



# HUMIDIFICATION IN PHARMACEUTICAL MANUFACTURING

Humidification and Evaporative Cooling



# TRUSTED TECHNOLOGY

Condair humidifiers are used in pharmaceutical processing and research facilities around the world to maintain product quality, reduce waste and enhance productivity.

Some of the world's leading pharmaceutical manufacturers put their trust in Condair humidification systems to help them meet their production objectives.



## GLOBAL EXPERTISE, LOCAL SOLUTIONS

Condair has manufacturing facilities in Asia, North America and Europe as well as sales operations in 15 countries and distributors in over 40 more.

The company has been serving the global pharmaceutical industry for more than 60 years and is highly experienced in many different processing technologies, products, climates and all types of pharmaceutical production and research facility.

Condair humidification systems are designed for each individual application by pharmaceutical humidification experts to create the ideal production environment.

If required, Condair's regional R&D departments can work with a client's product development team, creating custom solutions to meet FDA or GAMP compliance.

Alongside system design, manufacture and supply, Condair's specialist humidification engineering teams offer installation, commissioning, maintenance and spares supply.

System maintenance from Condair provides the manufacturer's expertise directly on-site, ensuring critical applications have the exceptional support they require.

# OPTIMUM HUMIDITY IMPROVES PRODUCTIVITY

Humidity control in the pharmaceutical industry is essential in many production and testing processes to maintain quality and reduce waste.



## Tablet coating

Successful coating of a tablet largely depends on the composition of the tablet at the time of exposure to its coating. If the tablet's surface is too dry, due to incorrect humidity levels, the coating will not adhere correctly. Likewise if the humidity post coating is not optimal, the coating may dry too rapidly, detrimentally affecting its properties.



## Cleanrooms

Many cleanroom manufacturing processes require control over humidity. For instance, the printing of diagnostic strips using water based inks can require a high humidity of between 95-98%RH,  $\pm 1\%$ RH. In such circumstances, when the optimum humidity is so precise, it is often not possible to maintain a whole room at such a close level so a contained micro-climate can be produced around an individual manufacturing process.

## Fluid Bed Drying

Consistent and responsive humidity control in FBD processes results in the product's moisture content reaching the target level more rapidly and with less wastage through over or under drying. Close control steam humidifiers running on pure RO water can provide  $\pm 2\%$ RH and increase productivity when compared to more traditional live steam humidifiers mounted on fluid bed driers.

## Stability testing

Regulations on accelerated or long-term stability testing mostly require humidity to be controlled within a tolerance of  $\pm 5\%$ RH. If the condition of the atmosphere falls outside this window, it can result in a test having to be restarted. This is expensive and can even delay the launch of a new product.

## Static prevention

Levels of humidity below 40%RH can lead to static build-up. The results of this include materials adhering to each other on the production line and not locating correctly inside of packaging.

A humidity level of between 55-65%RH will significantly reduce the probability of electro static discharge, which is vital for sensitive electronic equipment or where flammable gases or substances are being used.



# SOLUTIONS FOR THE PHARMACEUTICAL INDUSTRY

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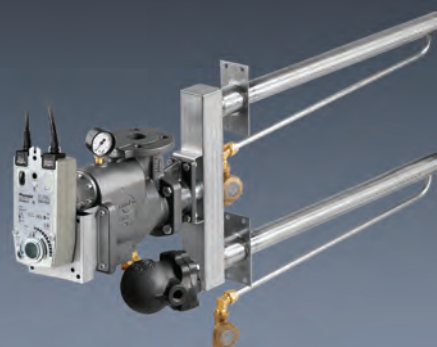
Condair has a wide range of humidification systems to suit any pharmaceutical manufacturing or research facility. As well as close control steam systems, the range includes low energy adiabatic humidifiers that can reduce operating costs and a building's carbon footprint.

Often the type of humidity control required by pharmaceutical processes is not achievable with standard humidifiers intended for offices or typical manufacturing environments. Many models within the Condair range have options specifically designed for advanced process applications.

This specialist range is combined with extensive expertise in the industry to ensure Condair always recommends and provides the most appropriate solution for any pharmaceutical project.



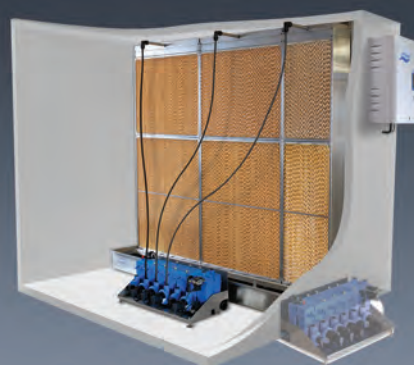
Condair RS – resistive steam humidifier



Condair ESCO – live steam humidifier



Condair GS – gas-fired humidifier



Condair ME – evaporative humidifier