

BENEFITS OF DRY FOG HUMIDIFICATION IN THE AUTOMOTIVE PAINT PROCESS

The Problem:

Automotive assembly plants paint and repaint automotive body parts and external panels due to imperfections created by dust in the paint finish. Electrostatic charge builds up on the product surface and attracts dust particles which adhere to the surface, resulting in paint defects. Increasing the humidity is an easy way to remove electrostatic charge in the staging area prior to painting (see Figure 1). Preventing static buildup on the surface reduces the need to repaint and correct defects, saving time, product, and money. Adding humidity also drastically reduces the amount of dust and debris in the booth and transfer areas, resulting in fewer defects.

The Product:

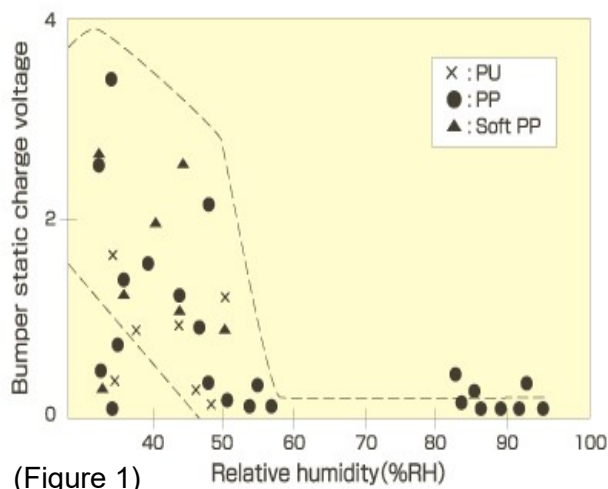
The AKIMist® humidification system is a humidifier which uses patented **Dry Fog** technology that began with the AKIJet® nozzle. After the AKIMist® had been utilized in European and Asian manufacturing facilities for over 20 years, it was introduced to the North American market with great success.

The AKIMist® is a compact sphere with four mounting positions around the top of our patented 'egg'. Up to four **Dry Fog** nozzles can be attached to these mounting positions and a fine, fog-like mist sprays from each nozzle with a droplet size so small it will not cause wetting. Installation can be customized based on your needs. Individual units can be used for small areas of **spot humidification** and multiple units can be linked together for larger areas. The addition of directional elbows offers even more control and system optimization. The AKIMist® design provides unique solutions to your specific humidification needs.

The Difference:

Paint departments use humidification systems and other static reducing products such as air ionizers, tack mats, dust nets and similar devices to keep products clean and ready for paint. Often the final step before painting includes manually wiping down parts as they enter the paint booth.

The Akimist® "E" raises the humidity which reduces static and settles dust particles to the ground. The particles simply become too heavy to float, which makes this an easy and environmentally safe solution to a common problem.



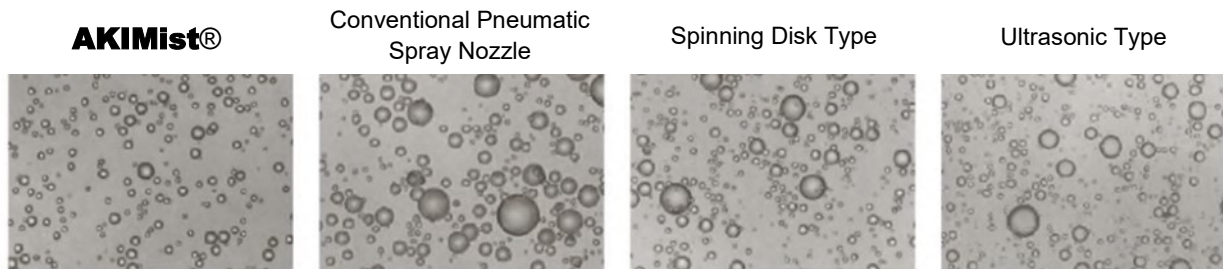
(Figure 1)



Other humidification systems also attempt to reduce static. For example, steam technology has been a popular large area solution, as well as high-pressure spray systems, spinning disk and ultrasonic systems. However, these methods have drawbacks. Due to the rising cost of electricity and the increasing maintenance costs of an aging system, steam technology is rapidly being replaced by more cost-effective solutions. Steam systems do not produce water droplets and therefore do not actively settle dust and debris. Cool water humidification increases the risk of bacteria buildup due to standing water. Other misting systems, including hydraulic and pneumatic nozzle arrays, can produce wetting which can cause defects and site hazards. High pressure systems rely on atomizing nozzles and high pressure pumps to create a mist like spray. However, these conventional nozzles do not create a consistently fine enough mist and wetting of the plant floor and product is likely to occur. The spray units are usually placed high above the target area to allow the droplets to evaporate before they reach the ground. Wetting remains a problem with these systems because of the larger size of the original droplets and an inconsistent performance of such layouts. Maintenance is an issue since the units usually require some type of lift to reach and service the system. Also, high pressure water pumps require routine maintenance as they often encounter problems.

