

PTX5J002

PROCESS CONTROL IN FABRIC MANUFACTURING

Course Objectives

To enable the students to understand process and quality control measures during formation woven fabric.

Course Outcomes:

Upon completion of this course, the students shall be able to :

- Describe and apply process parameters and control measures in each stage of weaving process to produce flaw less fabrics.
- Describe factors influencing production of the weaving preparatory machines and loom.
- Apply control measures to improve loom efficiency.
- Describe the key control measures in knitting process.
- Analyse quality of fabrics and classify fabric defects.
- Inspect fabric defects.

Module-I (14 Hours)

Process Control in Winding: Control of quality of knot, characteristics of good splice-appearance and strength rating, yarn faults classification by Classimat, yarn clearer setting adjustment and removal of yarn faults, package defects, performance in winding, control of productivity, calculation of expected efficiency of an Autoconer. Control of Tension level, Relative humidity and temperature, Machine and labour productivity. Norms. Performance assessment and calculations.

Process Control in warping: Control of end breaks, tension levels, quality and the productivity in warping.

Process Control in Pirn Winding: Minimising End breaks, stoppages due to mechanical failure, Improving build of pirn, control of speed and efficiency.

Module-II (14 Hours)

Process Control in Sizing : Choice of size recipe and preparation, control of size pick-up, control of yarn stretch in different zones and measurement of stretch in sizing, Control of moisture in sized yarns, quality of sized beam, Improvement of weaving of sized yarns, expected efficiency in sizing, Direct control of size losses. Machine and labour productivity. Norms. Performance assessment and calculations.

Process Control in Drawing-in and Tying: Care in use and selection of healds and reeds; Drop Pins, Care in Drawing-in and Warp tying.

Module-III (14 Hours)

Control of Productivity in Loom Shed: Control of Loom Speed, efficiency and stoppages, quality of yarn. Calculations on loom efficiency, expected loom efficiency of Automatic Looms, shuttleless loom. Machine and labour productivity. Norms. Performance assessment and calculations.

Control of Hard Waste and Consumption of Accessories: Control of waste in winding, warping, sizing and drawing-in, pirn winding and loom shed. Selection and care of accessories

Module-IV (14 Hours)

Key control points in knitting , Quality control of knitted fabrics , Control of knitted loop length, Common faults in knitted fabrics

Fabrics Quality Control : Classification of fabric defects, Control of fabric defects and quality in weaving and knitting ; Fabric inspection – Manual, semi-automatic and Automatic Inspection systems, independent product quality certification, acceptable quality level, MIL standards and final inspection.

Books Recommended

1. Process control in weaving by M C Paliwal and P D Kimothi, ATIRA Publication.
2. **Process Control in Textile Manufacturing** , volume in Woodhead Publishing Series in Textiles *Edited by: A. Majumdar, A. Das, R. Alagirusamy and V.K. Kothari*