

Accepted Manuscript

On developing improved modelling for particle velocity and solids friction for fluidized dense-phase pneumatic transport systems

Kapil Sharma, S.S. Mallick, Anu Mittal, Renhu Pan



PII: S0032-5910(18)30232-8
DOI: doi:[10.1016/j.powtec.2018.03.039](https://doi.org/10.1016/j.powtec.2018.03.039)
Reference: PTEC 13270
To appear in: *Powder Technology*
Received date: 26 May 2017
Revised date: 11 March 2018
Accepted date: 18 March 2018

Please cite this article as: Kapil Sharma, S.S. Mallick, Anu Mittal, Renhu Pan , On developing improved modelling for particle velocity and solids friction for fluidized dense-phase pneumatic transport systems. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Ptec(2017), doi:[10.1016/j.powtec.2018.03.039](https://doi.org/10.1016/j.powtec.2018.03.039)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

On Developing Improved Modelling for Particle Velocity and Solids Friction for Fluidized Dense-Phase Pneumatic Transport Systems

Kapil Sharma^{a,*}, S.S. Mallick^a, Anu Mittal^a, Renhu Pan^b

^a Department of Mechanical Engineering, Thapar University, Patiala, Punjab-147004, India

^b Fujian Longking Co., Ltd., Longyan, Fujian 364000, China

* Corresponding author. Email address: kapil.sharma.thapar@gmail.com

Mobile number: +91-81460-26917

Abstract

Pneumatic transport of fine powders in fluidized dense-phase pneumatic conveying of powders has become popular in several industries because it offers various advantages, such as reduced air flow and gas velocity, reduced pipeline sizing and wear rate, reduced size requirement of gas-solid separator unit etc. For the reliable design of a pneumatic conveying system precise estimation of the solids friction factor through horizontal straight pipes is essential, but it is a challenging task till date because of the highly concentrated, turbulent, and complex nature of the gas–solids mixture. In the present work, power station fly ash (median particle diameter: 22 μm ; particle density: 2370 kg/m^3 ; loose-poured bulk density: 660 kg/m^3) and cement (median particle diameter: 19 μm ; particle density: 2910 kg/m^3 ; loose-poured bulk density: 1080 kg/m^3) were conveyed through different pipeline configurations (i.e., 65-mm inner diameter \times 254-m-long and 80/105-mm inner diameter \times 407-m-long step-up pipeline). For the fluidized dense-phase flow in pneumatic conveying system, governing equations were developed and the same were

Download English Version:

<https://daneshyari.com/en/article/6674760>

Download Persian Version:

<https://daneshyari.com/article/6674760>

[Daneshyari.com](https://daneshyari.com)