The compact design of the AKIMist® uses a small chamber that constantly exchanges the water in the unit. When clean water (i.e. RO and/or DI water) is used, the system runs almost entirely maintenance free; bacteria and mold buildup does not occur and very little maintenance is necessary. Any possible maintenance is tool-free and can be completed by hand with little-to-no technical knowledge.

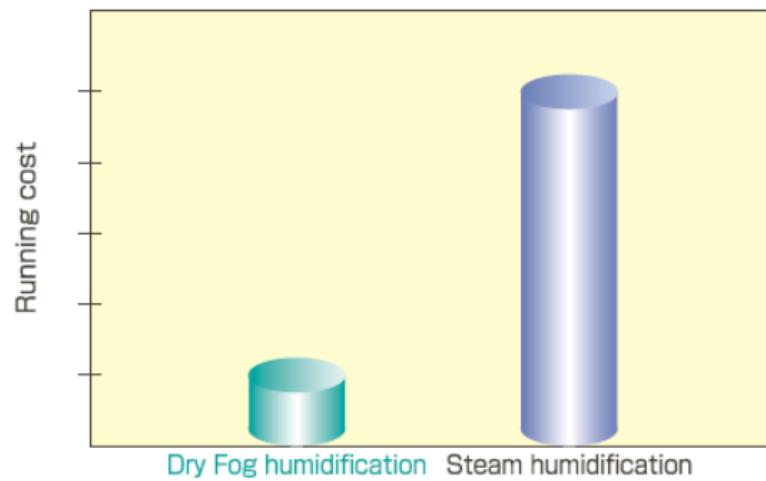
The AKIMist® Humidifier is the best choice to prevent problems in low humidity environments. AKIMist® requires neither heat nor high water pressure to run, which eliminates the drawbacks of other humidification systems. It also creates consistently small droplets as shown in Figure 2 (below). The pictures shown below are from a silicone oil test showing droplet samples from conventional pneumatic spray nozzles, spinning disk, and ultrasonic humidifying systems. Figure 2 illustrates that only the AKIMist® creates a consistent average droplet size of under 10 microns and completely eliminates large droplets.



(Figure 2)

Ikeuchi USA, Inc. is committed to customer support. Our Fog Engineers will visit your facility to ensure full understanding of your process requirements and application. Humidity and water samples are tested on site to diagnose the current environment. Problems and project goals are reviewed with your employees. Once this data is collected, we develop a proposal with a customized layout based on your specific floorplan, equipment, and current water system. We can also help adapt or supplement an existing system.

● Comparison of the running cost of humidification methods



(Figure 3)

Customers who have replaced a steam humidification system with AKIMist® have seen a quick return on their investment. The use of electricity drops by as much as 80% after the AKIMist® system is installed. (Figure 3 above) Some of the other systems require specialized maintenance, which means hiring third party contractors. These are hidden operating costs which can be avoided with the AKIMist® system. Its simple design requires minimal upkeep and can usually be maintained by an in-house technician.

Customization:

The AKIMist® was developed by working closely with our customers and listening to their specific needs. Ikeuchi is able to offer consistency, adaptability, and results. Through continuous evolution we have reached this AKIMist® series. This model is utilized in various industries where electrostatic and dry environments create problems for manufacturing facilities and engineers. A high quality humidification system is essential to keep costs and defects low, and product quality high.

The AKIMist® system has been successfully implemented in a variety of industries such as manufacturing electronic printed circuit boards, various paint lines, commercial printing operations (even those using new digital printing technology), textiles and many more, including areas where a static-generated spark can cause an explosion (such as in paint mixing rooms).

Today's automotive customers demand a flawless product. The appearance of the automobile's paint finish is always closely examined. Ikeuchi USA, Inc. with our AKIMist® can help today's auto manufacturer to reduce the costs of creating that perfect look in a new car with dependable quality.

Our Company:

Ikeuchi USA, Inc. is the North American office for H. Ikeuchi & Co. Ltd., which is headquartered in Osaka, Japan.

H. Ikeuchi & Co. Ltd. has been providing industrial spray nozzles and humidification products since 1954. With great insight into the needs of manufacturing facilities, Ikeuchi invented the world's first ceramic spray nozzle, the CERJET®, to extend the life of spray nozzles. Ikeuchi then went on to invent the world's first "Dry Fog" nozzle, the AKIJet®. Through an atomization process the AKIJet® creates a fine, fog-like mist. Today H. Ikeuchi & Co. Ltd. is the preferred supplier of many industries worldwide, covering a wide variety of humidification and dust control applications.

Ikeuchi USA was established in West Chester, Ohio in 2006. We are now bringing our popular products to the North American market, and are well established in a variety of industries.



“The Fog Engineers”

IKEUCHI USA, INC.

8110 Beckett Center Drive West Chester, OH 45069
Tel: (513) 942-3060 Fax: (513) 942-3064
www.ikeuchiusa.com info@ikeuchiusa.com