Disadvantages of the present revolving flat card

i. The average number of revolutions that different tuft or fibre in any processed lot makes around the cylinder has been estimated to vary from 5 to 20 revolutions depending on the transfer factor2,3,4. This transfer factor is the percentage of fibre mass deposited on the cylinder surface is transferred to the doffer during each rotation of the cylinder. As the process is a random one, some fibres may be through the machine with in one revolution, some may be in two revolutions, some may be after three revolutions and so on. Therefore, there is difference in carding action carried out on different fibre tufts and fibres. This is a serious drawback.

ii. Another drawback of the present flat card is that there is fibre damage and nep formation due to severe treatment meted out to fibres because of them traveling around the cylinder many times and getting carded again and again.

Iii. Yet another drawback is the doffing process in which hook is formed in fibres. This is due to the mechanical transfer of fibres from cylinder surface to doffer surface and the difference in surface velocities of these two elements. Hook formation complicates the yarn forming process because these hooks have to be removed and the fibres straightened before twisting them into a yarn. Otherwise effective fibre length will be reduced. Therefore, drawing machines become an essential part of the yarn spinning process.

iv. Another drawback is the high speed employed for all the working elements of the carding machine or for the majority of them. As a result, the process which is already random, looses control over the movement of fibres. With increased speeds, the randomness of the process increases and contol gets reduced. This problem has become more severe with cards meant for high production.

Present revolving flat card

ii. A flat carding machine or a revolving flat carding machine is used in the spinning process to open the fibre tufts and flocks into individual fibres and to some extent parallelize the individualized fibres. It is known from the art and research studies that the fibres are carried over the cylinder over a number of revolutions before they being doffed from the cylinder and made into a sliver. Fibres carded and doffed in the present method has their ends or one of the ends hooked, which necessitates use of drawing machines to straighten these hooked fibres.

It has been observed by many researches that the transfer coefficient of a revolving flat carding machine is around 0.1 and therefore there exists a delay time for a fibre to come out of the carding machine4. An operational layer is built on the cylinder surface. Load on the flats induced by carding action becomes almost stable and minimum after 15th – 20th flats5. That is the remaining working flats do not perform much carding action.