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DEPARTMENT OF TEXTILE TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

TEXTILE TECHNOLOGY

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PROJECTILE TITLE: DETERMINATION OF OPTIMUM PERIOD OF
OPENING ROLLER LIFE ON A ROTOR SPINNING MACHINE.

SUPERVISOR: DR A.B NYONI

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Abstract

The title of this project is the determination of the optimum period of opening roller life on a rotor spinning machine. The opening roller had worn out to the extent that frequent end breakages were being recorded on the rotor spinning which had a negative effect on the productivity and ultimately the yarn quality. The aim of this project was to assist Twine and Cordage in solving the problem of productivity and yarn quality deterioration in their spinning mill by being able to project the life span of the opening roller and therefore have enough time to budget for its replacement.

The research was carried out at Scottco as Twine and Cordage temporarily closed at the time the research was supposed to be carried out. Two rotor spinning machines of different models were used which were R20 and R40. These were technically superior machines to the RU 04 used at Twine and Cordage but the effect of a worn out opening roller is the same in all these machines. From each machine, 8 positions were selected to spin yarn samples with the opening rollers that were already on the machine. From the selected positions the old opening rollers were replaced with new rollers and another set of 8 yarn samples was spun. Comparison of yarn hairiness, tenacity and evenness between yarn samples from the old opening rollers and the new opening rollers was done to determine the degree of deterioration in these yarn quality parameters. Through degree of deterioration, determination of optimum period of opening roller would be possible to make.

However there was no significant difference in the tests carried on the yarn samples of the old and new opening rollers and therefore no degree of deterioration was determined. With no degree of deterioration in the yarn quality parameters, the determination of the optimum period of roller use was impossible. The loss in yarn quality cannot be used to determine the opening roller life span.

Determination of optimum opening roller age would have helped Twine and Cordage to be in a better position to replace the roller when it wears down.