hz/60 Hz

Regulatory
- CE marked
- FDA Class II Medical Device: 510 K070722
- Class 1 Medical Device

Key Performance Benefits
- High-throughput with low noise levels.
- Optimized air-flow patterns.
- Conforms to Center for Disease Control (CDC) supplemental air treatment recommendations.*
- Filters and inactivates airborne particles.
- “Plug and Play” set-up.

Cool plasmair version also available
Decontamination with air cooling

VERSATILE & HIGH PERFORMANCE
- Mobile.
- Fast set-up.
- Easy to use.
- Quiet operation.
- Minimal servicing.

Exhaustive user interface: Control panel with display of all operating parameters and simple settings.
MOBILE OR STATIONARY PROTECTIVE ENVIRONMENT

Spacious protected area: patient comfort and easy access for medical staff.

MOBILE DEPLOYABLE PLENUM (MDP)

- Mobile Deployable Plenum (MDP): Facilitates transportation and set-up.
- Lighting features integrated inside air diffusion plenums.

FIXED DEPLOYABLE PLENUM (FDP)

- Flat screen television included (MDP) or optional (FDP).
- Foldable coat hangers for sterile gowns.

CONVENIENT COUPLING POINTS FOR CONNECTION OF AIRINSPACE MOBIL UNITS TO PLENUMS
Technical specifications

<table>
<thead>
<tr>
<th>Mode</th>
<th>Pa T2006</th>
<th>Sentinel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airflow rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night mode</td>
<td>500 m³/h</td>
<td>400 m³/h</td>
</tr>
<tr>
<td>Intermediate mode</td>
<td>600 m³/h</td>
<td></td>
</tr>
<tr>
<td>Day mode</td>
<td>1 100 m³/h</td>
<td>850 m³/h</td>
</tr>
<tr>
<td>Sound Levels under the Plenum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 400 m³/h</td>
<td>42 dB(A)</td>
<td>39 dB(A)</td>
</tr>
<tr>
<td>At 500 m³/h</td>
<td>43 dB(A)</td>
<td></td>
</tr>
<tr>
<td>At 600 m³/h</td>
<td>48 dB(A)</td>
<td></td>
</tr>
<tr>
<td>At 850 m³/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At 1 100 m³/h</td>
<td>51 dB(A)</td>
<td></td>
</tr>
<tr>
<td>Air changes per hour/max</td>
<td>Up to 135 ACH</td>
<td>Up to 104 ACH</td>
</tr>
</tbody>
</table>

CASE STUDY

Multicenter Clinical Study:
4 Hospital Hematology/Oncology Wards
12 month study

- Microbiological performance achieved (> 1000 samples):
  - Less than 10 CFU/m³ for Total Flora.
  - Less than 1 CFU/m³ for Fungal Flora.
  - Data statistically validated and sourced from actual clinical studies incorporating real patients.

- Particulate performance achieved:
  - ISO 7 outside the patient tent (starting with Initial contamination in a standard room → ISO 9).
  - ISO 5 within the patient tent (once → ISO 7 achieved in the external room area).

- Decontamination kinetics:
  - 90% reduction of contamination within 4 minutes at 500 m³/h.
  - 90% reduction of contamination within 2 minutes at 1100 m³/h.
  - Data from hematology department studies.
Plasmair C2010 is the only model of the product range destined to be directly ceiling mounted to offer high performance of operation with no floor space taken.

**COANDA EFFECT**

The Coanda effect is the result of an air stream being attracted toward a nearby surface due to air velocities. This airflow pattern enables a continuous and optimized mixing of the room’s air volume.

**COMFORT OF USE**

- Easy to use.
- Low noise level.
- Light servicing.
- Remote control.

