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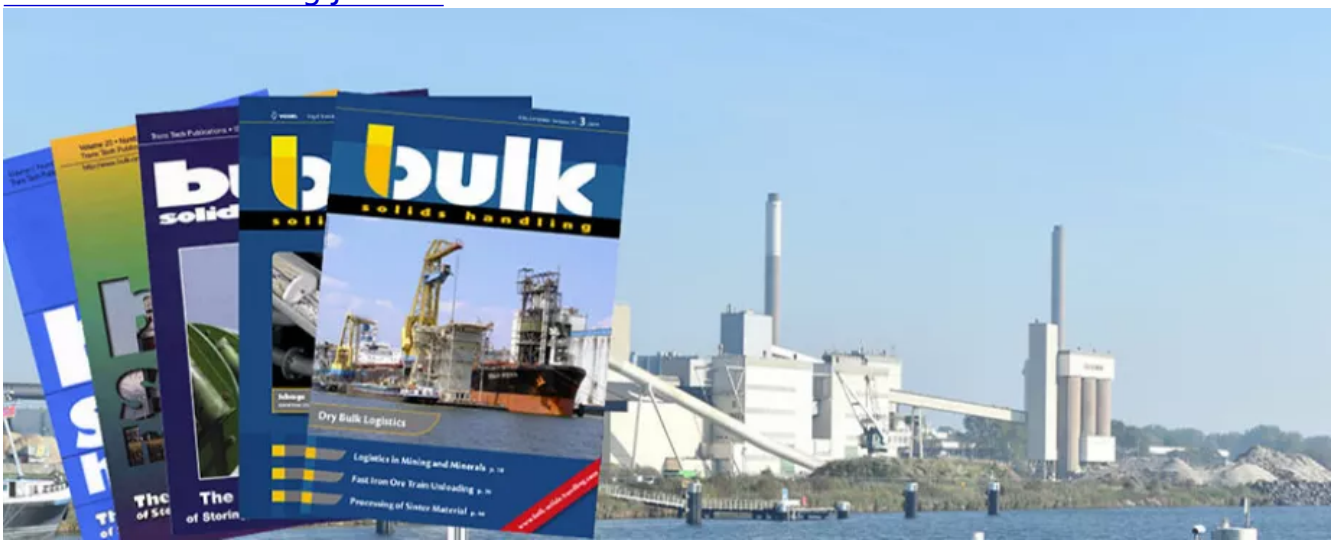

Forschungsbeitrag

Stress and Wear of Conveyor Belts by Loading Point Impact

Bearbeitet von am 17. Jan. 2024
Published in bulk solids handling, Vol. 3 (1983) No. 1

Loading point impact is one of the main reasons for belt wear. Impulse forces have been determined under realistic operating conditions. Stresses and deformations in the cross-section of a steelcord belt, with and without breaker plies, have been calculated by Finite-Element and Finite-Difference Methods. The non-linear elasticity of rubber has been taken into account. A clear relationship between distribution of stress and belt type is shown. Semi-stochastic impact is simulated in a test stand. First results indicate a strong coincidence of service-life and belt design and almost no relationship with quality standards of the covers. A technological grade of wear 1is introduced to establish a rating of test stand results for different belt types.

1. Introduction.

The present article is an extract from the Dissertation by the author. For reasons of space some parts of 1he Dissertation, dealing with the calculation of time-dependent deformations, the design criteria of a belt wear test stand and the results of a variety of quality tests are not reported here.

Discussed in the following are the main influences of dynamic forces at loading point, the distribution of stresses in the cross-section of different belt types,

calculated by two different numerical methods> Finite-Elements and Finite-Differences, the experimental deduction of a specific abrasivity of different materials, first results obtained from a newly designed conveyor belt wear test stand and the deduction of a technological grade of wear.