Accepted Manuscript

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PII: S0263-2241(17)30167-7
DOI: http://dx.doi.org/10.1016/j.measurement.2017.03.011
Reference: MEASUR 4648

To appear in: *Measurement*

Received Date: 10 February 2017
Revised Date: 3 March 2017
Accepted Date: 4 March 2017

Please cite this article as: V. Molnár, G. Fedorko, M. Andrejiová, A. Grinčová, P. Michalik, Online monitoring of pipe conveyors Part II: Evaluation of selected operational parameters for the design of expert system, *Measurement* (2017), doi: http://dx.doi.org/10.1016/j.measurement.2017.03.011

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Online monitoring of pipe conveyors Part II: Evaluation of selected operational parameters for the design of expert system

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Abstract: Online monitoring of pipe conveyors operation is a key condition to their operational reliability. According to [1], the parameter to be used for evaluation is the change of contact forces on the idler rolls of hexagonal idler housing of a pipe conveyor. However, the statement itself is not enough for online monitoring purposes. Evaluation criteria in form of evaluation gauge enabling the identification of processes occurring in the conveyor belt need to be set followed by adequate measures taken afterwards. The paper aims to review the courses of contact forces at various tension forces since these are the parameters convenient for tracking of pipe conveyor operation. For better independence of results and conclusions, the measured values are transformed with the use of min/max method of standardization and then modified by moving averages. Experimental tests are evaluated with the use of basic statistics methods, correlation and regression analysis. The outputs include analysis of contact forces and time dependence, contact forces and tension force dependence for two different measurements, with and without material.

Keywords: pipe conveyor, contact force, rubber-textile conveyor belt, idler roll, data transformation, regression models

1. Introduction

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