**Performance Range (for rooms up to 50 m³)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airborne Bacteriological Class</td>
<td>&lt;100/&lt;10 CFU/m³</td>
</tr>
<tr>
<td>ISO Particulate cleanliness class</td>
<td>ISO8/ISO7</td>
</tr>
<tr>
<td>90% Decontamination kinetics</td>
<td>within 20/10 minutes</td>
</tr>
</tbody>
</table>

**Dimensions and weight**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>26 cm</td>
</tr>
<tr>
<td>Diameter</td>
<td>120 cm</td>
</tr>
<tr>
<td>Max. Length</td>
<td>147 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>59 kg</td>
</tr>
</tbody>
</table>

**Technical specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airflow range</td>
<td>400-600-800 m³/h</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>120 VA</td>
</tr>
<tr>
<td>Sound level at 1 meter</td>
<td>600 m³/h - 45 dB(A)</td>
</tr>
<tr>
<td>Frequency and voltage</td>
<td>~100V/230V - 50Hz/60Hz</td>
</tr>
</tbody>
</table>

**Regulatory**

- CE marked
- Class 1 Medical Device


**CASE STUDY**

- Decontamination of a 35 m³ room from ISO9 to ISO7 in 10 minutes.
- Log reduction of particle load in 10 minutes.
- 23 air changes per hour (ACH).

Fast decontamination kinetics: 90% reduction within 10 minutes. Targeted particulate cleanliness class ISO7 achieved.

*Time in minutes to achieve a 90% reduction from the contamination peak.*
Airinspace International
service and support

The Plasmair range of products are designed to require minimal service and Airinspace ensures that technical support is on hand by carefully selecting and training local distribution partners.

Pre sales
Our partners will be happy to visit your institution and discuss in detail the benefits of the Plasmair system and more importantly the specific requirements you have concerning room volumes, air changes per hour, existing air quality (to establish the starting point) and existing infection risk issues. Should assistance be required from the Airinspace home office we have dedicated experts that will be able to support our distributors fully.
In some special cases where project management requires the active participation of Airinspace staff we can, and frequently do, make accompanied visits to customer sites.

After sales
Our distributors will keep essential consumables such as pre-filters and will have a managed supply of exchange modules. By recording accurately the technical details of each device they will be able to guide you through preventative programmed module changes and will have the modules ready for supply.
It will also be possible to discuss a variety of extended warranty and service inclusive packages with our distributors. These start from basic annual visits to check the machines functionality and to include a filter change service, right up to an ‘all risks’ contract that includes the cost of modules, preventative replacement of parts and regular functionality checks.

Warranty
Airinspace offers a 1 year warranty on components (modules and filters not included) valid for failure due to manufacturing fault or component breakdown. Failure to comply with the user manual recommendations may invalidate this, so we ask that our customers take due care in reading and applying the user guidelines.
If there are any doubts, do please consult with your supplier for clarification.

Extended warranty is available on request
**Protective Environment Guidelines**

Table extracted from French Standard - NFS 90-351 (June 2003): This standard details the specifications for the design, construction, operation and servicing of air treatment systems in healthcare facilities.

<table>
<thead>
<tr>
<th>Room equipped under standard conditions - no human presence</th>
<th>PERFORMANCE TARGETS</th>
<th>ADVISED AIR TREATMENT RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable Airinspace products</td>
<td>Particulate cleanliness class</td>
<td>Decontamination kinetics for ≥ 0,5 µm particles</td>
</tr>
<tr>
<td>Immunair ISO (MDP/FDP)</td>
<td>Zone 4: Very high infectious risk</td>
<td>ISO 5 &lt; 3,500 part. ≥ 0,5 µm/m³</td>
</tr>
<tr>
<td>Plasmair Sentinel Plasmair T2006 Plasmair C2010</td>
<td>Zone 3: High infectious risk</td>
<td>ISO 7 &lt; 350,000 part. ≥ 0,5 µm/m³</td>
</tr>
<tr>
<td></td>
<td>Zone 2: Moderate infectious risk</td>
<td>ISO 8 &lt; 3,500,000 part. ≥ 0,5 µm/m³</td>
</tr>
<tr>
<td></td>
<td>Zone 1: Non-specific environment</td>
<td>/</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISO classification</th>
<th>Maximum admissible concentration (particles/m³ of air) of particles of diameter equal or above the following sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0,1 µm</td>
</tr>
<tr>
<td>Classe ISO 1</td>
<td>10</td>
</tr>
<tr>
<td>Classe ISO 2</td>
<td>100</td>
</tr>
<tr>
<td>Classe ISO 3</td>
<td>1 000</td>
</tr>
<tr>
<td>Classe ISO 4</td>
<td>10 000</td>
</tr>
<tr>
<td>Classe ISO 5</td>
<td>100 000</td>
</tr>
<tr>
<td>Classe ISO 6</td>
<td>1 000 000</td>
</tr>
<tr>
<td>Classe ISO 7</td>
<td>352 000</td>
</tr>
<tr>
<td>Classe ISO 8</td>
<td>3 520 000</td>
</tr>
<tr>
<td>Classe ISO 9</td>
<td>35 200 000</td>
</tr>
</tbody>
</table>

**Glossary**

**Bacteriological class “B”**: The bacteriological class B represents the maximum admissible number of viable bacteria (Colony Forming Units) per cubic meter of air.

