

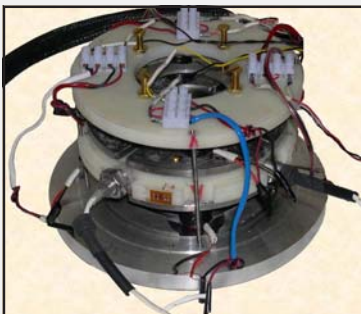
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Reference: Magnetic Ring
Spinning

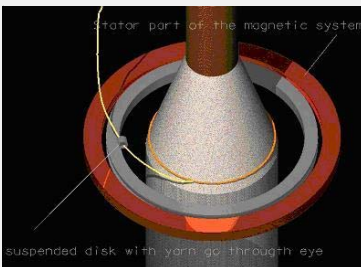
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Prototype of magnetic ring spinning system



Conceptual schematic of system design

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Magnetically Elevated, Traveler-Free Ring Spinning System

Overview

Auburn University is seeking a development partner or licensee for a magnetically suspended ring spinning system that operates without a traveler. This technology has potential applications in the textile and textile machinery industries.

Advantages

- Functions without a traveler sliding over the ring, reducing mechanical wear
- Overcomes almost all defects caused by ring/traveler system, including loss of production due to ring or traveler replacement, drop in yarn quality with time, increased spooler knots, improper twisting and low production rates
- Operates at higher rotational speeds, resulting in significantly higher production rates (estimated to be 3 times that of conventional ring spinning production rates)
- Greatly reduces frictional losses, lowering operating costs by an estimated 43 percent
- Lowers maintenance costs due to the reduction of mechanical wear
- Can produce different yarn counts without downtime
- Provides full control of twisting and winding via control systems and can be programmed to obtain constant tension during spinning
- Provides for online measurement of yarn quality, yarn tension and other production parameters
- Can be adapted to other practical situations such as winding or unwinding rotor systems

Description

Ring spinning stands alone as the standard of high quality yarn suitable for any type of textile end product. The main technological limitation of ring spinning lies with the metal/metal contact between the traveler and ring. This contact creates frictional heat and rapid wear, resulting in limitations on production speed, a drop in yarn quality with time, and in some cases increased downtime due to traveler replacement.

Our design approach is to eliminate the traveler from the ring spinning system and replace it with a magnetically suspended annular disc that rotates in a pre-defined magnetic field. This will result in a super high spinning rotation that is robust against all of the traditional limitations of the current traveler system.

Research into travelers has been practically exhausted with the result being only a slight increase in speed, leaving ring spinning at a production rate disadvantage of 10 times as compared with other spinning systems. Therefore, the challenging issue is how to revolutionize ring spinning in such a way that very high speed can be achieved without sacrificing the expected quality. This invention aims at that very objective through a truly revolutionary and innovative approach.

Status

- Subject of U.S. Patent [7,205,692](#)
- This invention has been successfully verified by simulations
- A prototype is under development

Opportunities

- Joint prototype development opportunities include funded research or collaboration
- This technology is also available for exclusive or non-exclusive licensing