



Continuous dosing system for cold pad batch (CPB) dyeing

Perfect preparation of dye chemical solution for high quality, reproducible dyeing

Feeding a precisely prepared dye-chemical solution into the trough of a cold pad batch dyeing machine is an essential first step for producing fabric that is evenly dyed and with minimal shade variations.

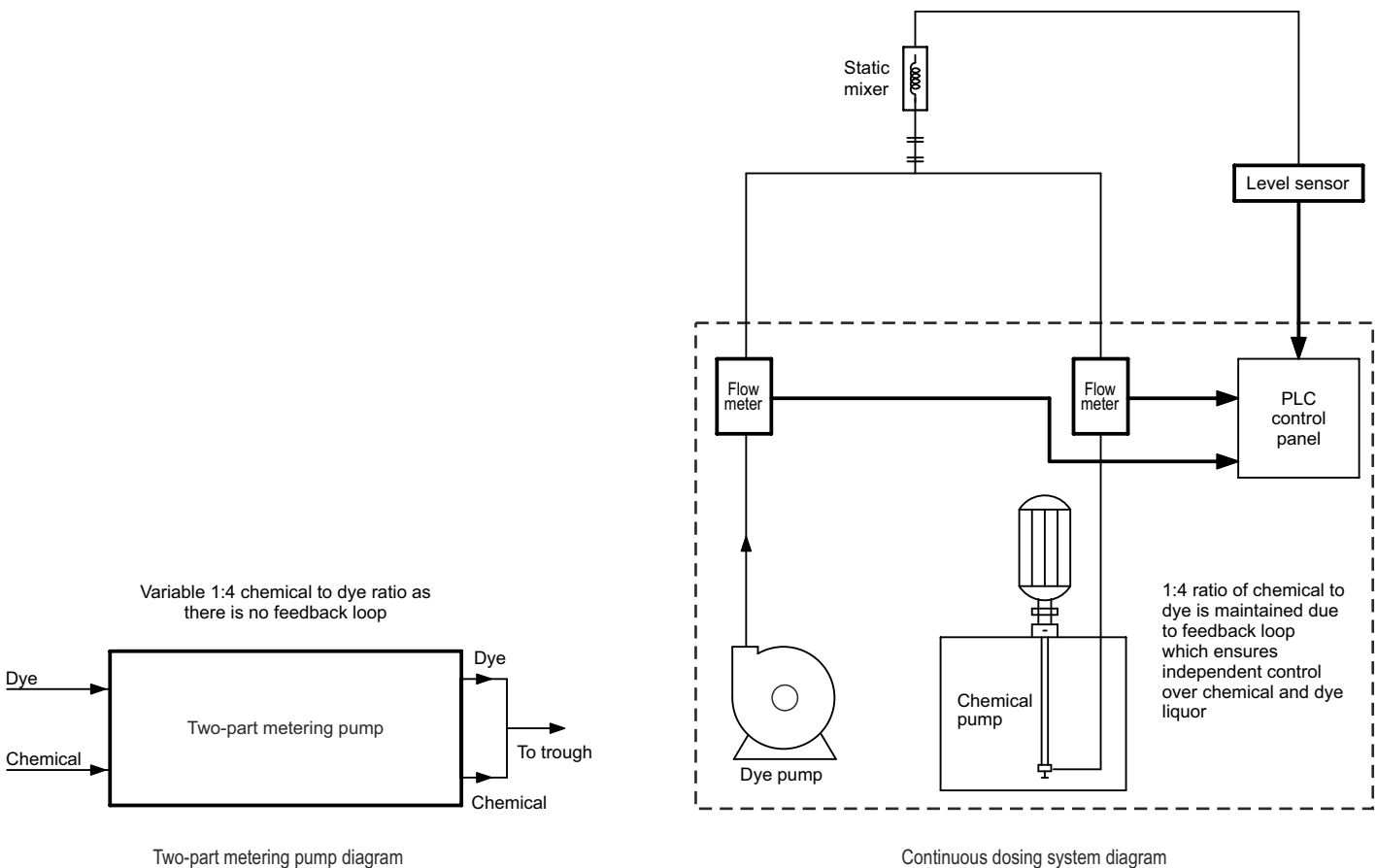
One common way dyers prepare dye liquors is with two-part metering pumps. Others use continuous dosing systems. Hence dyers face a dilemma: which is better – a two-part metering pump, or a continuous dosing system?

Working of a two-part metering pump

For example, for a ratio of 1:4 of chemical to dye:

- The colour and chemical are dispensed by a metering pump based on the total liquor replenished into the trough
- However, this 1:4 ratio varies – it may be slightly higher or lower as there is no feedback loop
- Due to this variability, the dye shade is negatively impacted in terms of uniformity of tone and hue

At times this might also lead to the depth variations, along the length of meterage dyed.



How continuous dosing works

For the same ratio of 1:4 of chemical to dye:

- Variability is eliminated through tight synchronisation between the two pumps with the help of the PLC and feedback from the flow meter
- This enables independent control over both the chemical and dye liquor
- Result: the ratio of 1:4 is maintained constantly

Features



Complete SS 304 skid



Flow switches to avoid the dry running of the pumps



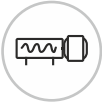
PLC with HMI and VFD wired with switchgear in a fabricated SS304 control panel



Flowmeters (Krohne or E&H)



SS body centrifugal pump with motor for dye



Progressive cavity/gear pump with motor for chemical



Manual valves for cleaning and sampling

Benefits



Both the dye and chemical pumps are regulated through a feedback system from the flowmeter. The ratio is kept constant by controlling the speed of a chemical pump with help of a VFD (variable frequency drive), in sync with a dye pump



Even a small change in the flow of the dye pump is sensed and the chemical pump will act quickly to keep the ratio constant



Level sensor feedback from the trough ensures that there is no overflow of liquor



Fabric transport speed is calculated from the pulse frequency of the yardage counter and the calculation of the fabric throughput in kg/h



Pumps are regulated as long as the dosing station is switched on or the fabric transport is switched on



Actual dosing feedback is received from the flowmeters and is compared and corrected continuously with the set point threshold

A.T.E.'s continuous dosing system for CPB dyeing ensures consistent and uniform shade

Complete dosing skid and control panel



Pumps and flow meters



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