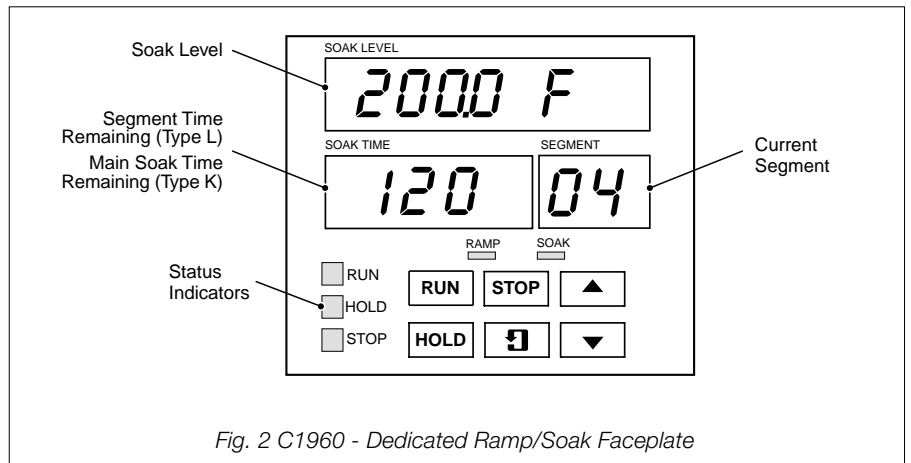


Fig. 1 Atmospheric Dye Beck

Why use aC1960?

- ▶ Automatic temperature control for increased production and operational efficiency.
- ▶ Guaranteed ramp and soak for precise process temperature profiles and improved product quality.
- ▶ Dedicated Ramp/Soak faceplate with status indicators (e.g. Ramp, Soak, Run, Hold and Stop) and trending for up to three variables.
- ▶ Direct-connected RTD and/or thermocouple inputs reduce installation costs.
- ▶ Modular construction, self-diagnostics and long-term reliability reduce maintenance costs.



Features and Benefits

Precise Set-Point Profiles Improve Quality, Consistency and Yield

- ▶ The C1960 features a Ramp/Soak set point profile generator with configurable hysteresis. It can be programmed with up to 10 temperature profiles and has a maximum of 99 segments that can be distributed throughout the programs.
- ▶ Configurable hysteresis provides the flexibility to set the upper and lower limits of both ramp and soak segments to achieve a particular process requirement.
- ▶ A guaranteed process ramp is provided as part of the C1960 profile. This feature is useful in situations where steam fluctuations may occur. For example, when ramping the process to the desired temperature set point, the guaranteed process ramp tries to ensure that the process keeps pace with the rising set point. If it cannot, the set point ramp is delayed until the process is within the specified hysteresis band, thus preventing a sudden change in temperature that could damage the fabric in the dye beck.
- ▶ The guaranteed soak ensures that the temperature and duration of the soak are held to the configured set points. This also ensures that the temperature is accurately maintained during the interrupt cycle at the end of the soak cycle.

Comprehensive Displays for Improved Operation

- ▶ The large, dedicated ramp/soak front panel display of the C1960 allows the operator to see displayed information from a distance. This information includes the target set point, time remaining in main soak segment and the segment running.
- ▶ The controller also includes status indicators to show if the profile is in a ramp or soak segment. Dedicated keys allow simple control of the profile. The keys are:
 - Run
 - Hold
 - Stop
 - Increase Time/Temperature
 - Decrease Time/Temperature

Why use a Dye Beck Control System?

- ▶ To Improve quality, consistency and yield. The art of dyeing textile fabric has evolved from a hand-operated process to one now employing sophisticated and highly accurate process control instrumentation.

The Application

Introduction

- ▶ Dyeing operations involve loading a product into a vessel (or dye beck) containing a heated dye liquor maintained at a precise temperature to ensure consistent, high-quality dyeing. The dye liquor is a mixture of water, dye and other chemicals. Products treated range from 75cm tubular cotton knits in rope form to 5m carpets.

Temperature Control

- ▶ Temperature is measured by a sensor located at the front of the vessel. Temperature control is achieved by adjusting the rate at which steam enters the dye beck.
- ▶ On atmospheric dye becks with front and rear steam sparge pipes, the temperature of the liquor rises uniformly as the steam valve opens during the ramping process.
- ▶ Dye becks with only one sparge pipe initially have a slight temperature gradient between the front and the rear of the vessel. As the ramping cycle progresses, the liquor temperature becomes uniform due to continued mixing action.

Profile Control

- ▶ The temperature of the dye liquor in the dye beck is controlled to a temperature profile similar to that shown in Fig. 3.
- ▶ Initially, the liquor temperature is increased at a specified rate until it reaches a predetermined value.
- ▶ Once at this temperature, the product is immersed in the dye beck for a specified period of time. The product is then cooled, rinsed and removed.

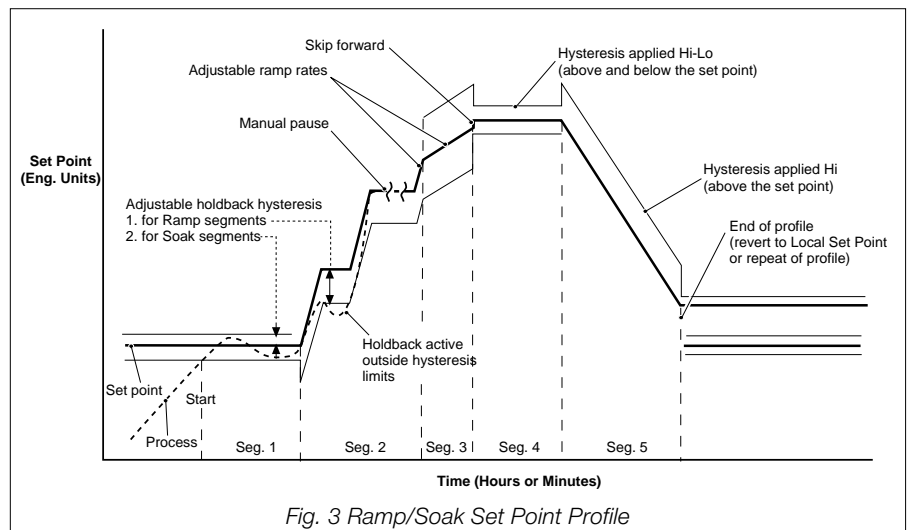


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