



The reasons behind the warp breakages during fabric manufacturing

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Abstract: The causes of breakage are investigated by the authors in the research work. In plant studies were carried out on 110 looms and 21 different fabrics. Three broad segments i.e. spinning process, sizing and loom accessories are considered as root causes of breakage during fabrics manufacturing. All the areas were sub divided to find out the root causes. It was observed that the faults created by spinning process are mainly responsible for warp breakage as well as poor loom efficiency. It was also found that the bad loom accessories affect the rate of breakage as well as loom efficiency. The sizing was comparatively less responsible for warp breakage.

Key words: warp breakage, spinning faults, weaving faults, loom accessories.

I. Introduction

Weaving is a process where a parallel sheet of sized threads is survived with various critical stresses like tensile, bending, compression and abrasion. The ability to weave a yarn into fabrics depends on the resistance to these four stresses, which is mostly influenced by raw yarn properties and treatment (sizing) given to the yarn to enhance the weavability. There are many attempts by different researcher to establish the proper cause of the breakage during weaving in laboratory. Subramanian *et al.* [1, 2] reported that the yarns which low extension to break, that breaks very early. Hari *et al* [3] investigated that the inter fiber frictions have great impact on warp breakage. All the literatures have discussed about yarn properties but breakage due to improper sizing and faulty weaving process has not spotted. In the present work, an industrial study has been carried out to find out the exact cause of warp breakage.

II. Materials

The study has been carried out in a loom shed of a textile industry. Twenty one different type of fabrics were taken into study, which was running in hundred and ten different looms. Fabrics were mainly shirting and suiting fabric of cotton, cotton polyester blend and cotton viscose blend. Following were used in study.

Table-1: The fabrics considered for breakage study

Serial no.	Fabric code
1	110136BD
2	116275BD
3	116414BD
4	116497BD
5	120G39BD
6	120H71BD
7	120E71BD
8	12605BD
9	130176BD
10	12621BD
11	130C56
12	130D07OG
13	130P52BD
14	130Q24BD
15	130N26

16	13254
17	13024
18	130Q21BD
19	150G07
20	160497B1
21	240358

III. Methods

In plant study was carried out by standing with weavers and observing the breakage ends of the yarns when breaks. Mainly causes of breakages were divided into three causes as spinning faults, sizing faults and loom accessories or loom parts. These three causes were again subdivided in following way

A. Spinning

1. Due to the weak place

B. Sizing

1. Due to size patch
2. Due to beads formation
3. Due to cut end
4. Due to cross end
5. Due to sticky end

C. Loom accessories

1. Due to the reed
2. Due to fluff
3. Due the heald wire
4. Due to drop pin
5. Operator negligence
6. Due to bad mech. Settings

IV. Results and discussion

From the fig.1, it was observed that the breakage rate is too high for few fabrics. The number of breakage

