



Research Paper

A New Conveyor Belt Wear Test Stand

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One of the main reasons for conveyor belt wear is the stress caused by the impact of lumpy material. In order to simulate loading-point stress conditions a new conveyor belt wear test stand has been developed and built by the Department of Conveying Technology at the University of Karlsruhe, Germany. A new contactless scanning technique has been introduced in order to determine the abrasion of the cover plate experimentally. With the help of this conveyor belt test stand experiments will be conducted which will allow the calculation and prediction of the service life of a conveyor belt in advance for specific operating conditions.

A conveyor belt is both an investment and an item subject to wear. Analyses conducted by belt manufacturers and users show that the total costs of purchase, maintenance and replacement of the belt exceed the total costs of the remaining system components over the service life of the conveyor system [3, 4].

The design of conveyor belts is primarily based on the tensile stress resulting from the necessary driving power according to the Eytelwein formula. One can attempt to cope with above average stress by increasing the dimensions of the tension member as well as by increasing the thickness of the cover plates, and previous operating experience usually determines the selection of the cover plate material. As this experience is always closely related to the operating conditions,

which change from installation to installation it is not surprising that users and manufacturers often have different opinions concerning the optimal technical and economic design. As a consequence of the resulting uncertainty, competition tends to produce a variety of new products, a fact which does not necessarily represent the optimum solution for either user or manufacturer.

Conveyor systems with a large center distance show only slight wear in relation to length, so that normally the service life of the belt amounts to several years [1].