

Consequently, the Jetring and Compact-jet spinning systems produce less hairy yarns of wrapping fibres and the systems predominantly reduce the number of longer hairs with no negative effect on the other yarn properties. In particular, the Compact-jet spinning system, compared with the Jetring spinning system, is more effective in terms of yarn properties. On the other hand, the Jetring and Compact-jet spinning systems have the possibility for further improvement in terms of changes in nozzle geometry and air pressure level.



Acknowledgements

This work is supported by grants from the Unit of Scientific Research Projects of Isparta in Turkey (Project No: 1795-D-09) and The Scientific and Technological Research Council of Turkey (Project No: 109M372). The authors also wish to express their thanks to Ekrem Gülsevinçler for his collaboration, the firms of Isparta Mensucat San. Tic. A.Ş. and YUMAK Tekstil San. Tic. A.Ş. for offering testing services and contributions to the study, and Technician Ufuk Korkmaz and other staff in the laboratory for their generous help.

References

- Barella A. Text C. Yarn hairiness. *Textile Progress* 1983; 13: 1, 1-57.
- Cheng KPS, Li CHL. JetRing Spinning and Its Influence on Yarn Hairiness. *Textile Research Journal* 2002; 72 (12): 1079-1082.
- Ramachandralu K, Dasaradan BS. Design And Fabrication Of Air Jet Nozzles For Air Vortex Ring Spinning System To Reduce The Hairiness Of Yarn. *IE (I) Journal-TX* 2003; 84: 6-9.
- Zeng YC, Yu CW. Numerical and Experimental Study on Reducing Yarn Hairiness With The JetRing and JetWind. *Textile Research Journal* 2004; 74 (3): 222-226.
- Rengasamy RS, Kothari VK, Patnaik A, Puneekar H. Airflow Simulation in Nozzle For Hairiness Reduction of Ring Spun Yarns. Part I: Influence of Airflow Direction, Nozzle Distance and Air Pressure. *Journal Of Textile Institute* 2006; 97 (1): 89-96.
- Subramanian SN, Venkatachalam A, Subramaniam V. Effect Of Some Nozzle Parameters On The Characteristics Of Jet-Ring Spun Yarns. *Indian Journal Of Fibre&Textile Research* 2007; 32: 47-52.
- Jeon BS. Effect of an Air-Suction Nozzle on Yarn Hairiness and Quality. *Textile Research Journal* 2000; 70 (11): 1019-1024.
- Wang X, Miao M, How Y. Studies of JetRing Spinning Part I: Reducing Yarn Hairiness with the JetRing. *Textile Research Journal* 1997; 67 (4): 253-258.
- Patnaik A, Rengasamy RS, Kohari VK, Ghosh A. Hairiness Reduction Of Yarns By Nozzles At Ring Spinning Airflow Stimulation Approach. *JTATM* 2005; 4 (4): 1-11.
- Yilmaz D, Usal MR. A Comparison of Compact-Jet, Compact, and Conventional Ring-Spun Yarns. *Textile Research Journal* 2011; 81(5): 459-470.
- Yilmaz D, Usal MR. Effect of Nozzle Structural Parameters on Hairiness of Compact-Jet Yarns. *Journal of Engineered Fibres and Fabrics* 2012; 7(4) 56-65.
- Oerlikon. Product Presentation Textparts® RoCoS, www.oerlikon.com, 2008.
- Stahlecker H. RoCoS Rotorcraft Compact Spinning: Magnetic Compacting, www.oe-rotorcraft.com, 2005.
- Zweigle G566 hairiness tester documents.
- Yilmaz, D. Development of a Plied Yarn Spinning System Based on False Twist Spinning Technique, Doctorate dissertation, Suleyman Demirel University, Isparta, Turkey, 2011, p. 332.
- Yilmaz D, Usal MR. Characterization of Jetring yarn structure and properties, *Science Eng Composite Materials*, 2011; 18: 127-137.

Received 15.12.2011 Reviewed 20.06.2012



INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES LABORATORY OF METROLOGY

Contact: Beata Pałys M.Sc. Eng.
ul. M. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland
tel. (+48 42) 638 03 41, e-mail: metrologia@ibwch.lodz.pl



AB 388

The **Laboratory** is active in testing fibres, yarns, textiles and medical products. The usability and physico-mechanical properties of textiles and medical products are tested in accordance with European EN, International ISO and Polish PN standards.

Tests within the accreditation procedure:

- linear density of fibres and yarns, ■ mass per unit area using small samples, ■ elasticity of yarns, ■ breaking force and elongation of fibres, yarns and medical products, ■ loop tenacity of fibres and yarns, ■ bending length and specific flexural rigidity of textile and medical products

Other tests:

- **for fibres:** ■ diameter of fibres, ■ staple length and its distribution of fibres, ■ linear shrinkage of fibres, ■ elasticity and initial modulus of drawn fibres, ■ crimp index, ■ tenacity
- **for yarn:** ■ yarn twist, ■ contractility of multifilament yarns, ■ tenacity,
- **for textiles:** ■ mass per unit area using small samples, ■ thickness
- **for films:** ■ thickness-mechanical scanning method, ■ mechanical properties under static tension
- **for medical products:** ■ determination of the compressive strength of skull bones, ■ determination of breaking strength and elongation at break, ■ suture retention strength of medical products, ■ perforation strength and dislocation at perforation

The Laboratory of Metrology carries out analyses for:

- research and development work, ■ consultancy and expertise

Main equipment:

- Instron tensile testing machines, ■ electrical capacitance tester for the determination of linear density unevenness - Uster type C, ■ lanameter