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Research paper

Comparison between simplex roller gauge of 40.5×50×52 mm and 39.5×49.5×50.5 mm

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Abstract

Simplex machine plays a vital role in spinning process. By using simplex machine the roving has been found, which reduced maximum draft in the ring frame. So it is necessary to produce good qualities roving from simplex machine. For this reason the draft and amount of false twist has been kept at a particular ration. For controlling draft, the drafting arrangement needed to arrange in a proper order. The gauge distance between the drafting zones are needed to maintain at a particular distance, through which the production and the quality of the product will be optimum level. Here for the research work the simplex machine drafting arrangement is 4 over 4 and diameter of the rollers are 28.5 mm. For this reason three drafting zones have been formed, they are front, middle and back zone. Here the roving hank has been used is 0.80 and this roving is used for producing 26 Ne and 32 Ne cotton carded yarn. By using the same roving hand and changing the gauge distances, it's easily identified which gauge distance is suitable for producing roving as well as the quality of ring yarn.

Keywords: *Simplex; Gauge Distance; Roving; Drafting Arrangement.*

1. Introduction

Simplex makes the drawn sliver finer by using drafting. After reducing the linear density a fine rope has been formed which is known as roving. This roving reduces huge draft for ring machine [1]. Linear density has been used for reducing hairiness. In the drafting unit the arrangement of rollers has been used at particular settings [2], [3]. Drafting force also influences the drafting system. Higher the break draft decreases the drafting tension [4]. The bottom roller in drafting unit gauge settings influences the quality of the material. For spinning particular gauge settings has been used for a particular drafting section [5]. Roller setting also plays a vital role in drafting arrangement. Without proper setting it is not possible to get proper draft [6].

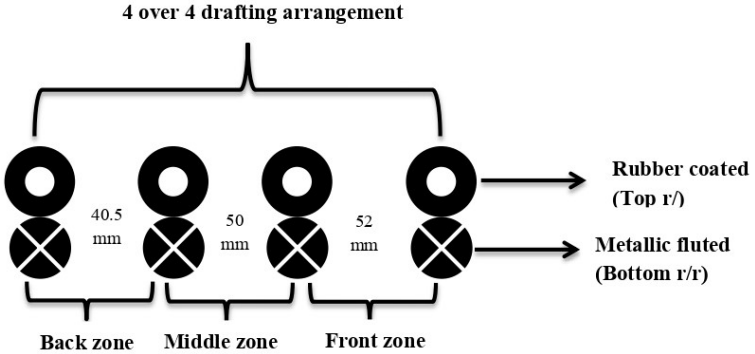


Fig. 1: Drafting Roller Gauge Setting of 40.5×50×52 Mm.

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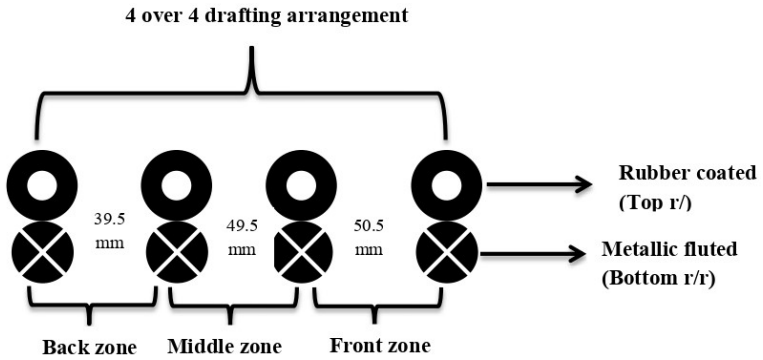


Fig. 2: Drafting Roller Gauge Setting of 39.5×49.5×50.5 Mm.

These are the figures of the 4 over 4 drafting unit containing different gauge distances.

2. Materials and methods

Materials
The main material slide calipers has been used for measuring the gauge distance [7] and Uster tester has been used for measuring the result of the products for comparing the qualities of the products [8].

3. Methods

Here normal production method has been applied during the production line.
Results and discussions
The results which have been got from the Uster tester machine are discussed below. For the one courser yarn 26 Ne and one finer yarn 32 Ne has been produced for comparing the results.
U% analysis from Roving for producing 26 Ne ring yarn

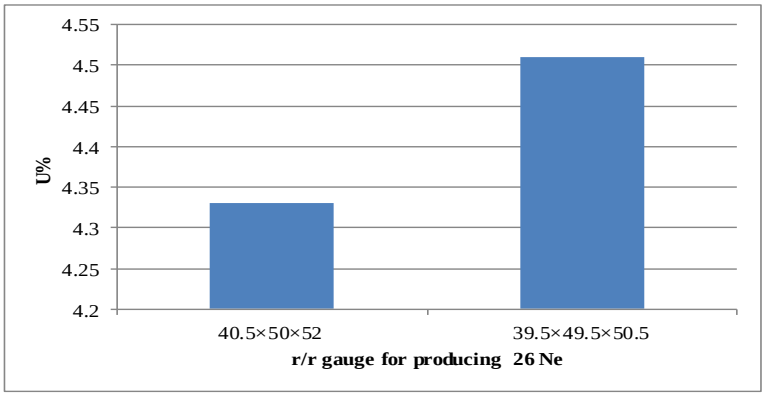


Fig. 3: U% Analysis from Roving for Producing 26 Ne Ring Yarn.

