Product Application Guide
AG/RCP–002_2

Atmospheric Dye Beck Control using the C360

Industrial IT enabled

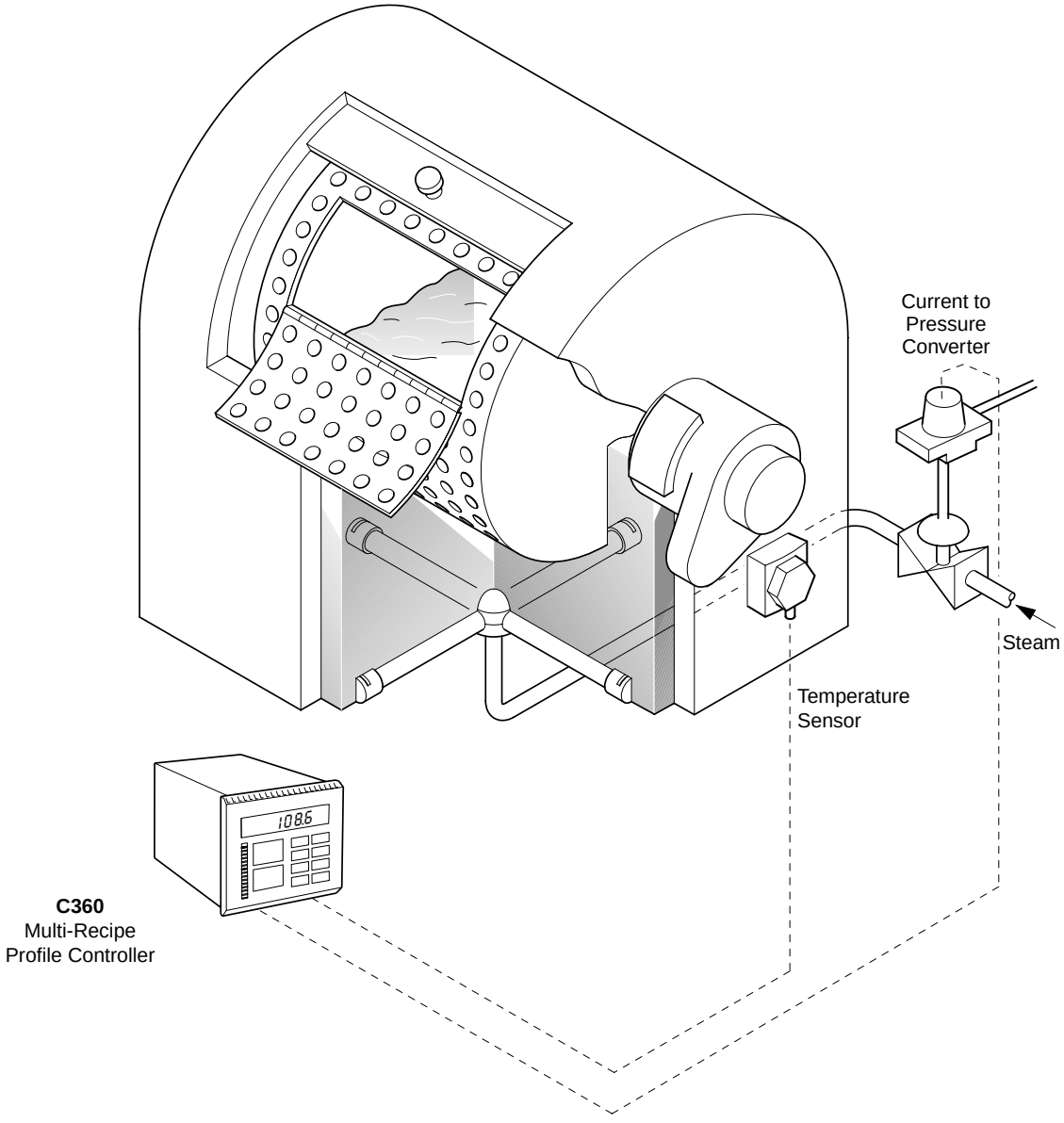

Fig. 1 Atmospheric Dye Beck with Single Sparge Pipe

ABB

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.

Why use a C360?

- 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.

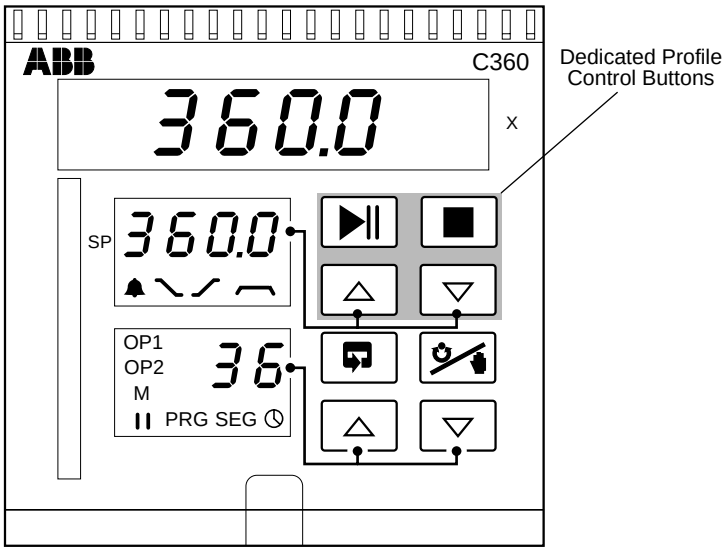

Fig. 2 C360 – Multi-Recipe Profile Controller

Features and Benefits

The **C360** Multi-Recipe Profile Controller is ideally suited for atmospheric dye beck temperature control. The instrument is equipped with dedicated front face profile control buttons and clear displays to indicate process variable, target set point, time remaining in current segment, program and segment running and output – see Fig. 2.

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 adusting 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.

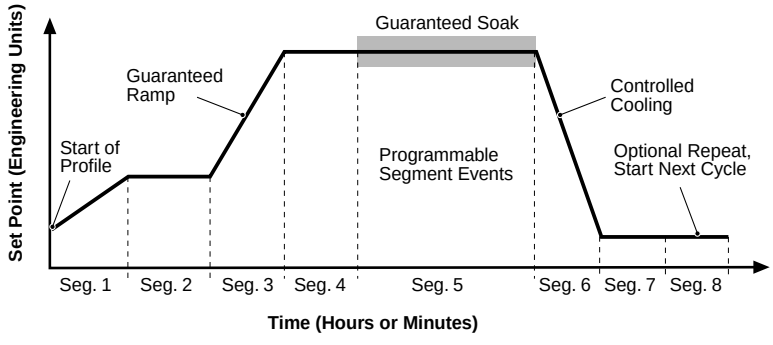

Fig. 3 Ramp/Soak Set Point Profile

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