High-speed video graphic study of a modified ring spinning system *by Noman Haleem*

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There has been a continuous quest to improve yarn quality since inception of ring spinning. Numerous modifications are introduced over the ring frame in past to produce better quality yarns. Rubbing of fibrous strand in drafting zone of a classical ring spinning is a recently proposed method in an attempt to improve ring yarn quality. This modification in classical ring spinning claimed a significant reduction in yarn hairiness by improved integration of fibres in yarn structure. However, yarn evenness was deteriorated due to rubbing of the fibrous strand. In addition, no significant improvements in other yarn quality parameters were observed. The aim of this study is to further investigate and explain the reasons of partial improvement and partial deterioration in yarn quality by means of high-speed videography of rubbing action on the fibres. The dynamics of the fibrous strand in drafting zone under influence of the rubbing action are discussed in relation to resultant yarn properties and possibilities of improving the rubbing mechanism are proposed. In addition, a novel method to determine the effectiveness of a yarn compacting system is also developed using image processing techniques, which is applied to rubbing mechanism for instance but can be generalized on various compact spinning systems in future.

Keywords: Ring spinning, rubbing action, image processing, compact spinning

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