VdrMAC
Measure | Analyse | Control
Optimised Moisture Control

A Vertical Drying Range (VDR) is installed at the exit of continuous processing machines to remove excess moisture from cloth in open width condition. In the VDR, the fabric is dried by passing over several cylinders heated by steam.

The aim of this drying process is to remove the excess water and attain the natural moisture content of the fabric. In case of excess moisture, the finishing solution does not adhere properly to the fabric resulting in improper finish.

Optimal drying by the Forbes Marshall VDR moisture control system ensures the right amount of moisture content at outlet and maximum steam savings.

Forbes Marshall VDR Moisture Control System

Features
- Use of measuring instruments to obtain quantitative data
- Precisely captures data relating to consumption of energy
- Evaluates energy consumption and carries out improvement measures for optimisation
### Areas of Concern

<table>
<thead>
<tr>
<th>Over drying of fabric results in 4-5% excess steam consumption</th>
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<td>Improper trapping results in 5-15% excess fuel consumption</td>
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- **Variation in outlet moisture**  
  Large variation in inlet moisture content of fabric dried in the VDR owing to the multiple processes it passes through. VDR is typically operated at fixed steam setting. Hence, the variation in inlet moisture results in outlet moisture variation as well.

- **Reduced dryer temperatures**  
  Insufficient heat due to insufficient flow of steam or fluctuation in steam pressure leads to improper drying and increased moisture content in fabric.

- **Reduced capacity**  
  Improper condensate evacuation due to issues of back pressures, incorrect selection of type of steam trap and incorrect installation of steam traps result in reduced capacity.

- **Bypass of steam traps**  
  Operator dependent hence likelihood of energy loss due to open bypasses.

- **Over drying of cloth**  
  Operator reliant process due to unavailability of correct moisture values, leading to over drying of fabric, which negatively impacts finish.

- **Increased energy consumption**  
  Excessive consumption of energy due to over drying and absorption of moisture from the environment prior to further processing.

### Benefits of Forbes Marshall Automation

- **Outlet moisture of the fabric is measured across the width.** Integrated control system controls steam in the final dryers using this moisture value, ensuring consistent desired output.

- **The control system also adjusts the steam quantity for the balance dryers through another valve.**

- **Forbes Marshall single orifice float traps with strainers are installed at the inlet of each dryer to avoid evasion of trap bypass.**

- **Air vents are installed for individual stacks to improve heating in dryers.**

- **The system also takes input for the machine speed from existing sensor and provides an output signal to vary the machine speed based on the moisture levels achieved and operating steam pressure.**

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