Multiple variants of Two-For-One-Twister machines for compact carded cotton yarns.

Dr. Amr Hamdy Ahmed Al-Laithy
Assistant Professor at Technical and Industrial Education Dep. (Textile Division), College of Education, Helwan University, amrohamdy221@hotmail.com

Abstract:

Statement of the problem: 1- Machines designers and companies produce presents only general advantages without referring to multiple variants of Two-For-One-Twister spindle. Which have a great impact on twisted yarn properties in general, which must be conducted multiple practical experiments to determine with extreme accuracy to adjust actual yarn T.P.I, and it varies according to machine manufacturer company. 2- Multiple variants of Two-For-One-Twister spindle based on personal diligence (which harms to final product) without referring to accurate variants contribute to activate Two-For-One-Twister technology correctly for spun yarns in general. 3- Scarcity of experimental studies evaluating multiple variants of Two-For-One-Twister spindle for compact carded cotton yarns and related properties of produced yarns, operating economics and production rates.

Significance: 1- Conducting scientific and reference research for multiple variants of Two-For-One-Twister spindle by three various twisting machines for the majority of compact carded cotton yarns. 2- Comparison among three various Two-For-One-Twister machines through twisted yarn properties, economics of operation and production rates for the same yarn count and T.P.I.

Objectives: 1- Recording multiple variants of Two-For-One-Twister spindle by three various Two-For-One-Twister machines for compact carded cotton yarns, thus improving performance level of twisting process. 2- Knowing the best Two-For-One-Twister machine suitable for compact carded cotton yarns through their effect on produced yarn properties which increases quality of final product, thus contributes significantly to marketing process.

Hypothesis: The research assumes that: using three various Two-For-One-Twister machines for compact carded cotton yarn has a direct effect on twisted yarn properties, operating economics and production rates of same yarn count and T.P.I.

Methodology: The research follows experimental and analytical method.

Results: 1- The correlation coefficient extracted, then regression line equation for different relationships between produced yarns by three various Two-For-One-Twister machines and (yarn tensile strength, yarn breaking elongation ratio, yarn hairiness values, yarn Imperfection IPI and actual yarn T.P.I.). 2- Two-For-One-Twister machine Volkmann VTS-07 is the most suitable for compact carded cotton yarns through their effect on properties of produced yarns: (higher tensile strength, higher breaking elongation ratio, lowest hairiness values, lowest imperfection IPI which includes the sum of thick places, thin places, Nep/ 1000 m and higher T.P.I Regularity), then Two-For-One-Twister machine Murata NO. 363, while Two-For-One-Twister machine Lee Wha 541 SA the lowest. 3- Two-For-One-Twister machine Volkmann VTS-07 achieves optimum operating economies and high production rates, then Two-For-One-Twister machine Murata NO. 363, while Two-For-One-Twister machine Lee Wha 541 SA the lowest.

Keywords:
Compact Twister- Compact Carded Cotton Yarns- Compact Twister M/C- Doubling, Two Folding- Ply Twisting- Ply Twisted Yarn- Ply Yarn- Folded Yarn- Twisted Yarn.

References:

Paper History:
Paper received 9th January 2022, Accepted 21st April 2022, Published 1st of May 2022