



## Why humidify?... For Aerospace

Ensure product quality and production efficiency with effective humidification

- Quicker production cycles
- Reduce material waste
- Increase safety and aircraft flying time
- Improve on-time delivery

# Ensure product quality and production efficiency with effective humidification between 40-60%

The manufacturing process for the aerospace industry relies heavily on a proper humidity level of between 40% - 60%. Insufficient and excessive humidity levels can cause damage and defects to aerospace electronic components, can provide an insufficient curing environment for composites, sealants, coatings and welding, and can pose safety concerns in your facility and in the field. Ensuring proper humidification in your aerospace manufacturing facility will improve production output, product quality and increase aircraft flying time.

## **Humidity Control Ensures Safety for your Aircraft While in Flight**

Maintaining humidity levels of between 40% - 60% in your aerospace manufacturing facility will ensure you are manufacturing a product that meets safety standards. Failure to meet this humidity criteria can cause equipment to be susceptible to electrostatic discharge which can cause electronic components to fail in the field. Safety of an aircraft can also be compromised when parts of the aircraft are manufactured in an environment with insufficient humidity causing the parts to warp, be brittle, and have compromised finishes. When aerospace parts are compromised these parts may not withstand the intense environment that aerospace vehicles can encounter in the field which can then result in malfunction causing safety concerns for those in flight. The quality, durability and long-term integrity of products manufactured for the aerospace industry can have serious ramifications for safety, making proper application procedures of the utmost importance.

## **Humidity Control for Manufacturing of Avionics and Electrical Components**

Avionics and electronic components are integral to the function of modern aerospace vehicles. Equipment malfunction or failure in the field, can have serious

ramifications for operators' and public safety. Ensuring proper humidity levels in the manufacturing process is integral to producing high-quality, reliable parts and equipment for these vehicles.

### **Prevent Electrostatic Discharge (ESD)**

Maintaining correct humidity levels of between 40% - 60% RH will reduce ESD which can cause expensive and dangerous electronic failure to avionics and electronics systems. Electrostatic discharge (ESD) occurs with the sudden flow of electricity between two electrically charged objects come into contact with one another. When objects holding different charges come into contact, or when the dielectric between them breaks down, a visible spark can be triggered, which can damage electronics and pose safety concerns for facility operations. Correct humidity provides a thin protective film on surfaces, which serves as a natural conductor to dissipate electric charges.

### **Prevent De-Soldering and Brittle Components**

Proper humidity levels contribute to the effectiveness of wave soldering and surface-mount technology (SMT) processes in aerospace manufacturing. Without sufficient humidity, solder paste can dry out resulting in insufficient solder joints and product defects. This can lower the shelf life of aerospace products and lead to short circuiting and malfunctioning devices. Insufficient humidity levels can also cause the components within aerospace electronics to become brittle, causing broken components or damage that could lead to malfunction or failure to perform in the field.



### **Ensure Quality Manufacturing of Avionics and Electrical Components**

Ensuring a consistent humidity level of 40% - 60% RH throughout avionics manufacturing is integral to ensuring the quality, reliability, and safety of the product. Proper humidity helps eliminate ESD and decreases the likelihood of expensive electronics failure, improves aircraft and flight system safety, and ensures schedules are adhered to and deliveries are met.

### **Humidity Control for the Paint and Coating Application Process in the Aviation Industry**

When painting aircrafts, the process requires reduced static and tight environmental conditions to create an even coat. Maintaining humidification between 40% - 60% is ideal for paint adherence.

### **Prevent Inconsistent Coating and Over-spray**

Electrostatic paint and powder coating is now very widely used in aerospace applications, offering many benefits including waste reduction, over-spray control, particulate recovery and solvent reduction. The process of electrostatic painting and powder coating requires maintaining a differential charge between the powder and earthed item, which relies on a controlled-humidity environment. If humidity levels are not maintained, this leads to product waste and increased production costs.

### **Prevent Rapid Surface Drying**

Humidity plays a key role in the multistage coating and surface treatment processes, including dipping and electroplating. Insufficient humidity levels result in uneven drying at the surface, and can cause staining and problems in the following phases of processing, leading to decreased operations efficiency. To prevent rapid surface drying, a relative humidity level of 50-60% RH must be maintained throughout the process.

### **Ensure Quality Paint and Coating with Humidity Control**

Ensuring adequate and consistent humidity control of between 40% -60% is integral to successful paint spray and coating applications. The quality, durability and long-term integrity of products manufactured for the aerospace industry can have serious ramifications for safety, making proper application procedures of the utmost importance.

### **Other Considerations for the Aerospace Industry**

Parts, storage, and machining need special humidification for consistent quality and productivity to reduce corrosion, maintenance, and the need for on hand replacement parts. Ensuring proper humidification results in less downtime and increased aircraft flying time, the need for fewer spare parts, improved on time delivery, and safer aircrafts.

Ensuring proper humidification in your facility will improve production output, elevate product quality and ultimately, boost ROI.



# Effective Humidification Solutions for the Aerospace Industry

Condair manufactures a comprehensive range of humidifiers and evaporative cooling systems across all humidification technologies. With years of experience working within manufacturing, paint spray booth manufacturers, air handling unit (AHU) manufacturers and end users, Condair's humidification engineers will provide the right solution to meet the unique needs of your aerospace facility.

**Effective humidity control between 40% - 60% poses a long list of benefits for the aerospace manufacturing industry including:**

- Increase production output and productivity
- Lower rework rate resulting in less waste
- Boost ROI of facility production and operations
- Maintain and improve product quality
- Improve on-time deliveries
- Increase safety and aircraft flying time
- Improve indoor air quality for employee health

## **Condair's Aerospace Manufacturing Customers Include:**

- |                   |                    |
|-------------------|--------------------|
| ▪ NASA            | ▪ Orbital ATK      |
| ▪ Boeing          | ▪ Honeywell        |
| ▪ Lockheed Martin | ▪ Northrup Grumman |
| ▪ Bombardier      | ▪ Spirit           |
| ▪ Embraer         |                    |



**DL-Series** Evaporative Cooling / Humidification



**HP-Series** High Pressure Humidification



**DR-Series** ML Direct Room Humidification



**DR-Series** Solo Direct Room Humidification

As the leading manufacturer of commercial/industrial humidification systems for more than 70 years, Condair has the technology and application expertise to meet the needs of any application.

Contact us today and ensure you have the best humidification solution for your aerospace manufacturing facility.

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