- **Example:** B100 = Less than 100 CFU/m³ of air.

**“CP” decontamination kinetics:**
The decontamination kinetics parameter “CP” is defined as the time required to achieve a 90% reduction (1 log) from an initial contamination peak. Measurements are carried on particles of size greater than 0.5 µm.

- **Example:** CP10 = less than 10 minutes to reduce particulate contamination by 90%.
### Area designation

<table>
<thead>
<tr>
<th>Area designation</th>
<th>4 (Very high risk of infection)</th>
<th>3 (High infectious risks)</th>
<th>2 (Moderate infectious risks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples of applications</td>
<td>- Immunosuppressed (grafted, serious cortisone treatment, ...)</td>
<td>- Immunodepressed (hematology, oncology, ICU, ...)</td>
<td>Moderate infectious risks environment</td>
</tr>
<tr>
<td></td>
<td>- Serious aseptic surgery (orthopedic, neurosurgery, ophthalmic, ...)</td>
<td>- Surgery (gynecological, urological, digestive, ...)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Severe burns, ...</td>
<td>- Neonatology, ...</td>
<td></td>
</tr>
</tbody>
</table>

### Our solutions

- Immunair ISO MDP/FDP
- Plasmair T2006 / Sentinel / C2010
- Plasmair T2006 / Sentinel / C2010

### INTERNATIONAL SCIENTIFIC PEER-REVIEWED REFERENCES

- **V. Bergeron, PhD et al.** Decreasing Airborn Contamination Levels in High-Risk Hospital Areas Using a Novel Mobile Air-Treatment Unit, Infection Control and Hospital Epidemiology, October 2007.
- **N. Sixt et al.** Reduced fungal contamination of the indoor environment with the Plasmair™ system (Airinspace), Journal of Hospital Infection, October 2006.
- **C. Beauchène et al.** Accumulation and transport of microbial-size particles in a pressure protected model burn unit: CFD simulations and experimental evidence, BioMed Central infectious Diseases, March 2011.
- **V. Bergeron et al.** Supplemental treatment of air in airborne infection isolation rooms using high-throughput in-room air decontamination units, American Journal of Infection Control, December 2010.
- **M-P. Brenier-Pinchart et al.** Mobile air-decontamination unit and filamentous fungal load in the hematology ward: How efficient at the low-activity mode, American Journal of Infection Control, October 2009.

### SOME CUSTOMER REFERENCES

**France:**
- Assistance Publique des Hôpitaux de Paris - Paris (Necker-Enfants malades ; Saint-Louis ; Saint-Antoine ; La Pitié-Salpêtrière ; Hôtel Dieu ; ...).
- Lille University Hospital - Lille.
- Strasbourg University Hospital - Strasbourg.
- Montpellier University Hospital - Montpellier.
- Assistance Publique des Hôpitaux de Marseille - Marseille (Hôpital Nord ; La Timone ; Conception).

**England:**
- Royal Free Hospital - London.
- Geneva University Hospital - Geneva.

**Germany:**
- Münster University Hospital - Münster.
- Klinikum Rechts der Isar - München.
- Charité University Hospital - Berlin (positive testing).

**Belgium:**
- Antwerpen University Hospital - Antwerpen.
- Gent University Hospital - Gent.

**USA:**
- New York University Medical Center - New York (positive testing).
- Duke University Medical Center - Durham (positive testing).

**And many more throughout 33 countries worldwide...**
airinspace

Safe Air, Better Health

airinspace
Parc Technologique du Pas du Lac
10 avenue Ampère - Bat. B2
F-78180 Montigny le Bretonneux - France

Tel.: +33 (0) 1 30 07 01 01
Fax: +33 (0) 1 30 07 01 02
contact@airinspace.com

www.airinspace.com