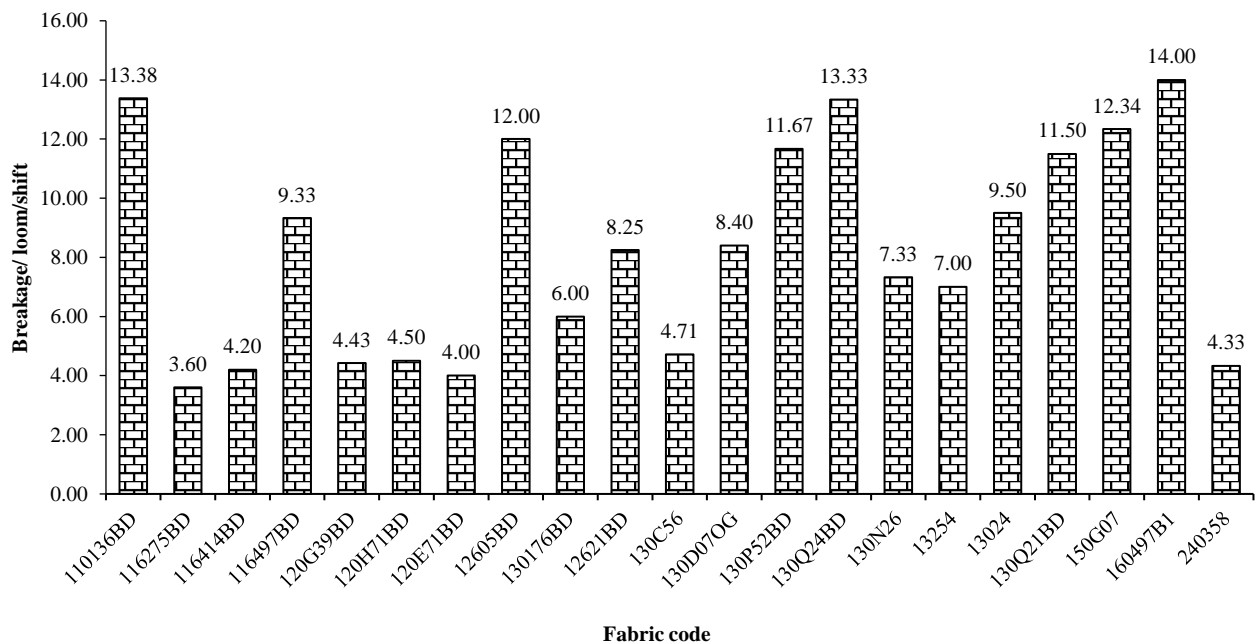


Figure-1: The rate of breakage of thread per loom per shift (8 hours)

was 14 per loom per 8 hours and the minimum value was 3.5 approximately. The Table 2 giving the information about the causes of breakage for a particular fabric where it was observed that in 12 fabrics the breakages are occurring due to spinning faults (weak places) among all 21 fabrics.

Table-2: The major area of defects according to different yarns

Fabric code	Fault
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110136BD	SIZING
116275BD	SPINNING
116414BD	LOOM PARTS
116497BD	LOOM PARTS
120G39BD	LOOM PARTS
120H71BD	SPINNING
120E71BD	LOOM PARTS
12605BD	SPINNING
130176BD	SPINNING
12621BD	SPINNING
130C56	SPINNING
130D07OG	SPINNING
130P52BD	SPINNING
130Q24BD	SIZING
130N26	SPINNING
13254	SPINNING
13024	LOOM PARTS
130Q21BD	SIZING
150G07	SPINNING
160497B1	SPINNING
240358	LOOM PARTS

Subsequently the loom accessories and sizing are responsible for warp breakage. From the fig. 2, it was found that the spinning process is 57 % responsible for breakage followed by loom accessories 29% and sizing 14 %.

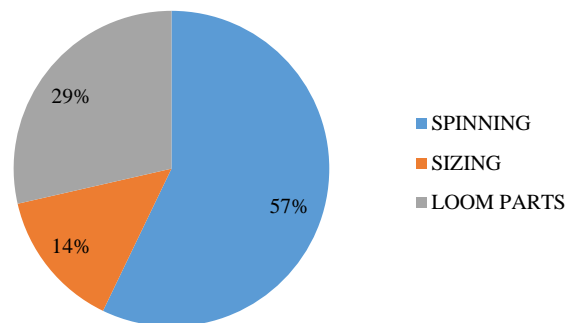


Figure-2: Summarization of areas which creating problems

V. Conclusion

In more than half cases, the spinning (weak place) is responsible for the breakage. It is obvious to have concentration on spinning section to fulfil the goal of reduction in breakage. There is another problem of loom parts (drop pin & heald wire), which are also greatly (29%) responsible for breakage. Focusing on these, control on breakage can be achieved. In few quality of warp yarn has problem of sizing (12%), where breakages occurring regularly. It is also important to pay attention on sizing section to get minimum breakage rate.

References

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