# HUMIDIFICATION BUYER'S GUIDE

## OTHER ISSUES CAUSED BY LOW OR FLUCTUATING RELATIVE HUMIDITY

- Increased absences:
  - Maintain the recommended RH level especially within dormitories and cafeterias to lessen the impact of contagious respiratory illnesses like seasonal influenzas and the SARS-CoV-2 virus to protect staff, faculty, students, and the surrounding community.
  - Absences of staff, faculty, and students increase during the dry winter months, often due to chronic respiratory illnesses. Research has established that flu outbreaks can be predicted 14 to 16 days after outdoor humidity bottoms out in the continental United States.
- Dry air can cause damage to furnishings, musical instruments, gymnasiums, lecture halls, and other building materials, Humidification can protect against:
  - Cracking and splitting of flooring or woodwork
  - Deterioration of fabrics and other materials
  - Damage to finishes and surface distortion

#### SOURCES

1. "Indoor Air – International Journal of Indoor Environment and Health. International Journal of Indoor Environment and Health," Wiley Online Library. (30, October 2020). https://onlinelibrary.wiley.com/doi/full/10.1111/ina.12618

2. "High Humidity Leads to Loss of Infectious Virus from Simulated Cough," Rong, Lijun. (2013 February). https://www.ncbi.nlm.nih.gov/pmc/ articles/PMC3583861/

3. "Addressing the Challenges of Influenza Vaccination on US College Campuses," NFID Report. (May 2016). https://www.nfid.org/infectiousdiseases/national-survey-on-college-students-flu/#:~:text=Although%20most%20college%20students%20in,18%2D24%20years%20 old%20currently

4. "Focus on Top Impediments to Academic Success.," Villanova University Prevention Points. Vol 1, Issue No. 1 https://www1.villanova.edu/content/ villanova/studentlife/health/promotion/goto/resources/archives/ jcr content/pagecontent/download 0/file.res/prevention

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## WHY HUMIDIFY UNIVERSITIES?

Controlling the relative humidity (RH) can help universities to reduce the spread of viruses like COVID-19 and seasonal influenza, protecting students, faculty, staff, and the surrounding community.

University students live in close proximity to one another – attending sporting events, living in the dormitories, collaborating in lecture halls, and dining together in campus cafeterias – which creates many opportunities for viruses like SARS-CoV-2 and seasonal influenza viruses to easily spread. Regulating the relative humidity (RH) within the enclosed spaces of universities can add an additional layer of defense against the spread of viruses, protecting the well-being of the staff and students.

Humidification improves indoor air quality because bacteria and viruses thrive in dry air. Studies have shown an increase in potential respiratory illnesses when room RH drops below 40 percent.

Keeping RH levels within a range of 40 to 60 percent not only decreases bacteria and viruses in the air, it also hinders the development of fungi, mites, chemical interactions, and ozone production. The result is reduced occurrences of allergic rhinitis, respiratory infections, and asthma among staff, professors, facility, and students. To ensure that RH levels do not rise above 60 percent, responsive humidification system control is essential.

As universities navigate through these challenging times, they are faced with declining enrollment and need new ways of keeping their staff, faculty, and students safe. Learn how controlling relative humidity can help.

# ISSUES CAUSED BY LOW OR FLUCTUATING RELATIVE HUMIDITY

- Stress levels
  - > In areas where students and staff spend the majority of their time, such as dormitories and lecture halls, maintaining RH levels between 30% - 60% may lower stress levels.<sup>1</sup> A study comparing occupants in an environment with a RH level between 30% - 60% and those in drier conditions measured a 25% difference in stress response levels.
- Virus transmission
  - When the relative humidity level is 23% or less, viruses retain about 70% 77% infectivity compared to only 15–22% of viruses where the relative humidity level is greater than or equal to 43%.<sup>2</sup> Keeping RH levels within a range of 40 to 60% not only decreases bacteria and viruses in the air, but hinders the development of fungi, mites, chemical interactions, and ozone production.
  - A national survey found that only 46% of students 18-24 years old currently attending a two- or four-year college or university get their annual influenza vaccine.<sup>3</sup> Using non-pharmaceutical interventions like humidification to complement vaccinations is a safe, efficient, and easy way to reduce the spread of influenza and protect staff members and students.
  - > An assessment administered to undergraduate students on the campus of Villanova University found 17%<sup>4</sup> of students assessed said cold/flu/sore throats had affected their academic performance. Properly controlled humidification enhances the health and comfort for your students and staff while reducing the spread of airborne viruses.









