A NEW SYSTEM FOR MEASUREMENT OF THE PROPERTIES OF INTERMEDIATE COTTON SPINNING PRODUCTS

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Abstract

A real time, automatic system for measurement of the linear density, parallelization (fiber arrangement rate), moisture content, and composition of the cotton yarn and its blends with other fibers was developed to provide continuous control of these parameters during the spinning process. Devices that are currently available, can measure only linear density and spectrum (e.g. "Uster Tester-3"). But it is well known that some other parameters, such as moisture content and fiber orientation, can significantly affect accuracy of such measurements. The new system for simultaneous measurement of these important parameters is based on the combination of two patented devices, AV-1 and AV-2. Each device accommodates two specially designed rectangular copper resonators (work & heterodyne) with working frequencies of 2 GHz, which when superimposed creates a signal that is proportional to the measured parameter (e.g. linear density), but also comprises information about the secondary parameter (e.g. moisture content). The AV-1 device measures a linear density of yarn regardless of individual fiber arrangement (compression) and also a special parameter related to degree of fiber arrangement in yarn. The second device provides measurement of the moisture content and the linear density of blending additives (components). A combination of both devices realizes a real time control of the spinning process for cotton and cotton blends. An immediate control of the differences in the properties of the intermediate products during the spinning process could significantly shorten time for quality assessment and as consequence, decrease the amount of lengthy and expensive laboratory measurements required.

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