

Application of the vacuum yarn conditioning machine in the Textile Industry

by Xi'an Botong Energy-Saving Equipment Co., Ltd.

Due to increasingly higher quality requirements of the market, more and more new technology and products are constantly introduced and are being utilized in textile and knitting industries. Remarkable yarn conditioning machine by Xi'an Botong is being introduced to the world of textile industry at ITMA ASIA CITME.

Function and application of yarn conditioning machine

Nowadays, in Chinese domestic market yarn conditioning machine is mainly used for setting twist and stabilizing the yarn as well as adjusting the moisture. However, it is also widely used in spinning, knitting, dyeing, garment, thread, art ware and other industries world-wide. The major functions of the yarn conditioning machine are as follow:

- ❖ In spinning process yarn conditioning machine is used to adjust the moisture of yarn and to improve efficiency in the next process. After processing, when the moisture level of yarn would reach about 8.5%, strength and elongation can be increased greatly, which would help the performance at processing line. The dealing of cone yarn would improve the efficiency on winding, doubling and twisting and also reduce the yarn hairiness. It will be also helpful to improve warping efficiency and to reduce the defects from rewinding and warping. Owing to the conformity of moisture of the yarn, the efficiency of sizing and weaving will also improved ensuring the quality of the final fabric.
- ❖ The yarns after processing by yarn conditioning machine would improve the working process as well as the quality of final fabric. Because of fixed twisting and shaping of the yarn, it will give equal height of rising and looping, reduce the unwinding tension, stable the structure and size of the end fabric and give better appearance. Especially it is the key process for setting the seamless underclothes. The process of conditioning will not only stabilize the twist, but also fully relax the yarn to reduce the shrinkage of final product.
- ❖ In dyeing industry, processing after yarn conditioning machine can remove the stress on grey fabric, which will be helpful for uniform absorption of dyes to obtain bright color as well as uniform shade of the fabric.
- ❖ In garment industry, yarn conditioning machine can make fabric with stable size, reducing the shrinkage and improving the quality.

- ❖ Processing yarn, especially the chemical fibre, in the conditioning machine can greatly improve the quality and appreciation of product.

Main features of yarn conditioning machine

- ❖ Although yarn conditioning machine can add the moisture of yarn, one must consider different raw material and yarn counts to make different yarn conditioning programs. In spite of higher moisture, if there is high vacuum condition, the low quality of raw cotton, coarse count and higher ratio of short fibre would make yarn over relaxed and thus will have less strength. Thus cotton yarn less than Ne.21/s, needs less vacuum, low steam temperature, longer heating up time and constant temperature. For PC or pure polyester fibre as well as combed yarn, it requires high vacuum degree and high steam temperature. The time for heating up and constant temperature is related to the actual twist but maximum should not exceed 70 minutes.
- ❖ Steam temperature is set according to different fibers. As per experience, for cotton fiber if under 100°C for 20 days it would have only 92% strength left, but polyester fibre under the same conditions would retain 100% strength. For different fibers, there is a big difference on flow temperature, fusion, resolution and other index of thermology. Maximum temperature for cotton fiber in yarn con-



Chairman of Botong Mr. YU with Mr. Eric of CTMTC and Mr. Tahir of Tahir & Sons, Pakistan at Botong Factory, Xian, China.

ditioning machine should not exceed 85°C but pure polyester could reach 140°C. Otherwise it will have negative effects on breakage strength and colors.

- ❖ Yarn conditioning machine will not improve the CV of yarn but it will also not make it worse. It is the fact that CV and neps of yarn detected by yarn evenness tester is raised rapidly if testing yarn that is just taken from the yarn conditioning machine. However, leaving it for 24 hours later the data will remain as before. The reason is after processing, a part of water gets into the inner core of yarn and becomes relatively steady crystal water, and water attached to the surface of yarn becomes unsteady. The difference in each part of the surface water would result in different dielectric coefficient, which makes the yarn evenness tester give inaccurate results.
- ❖ In case of cotton fiber, absorption of moisture is delayed after processing in the yarn conditioning machine. It is therefore, better to pack or use the yarn after 30 minutes rest in the yarn stock room. This would allow enough time for the surface water to evaporate and also to retain the same moisture level both inside and outside of the yarn.
- ❖ The yarn that has been processed in the yarn conditioning machine should not be mixed with the one which has not been processed; otherwise, there will appear long and narrow shadow on the final product after dyeing, especially for knitted fabric.

This Yarn Conditioning Machine is distributed by China Texmatech Co., Ltd. (CTMTC) in Pakistan through Tahir & Sons. Visitors at ITMA ASIA + CITME 2010 are also encouraged to visit this company and see the relevant features of this yarn conditioning machine in operation.



Vacuum Yarn Conditioning Machine by CTMTC.

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