TOBACCO PROCESSING

HUMIDITY CONTROL BUYER'S GUIDE

WHY CONTROL HUMIDITY LEVELS FOR TOBACCO PROCESSING?

Proper humidity control is crucial for maintaining the quality of tobacco products throughout the curing, storage, and processing stages. The process of controlling humidity helps maintain the quality of the tobacco, and also prevents issues such as mold growth, insect infestation, and deterioration. Maintaining material weight also has a direct impact on profitability.

ISSUES CAUSED BY UNCONTROLLED HUMIDITY LEVELS

Relative humidity levels that are too low or too high can cause the following issues in tobacco processing applications:

- **Uneven Curing**: Inconsistent humidity control during the curing process can result in uneven drying of tobacco leaves. This can lead to variations in color, texture, and flavor, impacting the uniformity of the final tobacco product.
- **Product Contamination**: Fluctuations in humidity can increase the risk of contamination, especially in environments where tobacco is processed and packaged. Contaminants may compromise the safety and purity of the final tobacco products.
- **Increased Production Costs:** Inefficient humidity control systems may increase energy consumption and operational costs. Maintaining a consistent and optimal humidity level requires effective equipment and monitoring systems.
- **Reduced Productivity**: low humidity levels lead to static and dust/suspended particles reducing machine performance, decreasing throughput and increasing maintenance leading to elevated quality problems and higher manufacturing costs.
- **Deterioration of Tobacco Quality**: Fluctuations in humidity levels may contribute to the deterioration of tobacco quality, affecting its flavor, aroma, and overall market value. Maintaining stable humidity is essential for preserving the desired characteristics of tobacco.
- **Regulatory Compliance Issues**: Variations in humidity levels may result in non-compliance with industry regulations and quality standards. Adherence to specific humidity requirements is essential for meeting product specifications and regulatory guidelines.
- **Storage Challenges**: Improper humidity levels in storage facilities can affect the long-term preservation of tobacco products. High humidity may lead to clumping and degradation, while low humidity can cause excessive dryness and loss of product quality.
- **Mold Growth**: Inadequate humidity control can result in conditions conducive to mold growth on tobacco leaves. Mold infestations not only compromise the quality of the tobacco but can also lead to health concerns for consumers.
- **Insect Infestation**: High humidity levels create an environment that is favorable for insect infestation. Pests can damage tobacco leaves, leading to economic losses for growers and manufacturers.

DRISTEEM SOLUTIONS

EVAPORATIVE HUMIDIFICATION & COOLING

Evaporative humidification and cooling (adiabatic) systems are commonly used in various stages of tobacco production, primarily in regions with hot and dry climates. These systems utilize the principle of evaporation to add moisture to the air, creating a cooling effect. This system is often used for:

- Curing barns to maintain optimal humidity levels during the tobacco curing process
- Greenhouses that provide controlled environments for seedlings and young plants
- Processing facilities to help maintain the quality of tobacco leaves during various processing stages, such as sorting, cutting, and drying
- Drying areas where these systems provide a cooling effect, contributing to the prevention of over-drying
- Where multiple zone control for humidification is needed
- For energy cost savings where the evaporative/adiabatic process can use the heat energy generated by machinery to cool the area

ADIATEC® HIGH-PRESSURE SYSTEM

STEAM HUMIDIFICATION

Steam humidification systems are commonly used in various stages of the tobacco industry, primarily in facilities involved in the curing and processing of tobacco leaves. They are often used in:

- Curing barns where freshly harvested tobacco leaves are dried to achieve the desired color, flavor, and aroma
- Greenhouses where tobacco plants are grown in greenhouses before being transplanted to the field
- Processing and manufacturing facilities where tobacco leaves are processed into various tobacco products such as cigarettes, cigars, and pipe tobacco
- Storage warehouses where finished tobacco products are kept

RTS® HUMIDIFIER – RESISTIVE ELECTRIC
GTS® HUMIDIFIER – GAS-FIRED

DEHUMIDIFICATION

Dehumidification is commonly used in various stages of tobacco production to control and reduce humidity levels. Here are specific areas within tobacco production where dehumidification is commonly applied:

- Curing barns to prevent issues such as mold growth and ensures a controlled drying environment for the tobacco leaves.
- Storage warehouses to prevent moisture-related problems, such as clumping or deterioration
- Processing facilities during processing stages such as sorting, cutting, and packaging
- Drying areas for an optimal drying environment
- Packaging areas to maintain the integrity and quality of the packaged tobacco

EVAIR™ DEHUMIDIFIER

WHY CHOOSE DRISTEEM HUMIDITY CONTROL 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 high-quality products, efficient services, on time delivery, and innovative solutions.

ISO 9001:2015

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.

RESEARCH

Support your business case with data. Following are recommended relative humidity levels for different stages of tobacco production:

- **Primary Production**: Tobacco leaves the primary production regions with a moisture content ranging from 13% to 16% by weight. To maintain equilibrium between the air and tobacco moisture, an ambient relative humidity of 60-68% RH is essential. A humidity level below 60 % RH will result in the loss of moisture, weight, and overall quality of the tobacco.
- **Storage of Cut Tobacco**: Following primary production processes, the tobacco is placed into large bins or silos. Smaller tobacco plants may utilize boxes in cut tobacco storage facilities. It is crucial to maintain these areas at 60-70% RH with a temperature range of 70-75° F (21-24°C).
- **Secondary Production**: During secondary production, maintaining a humidity level around 60-70% RH is critical in areas such as the maker, catcher band, and any on-machine storage systems. Failure to do so can result in the loss of moisture when storing cigarettes temporarily, leading to diminished quality.
- **Recovery & Ripping Areas**: Maintaining a humidity level of 65% RH at 21°C is imperative in ripping rooms where production waste is broken up and reused. Insufficient humidity can result in poor recovery of tobacco.
- **Electrostatic Build-Up**: When humidity falls below 50% RH, electrostatic charges can occur, particularly in filter rod areas. Sustaining conditions above 50% RH eliminate electrostatic charges and helps reduce dust which reduces equipment breakdown and production stoppage.
- **Papers**: Cigarette paper must be kept in equilibrium with the environment. Changes in moisture content can alter the dimensions of the paper reel along exposed edges. This can create tension as the paper runs, leading to tears, machine misfeeds, and costly downtime for re-feeding the roll.

DRI-STEEM Corporation
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DriSteem U.S. operations are
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Continuous product improvement is a policy of DriSteem; therefore, product features and specifications are subject to change without notice.

Expect quality from the industry leader
Since 1965, DriSteem has been leading the industry with creative and reliable humidification solutions. Our focus on ease of ownership is evident in the construction of DriSteem products. DriSteem leads the industry with a Two-year Limited Warranty and optional extended warranty.

For more information:
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For the most recent product information visit our website:
www.dristeem.com