From the above it is clear to say that higher gauge distance produce good quality products than lower gauge distance.
U% analysis from Roving for producing 32 Ne ring yarn

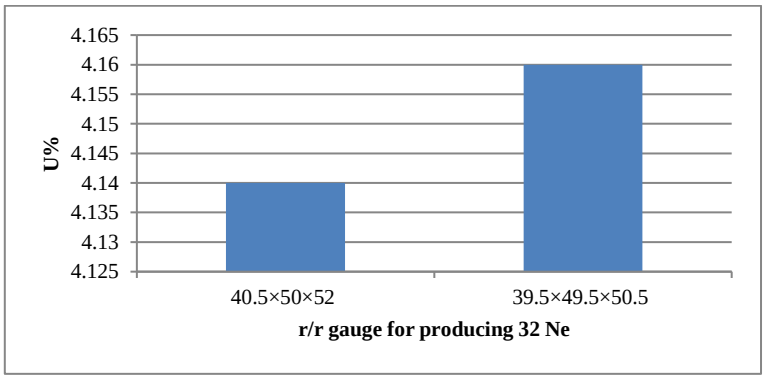


Fig. 4: U% Analysis from Roving for Producing 32 Ne Ring Yarn.

From the above it is clear to say that higher gauge distance produce good quality products than lower gauge distance
IPI analysis for producing 26 Ne ring yarn

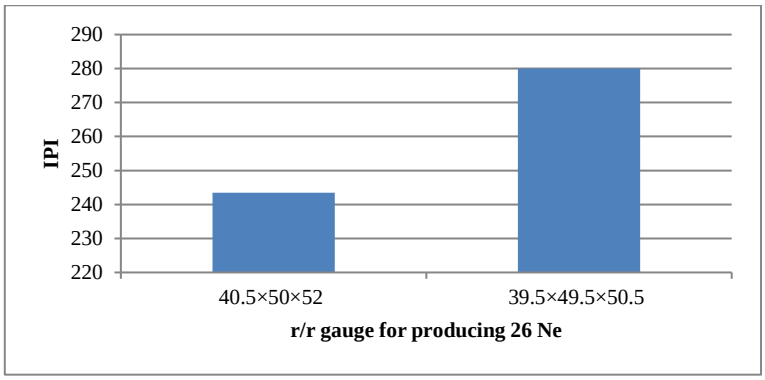


Fig. 5: IPI Analysis from Roving for Producing 26 Ne Ring Yarn.

From the above it is clear to say that higher gauge distance produce good quality products than lower gauge distance.
IPI analysis for producing 32 Ne ring yarn

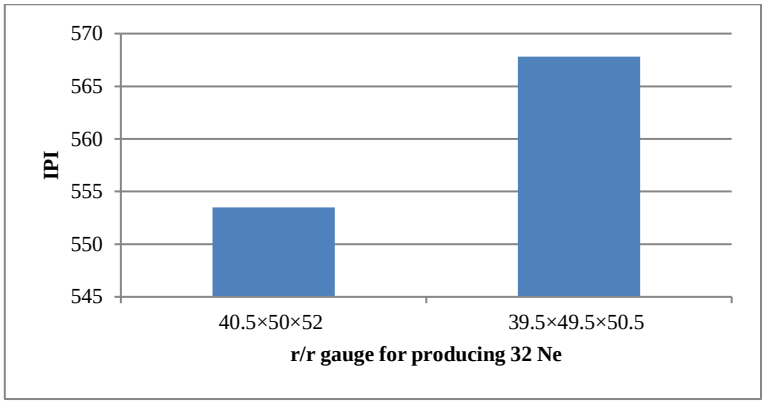


Fig. 6: IPI Analysis from Roving for Producing 32 Ne Ring Yarn.

From the above it is clear to say that higher gauge distance produce good quality products than lower gauge distance.

4. Limitations

It was tried to find use many more products but there was some barrier in the factory. That's why it is confined within these two gauge distance for measuring only two yarn count.

5. Conclusion

From the analysis it has been found that the longer gauge distance 40.5×50×52 mm shows good qualities than the gauge distance 39.5×49.5×50.5 mm because from the results it is clearly shown that higher the gauge distance creates lower U% and IPI than the higher gauge distance. So it can be decided that 40.5×50×52 mm gauge distance is good for simplex machine.

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