Technical Update
from Jones-Hamilton Co.

SAS
Process Water Acidifier

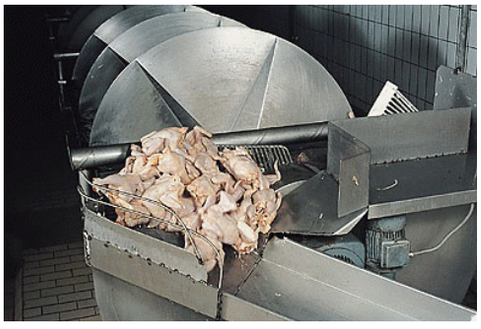
Set-up And Management Of SAS Delivery Systems

SAS is a patented food grade acid for pH control of process water in meat and poultry facilities. SAS is used in conjunction with chlorine to maximize the antimicrobial properties of chlorinated processing water and chill systems. SAS is manufactured under FDA's Good Manufacturing Practices and HACCP program. SAS purchased from Jones-Hamilton Co. includes a license for use in applications covered by U.S. patents 5,958,491, 6,132,792, and 6,620,445 B1.

Chlorination of processing and chiller water is the most commonly used sanitation system in poultry and meat processing. Chlorine requires a pH of 5.0-6.0 in order for it to be in its most effective form (hypochlorous acid). In most processing plants, the incoming water is not in this correct pH range. SAS is used to keep the processing water at a pH of 5.0-6.0 in order to allow free chlorine to be in its most effective form.

How Much SAS Will My Plant Need?

The target pH for all processing water is 5.0-6.0. The amount of SAS required to achieve that target in a given location depends on the pH and alkalinity of the incoming water, the type of chlorine being added and other OLR chemicals that may be present. Jones-Hamilton Co. provides customers with a free water analysis to determine the estimated SAS usage in a given operation.



How Do I Control Or Automate My System?

The addition of SAS for pH control is a simple matter and can be done with a number of commercially available systems. Care should be taken with the application of the equipment to insure proper control. The measurement and control of chlorine addition is more complicated than pH because of the variability of water chemistry and quality. Systems are available to control by measuring free chlorine but these are often not suitable for water with high levels of solids and/or fats. ORP measurements can be used to control chlorine addition but must be done in conjunction with pH measurement. It is also important to determine the typical conditions of the water through manual testing to establish the proper set points for the equipment. In all cases the use of automated equipment cannot eliminate the need regular manual testing to verify the proper operation of the equipment.

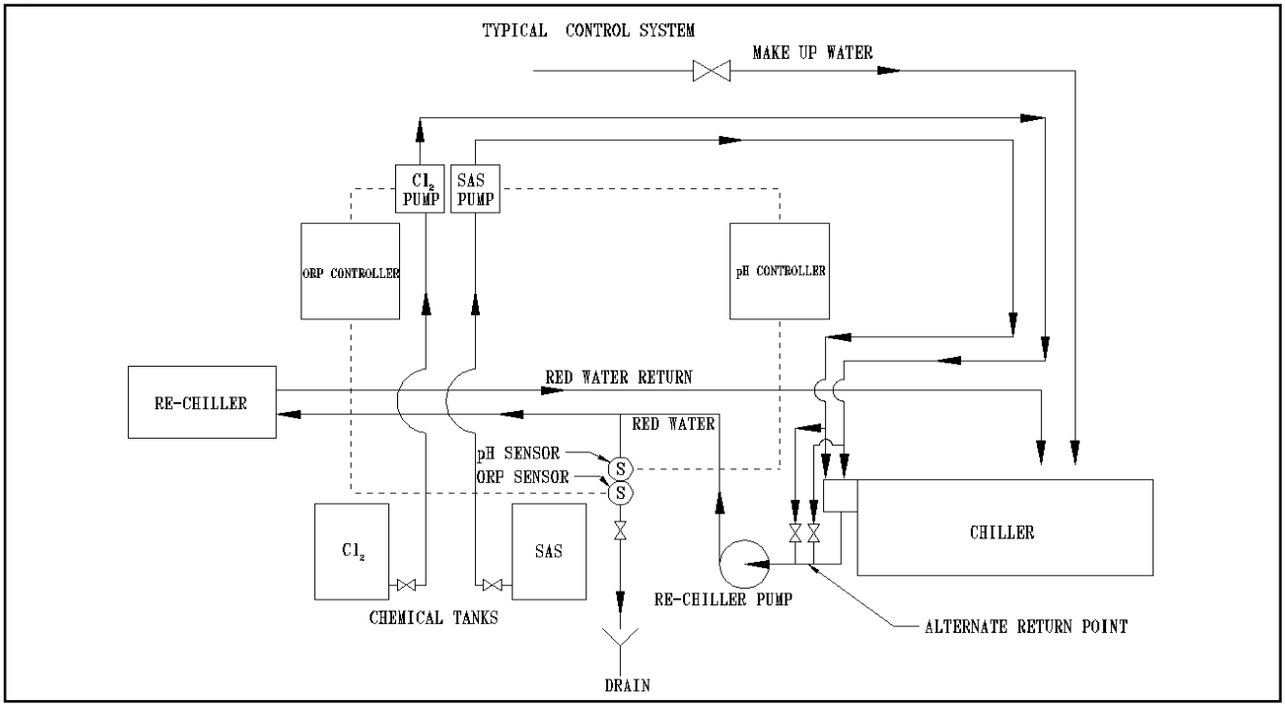
How Do I Determine My Set Points For The Delivery System?

To determine your chill tank water profile, the total chlorine, free chlorine, and pH should be measured at the bird entrance, middle, and bird exit of the chiller or pre-chiller. This assesses how much chlorine activity is present. Initially these measurements should be taken on an hourly basis for the best results. Using the data collected, the optimum set points can be determined for automated control systems. Even if automated systems are utilized, regular tests should be conducted to verify operation of the system.

What About Monitoring My Delivery System Using ORP?

ORP (oxidation reduction potential), measured in millivolts, reflects the oxidizing potential of the water. In chlorinated water, the various forms of chlorine present are the primary oxidizers. The form of the chlorine will affect the ORP reading. As with pH and free chlorine measurement, the ORP should be tested, as outlined, to determine the water profile and optimum set points for system control. Once a correlation is established between the ORP reading at a specific location at the proper pH and free chlorine levels, the chlorine delivery system can be set to a specific ORP target. Because ORP is only a trend indicator, different plants or different locations within the same plant may have a different ORP set point for the same pH and free chlorine targets.

Figure 1: Control System Flow Chart



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