

Impact of carding segments on quality of card sliver

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Majority of textile machinery manufacturers are marketing modern high production cards developed by them on the basis of continuous research and development work. Latest models of these cards have unique features. For example carding area of **Trützschler TC 03 card** has been extended by 30% which promotes reduction in waste quantity and better use of cotton upto 2% as claimed by the manufacturers. The TC 03 card is the latest high production machine developed by Trutzschler with an out put rate of 150 KG incorporated in the TC 03 card includes precision knife setting system PMS and precision Flat Setting System PFS and Flat control TC-F CT.

Similarly, the working width of **Rieter C60 card** has been increased upto 1500 m.m. It has also been equipped with Integrated Grinding System (IGS) which eliminates production losses due to cylinder grinding. With this system carding is always performed with sharpened points. The grindstone traverses the cylinder clothing automatically during production 400 times with in the useful life span of the clothing. Similarly, the points of the flat wire are kept sharp by automatic cycles 100 times higher than that in manual grinding. The life of the cylinder clothing is prolonged by 10 to 20% as a result of elimination of manual grinding.

In short, many innovative devices have been incorporated in these models which facilitate delivery of good quality sliver at high output rate of upto 150 KG per hour. The flat module in the main carding area consisting of 79 precise flats guarantees a high degree of nep and impurity removal. The modular construction of Rieter card allows a complete exchange of flat module in a very short time.



Truetzschler TC 03 card.



Rieter C60 card.

One of these innovative devices which is an indispensable part of all modern high production cards is the Carding Segments. Functions of the Carding Segments and contribution to card sliver quality is described below:

Carding Segments

Pre-carding segment is installed on the feed side and post-carding segment on the delivery side of the card. Both segments comprise of identical components as listed below and illustrated in Figure given as under:

- 1- Control Flat.
- 2- Control Plate.
- 3- Trash Knife.
- 4- Stationary Flats.

These components are arranged in ascending order in the pre-carding and descending order in the post-carding segment as shown in diagram given as under. The contribution of these segments to the quality of card sliver is reported as follows:

Cleaning Efficiency

Both Pre-carding and post-carding segments improve cleaning efficiency of the card by fascinating removal of motes, seed coat fragments and dust.

The leading edge of the control plate is set closer to the cylinder wires than the backward edge. It regulates the fibre density in conjunction with the stationary flats, allows only a thin layer of fibres to reach the main carding area and promotes effective carding action between the cylinder and the flats.

As the cylinder is rotating at high speed, a strong centrifugal force is developed and strong air current is generated. The leading edge of the control plate being closer to the cylinder back pressure is developed. The air escapes around the control plate leading to extraction of dust and trash particles under the trash knife. The waste extraction takes place in the pre-carding as well as post – carding segment.

Removal of short fibres and nep reduction

The stationary flats of the pre-carding segment have coarser metallic wire of approximately 250 points per square inch as compared with the cylinder wire. The unopened tufts of the material are broken down, short fibres and naps are removed by these flats.

Fibre parallelization and alignment

The stationary flats of the post carding segment are covered with finer metallic wire of approximately 620 points per square inch as compared with the cylinder wire. The cotton has already been opened into individual fibre state as it leaves the cylinder / flat area. The stationary flats of the post carding segment promote fibre alignment and parallelization.

In conclusion, it may be stated that the pre-carding and post- carding segments of the modern high production cards facilitate delivery of well-carded good quality sliver by promoting extraction of dust and trash particles, removal of short fibres, reduction of naps, fibre alignment and parallelization. ♦

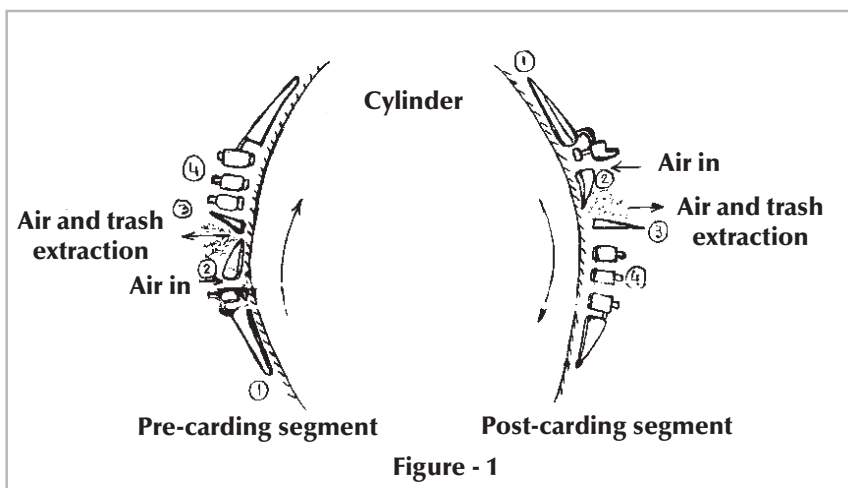


Figure - 1