Process Controls SalesNet
pH Applications

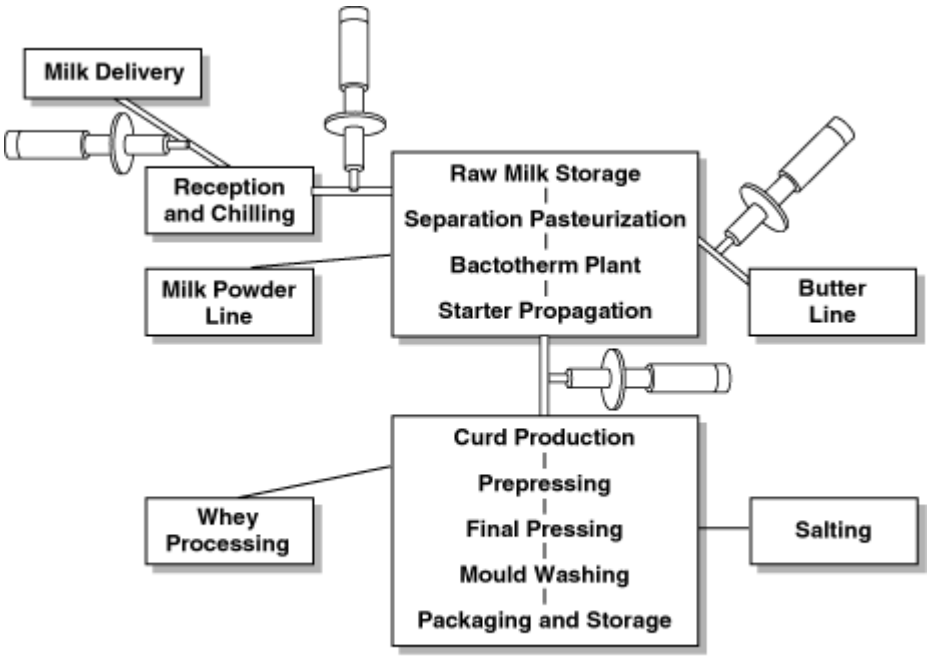
Cheese Processing pH Measurements

Accurate measurements ensure that your best ingredients produce the best products.

Background
Engineers need to know the physical properties of the product so that they can design the appropriate equipment and process. Operators must have accurate and reliable physical property data in order to ensure the quality of the product and the efficiency of the process. Reliable and accurate data is important in any production, but in food processing, the measurements also need to be from sanitary instrumentation. Here's one example of how Sanitary Durafet® pH electrodes can improve your on-line measurements and ensure your process's quality.

The process
Traditionally, cheese makers have developed a "feel" for time-temperature- acidity relationships for different types of cheeses. This "feel" is based upon certain criteria for acidity, curd development, heating times, and other process conditions. However, automation has led to certain equipment design principles and measurement techniques to ensure the "feel" of cheese production. These principles include:

- Production methods must produce cheese reliably and cost effectively, and with repeatability from batch to batch.
- Design should be simple and include an effective clean-in-place (CIP) system.
- Equipment must satisfy regulations.
- Design should permit installation in existing plants and be available with manual to fully automatic control schemes.



where the Durafet pH electrode helps your process the most

A cheese vat is a jacketed vessel equipped with hot and cold water supply for heating and cooling. The vat must heat the ingredients uniformly and at a slow, even rate during cooking. The setting temperature of the milk is dependent upon the starter bacteria and the type of cheese produced. The setting temperatures are usually in the range of 21° to 29°C (70° to 85°F). The final cooking temperature ranges from 40° to 57°C (104° to 135°F). During the cooking period the acid-forming bacteria will produce the desired levels of acidity before commencing with the next step of the cheesemaking process. Accurate pH readings can pinpoint the optimum time to cut the curd to achieve the highest yield of cheese and minimize the loss of solids into the whey. It is very important to have a reliable temperature and pH measurement to ensure the quality of each particular cheese. A cheese's distinctive flavor is determined in part by the pH balance of the process.

Flexible plant for multiple products
In today's fast paced manufacturing environment, how fast you can change your processing to meet your customers' demands often defines your margin of profit. In-line pH sensors can provide current information for controlling the process to yield consistently high quality product.

Advanced in-line process control.
Off-line sampling is slow, unresponsive, cumbersome, and costly. Now you can do in-line pH analysis with Honeywell's Durafet pH electrodes. The solid-state ISFET sensor is virtually unbreakable and is designed for sanitary service. Sanitary Durafet electrodes are accurate in a wide pH range (0-14), providing reliable measurements throughout the pasteurization process.

In-line sampling and on-line analysis enables you to correct process drift and protect product quality. The in-line Sanitary Durafet electrodes increase productivity, ensure product quality, save time, and increase process profitability.

Now you can do pH analysis on-line without distrupting your process for time-consuming pH lab analysis.

Durafet electrodes remain accurate under the most demanding conditions over a wide range of temperatures (-10 to +110°C). Sanitary Durafet pH electrodes feature a fast-responding temperature sensor for better control of food and dairy processes.

Reliable Sanitary Durafet pH electrodes provide a simple solution to a complex technology challenge.

Durafet pH electrodes are a series of rugged pH electrodes featuring a fast responding ion-sensitive field-effect transistor (ISFET) that provides increased system accuracy, stability, and reliability. The Sanitary Durafet pH electrode can be mounted in-line to provide on-line pH measurements. This increases your productivity, speeds control, improves product quality, and lowers installed costs.

The traditional glass membrane is fragile and delicate. When it breaks, it is costly and time consuming to replace. A solid-state sensor makes Durafet electrodes virtually unbreakable. Longer electrode life not only adds up to lower maintenance costs, but also provides increased reliability for even the most critical processes.

Six models of the Sanitary Durafet pH electrode range from 1l/2", 2", and 3" flange sizes that have either deep or shallow penetration.

A simple solution

Tomorrow's standards, that Honeywell is setting today, include:

- **Solid-state ISFET sensor is virtually unbreakable.**
- **No sodium iron error or ORP interference.**
- **Built-in counter electrode increasing measurement stability.**
- **Designed for sanitary service and authorized to use the 3A symbol.**
- **Easy retrofits to existing systems, because it works with almost any analyzer.**
- **Complete selection of housings for in-line or immersion mounting.**

The in-line Sanitary Durafet electrode is another example of Honeywell's powerful technology giving you a simple solution that increases productivity, ensures product quality, saves time, and increases process profitability.