The further development and evaluation of an automatic dismantler of short staple ring-spun yarns

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TEXTILE RESEARCH JOURNAL
Volume: 84 **Issue:** 11 **Pages:** 1211-1219
DOI: 10.1177/0040517513512397
Published: JUL 2014
View Journal Information

Abstract

There is often a need to dismantle staple fiber yarns into their component fibers, without significantly changing the fiber physical properties, or damaging the fibers in the process, so that the fibers can be tested for their physical properties. In the past, this could only be done by the very time-consuming and tedious manual method. In view of this, an instrument, termed the yarn dismantler, which could automatically dismantle short staple ring-spun yarns, was developed and patented. This paper reports research undertaken on Upland cotton ring-spun yarns to further develop, evaluate and optimize the original demonstration model into a final prototype ready for commercialization. Results are presented

which show that, according to Advanced Fibre Information System (AFIS) single fiber length tests, the fibers from automatically dismantled ring-spun cotton yarns are very similar in their properties to those dismantled by hand (manually). It was also found that, at a speed of 2 m/min, the yarn dismantler functioned very well, enabling the length of cotton yarn required for subsequent AFIS testing to be dismantled within an acceptable time of less than 10 minutes, with excellent reproducibility of results and without changing the fiber length properties. According to the test results obtained here, neither steaming the dismantled fiber strand nor the spinning draft appeared to affect the dismantled fiber length significantly, or in a consistent manner.

Keywords

Author Keywords: Yarn dismantler; cotton; fiber length; Advanced Fibre Information System tests

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Publisher

SAGE PUBLICATIONS LTD, 1 OLIVERS YARD, 55 CITY ROAD, LONDON EC1Y 1SP, ENGLAND

Categories / Classification

Research Areas: Materials Science

Web of Science Categories: Materials Science, Textiles

Document Information

Document Type: Article

Language: English

Accession Number: WOS:000338014700009

ISSN: 0040-5175

eISSN: 1746-7748

Journal Information

Impact Factor: Journal Citation Reports®

Other Information

IDS Number: AJ9GC

Cited References in Web of Science Core Collection: 4

Times Cited in Web of Science Core Collection: 0