



# Worthwhile Operational Guidelines & Suggestions

BROILER PROCESSING TIMELY INFORMATION – JULY 2004

## CONDENSATION

Poultry processing facilities, by inherent nature of the process, use a lot of water. Although most of the process water is removed by the plant effluent, considerable amount ends up as water vapor through evaporation. This water vapor then ascends and condenses on surfaces such as equipment, pipes, structural elements and ceilings. The Food Safety Inspection Service, USDA, requires [9 CFR 416.2(d)] that “...odors, vapors, and condensation must be controlled to prevent adulteration of the product and the creation of unsanitary conditions...” This regulation is based on the premise that high moisture environments are conducive to microbial and fungal growth and that drips resulting from condensation could adulterate the product. Plant condensation problems often result in additional labor costs, pre-operational delays, line shutdowns and longer sanitation shifts.

Attempts to control condensation through Sanitation SOP's have been marginally effective in many operations. Traditional approaches plants use include: increasing refrigeration, utilizing “wipers” to remove the condensate, installing ceiling fans to facilitate air circulation, increasing intake and/or exhaust air flow, hooding or shielding equipment, and using drip pans and/or plastic covers to protect the product. Airflow pattern(s) is a critical, but often neglected, aspect of condensation control. Many plants are ventilated with negative pressure systems, where air moving capacity is provided by large roof fans in the picking room. Theoretically, it makes sense to have a one-way air flow, from clean areas to a location with high concentration of bioaerosols (airborne spoilage and pathogenic organisms). However, it has been an engineering challenge to obtain this type of ventilation in many facilities. Large, but secondary, airflows occur as a result of openings between areas, rooms, and from the outdoors, often because of structural modifications, convenience or worker/vehicle traffic. The “science of condensation control” (i.e., technical expertise, selection/use of instruments to measure and analyze ventilation, pressure, and air flow data, proper facility design and modifications etc.) is a must to assure process control, product quality and safety.

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