

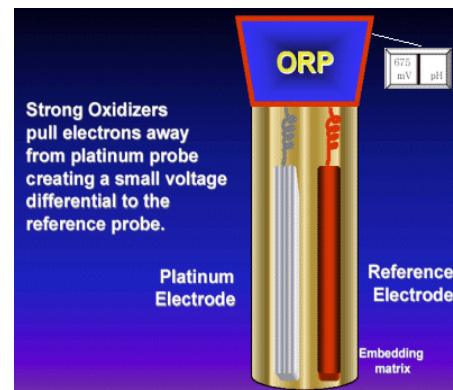


Worthwhile Operational Guidelines & Suggestions

BROILER PROCESSING TIMELY INFORMATION – NOVEMBER 2009

Using ORP to Control Immersion Chiller Parameters

Effective and consistent operation of carcass chilling process is critical in poultry processing in terms of meeting food safety performance standards. Immersion chilling not only allows for rapid and efficient carcass cooling, but also provides a unique opportunity (i.e., ample contact time) to apply antimicrobials. Oxidation-Reduction Potential (ORP) is a parameter (measured in millivolts; mV) that can be used to measure and track oxidizing antimicrobials such as chlorine, chlorine dioxide, ozone, peroxide, peroxyacetic acid and other approved treatments in the chiller.



T. V. Suslow, 2004

Oxidizing agents “steal” electrons from other substances and destroy them by altering their chemical make-up. In the process, they pickup electrons (i.e., reduced), lose electrical charge and hence their oxidizing potential. The ORP is measured by a millivolt (mV) meter (see Figure) and levels of 650 to 700 mV are recommended to destroy the free-floating spoilage bacteria, *E.coli* and *Salmonella* in the water within seconds. Since the efficacy of antimicrobial such as chlorine is dependent on the pH of the water, the ORP controllers are typically coupled with electronic pH regulators to provide a real-time response in maintaining chiller “anti-microbial potential.” The ORP + pH based controllers can dispense chemicals on an “as needed” basis to assure desired chill water chemistry and antimicrobial efficacy. Excessive application of chemicals and potential issues that may arise from a cost, sensory quality, safety and environmental standpoints are prevented. This technology certainly provides a much-needed consistency in meeting post-chill microbial performance goals.



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