# **ASSISTED LIVING FACILITIES**

## WHY CHOOSE DRISTEEM HUMIDIFICATION SYSTEMS?

#### COMMITTED TO QUALITY

DriSteem has been designing and building world-class humidification business for more than 50 years and is committed to making the best products in the HVAC industry.

DriSteem humidification systems are made to fit each unique application, whether it is ensuring the success of critical industrial processes, preserving fragile and valuable museum artifacts, or protecting the health and well-being of building occupants. DriSteem's mission is to support healthy environments – studies show that when room relative humidity (RH) drops below 40 percent, incidents of respiratory illness increase but by adding proper humidification, student and employee absenteeism can be significantly reduced.

DriSteem U.S. operations are ISO 9001:2015 certified and committed to providing highquality products, efficient services, on time delivery, and innovative solutions.

#### **SUPPORT & RELIABILITY**

DriSteem sales representatives are the industry experts in humidification systems, and are trained to recommend and specify the best solution for any application. They are willing to go the extra mile to make sure everything runs smoothly at start-up and for the life of the equipment.

DriSteem stands behind their products with a world-class Technical Support team available to troubleshoot any issues that may arise. They can also provide start-up assistance and offer field service visits.

#### **CASE STUDIES & RESEARCH**

Support your business case with data – DriSteem is continually adding to our collection of white papers and case studies.

Recently, DriSteem partnered with the Mayo Clinic to determine whether low humidity levels during the dry winter months have an effect on the spread of flu virus in a classroom environment. As the study showed, the addition of steam humidification resulted in a significant reduction in the total number of influenza-positive samples in the air and on surfaces.

- See the full case study here: <a href="https://dristeem.azureedge.net/public-documents/">https://dristeem.azureedge.net/public-documents/</a> docs/default-source/azure-public/case-studies/mayo-clinic-humidification-casestudy-0518.pdf?sfyrsn=2
- > And the supporting published study "Humidity as a non-pharmaceutical intervention for influenza A" here: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204337

Additional health care facilities case studies:

- Unsuitable Substitutions: Learning the Hard Way About Absorption http://www.dristeem.com/humidity-university/case-studies/case-study-mercyhospital
- Ultra-sorb Improves Absorption and Reduces Operating and Maintenance Costs http://www.dristeem.com/humidity-university/case-studies/case-study-ultrasorb-improves-absorption









### **DRISTEEM SOLUTIONS**

#### **XT SERIES ELECTRODE HUMIDIFIER**

Good choice for single-room humidification. It can mount on a wall and disperse steam directly into a room such as a band or chorus practice space.

- Easy to maintain: No cleaning required. Simply replace the affordable steam cylinder when prompted by the controller display.
- Compact to fit in small spaces.

#### **VAPORMIST® HUMIDIFIERS**

Disperses steam humidification through ductwork with dispersion panels, or directly in the space.

- Full enclosure suitable for finished spaces
- Can be wall mounted

#### **VAPORSTREAM® HUMIDIFIER**

Disperses steam humidification through ductwork with dispersion panels, or directly in the space.

- Industrial-grade unit designed to meet the humidification demands of any building environment
- Mount options: Trapeze hanger, wall brackets, support legs
- Seismic certified option (OSHPD)

#### **GTS® HUMIDIFIER LX SERIES**

The LX Series is the only gas-fired humidifier that combines the highest efficiency on the market with ultra-low NOx in a single design.

- Condensing design for highest efficiency and PVC venting
- Ultra-low NOx certified to SCAQMD 1146.2 standards
- Smart drain technology adjusts drain intervals automatically based on water quality
- Universal water control for use with any water type, including RO/DI water
- Modulating output with minimum 5:1 turndown for accurate humidity control
- Outdoor and indoor models for application flexibility

#### **STEAM DISPERSION**

Depending on the application, steam dispersion options may include:

- Ultra-sorb<sup>®</sup> Model XV steam dispersion panel
- Ultra-sorb<sup>®</sup> Model LV/LH steam dispersion panel
- Ultra-sorb<sup>®</sup> Model MP steam dispersion panel
- Multiple-tube humidifier
- Space Distribution Unit (SDU)

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XT SERIES ELECTRODE HUMIDIFIER



VAPORMIST HUMIDIFIER



VAPORSTREAM HUMIDIFIER



GTS HUMIDIFIER LX SERIES



STEAM DISPERSION OPTIONS