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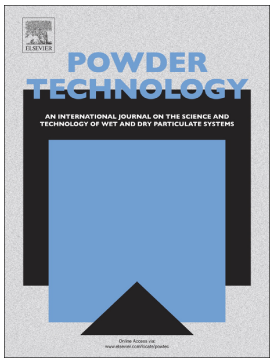

Numerical study of diesel particulate matter distribution in an underground mine isolated zone

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PII: S0032-5910(18)30713-7
DOI: doi:10.1016/j.powtec.2018.08.075
Reference: PTEC 13660

To appear in: *Powder Technology*

Received date: 15 March 2018
Revised date: 23 July 2018
Accepted date: 29 August 2018

Please cite this article as: Guang Xu, Ping Chang, Benjamin Mullins, Fubao Zhou, Shengyong Hu , Numerical study of diesel particulate matter distribution in an underground mine isolated zone. Ptec (2018), doi:10.1016/j.powtec.2018.08.075

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Abstract: The increased use of diesel engines in underground mines, together with increased mine depth, cause challenges in maintaining diesel particulate matter (DPM) at acceptable levels in underground environments. In 2012, the International Agency for Research on Cancer (IARC) classified DPM as carcinogenic to humans. To control the DPM exposure, it is important to understand DPM distribution and dispersion characteristics. In this study, an isolated zone in an underground mine in the US was taken as the physical model and the computational fluid dynamics (CFD) method was used to study the DPM distribution for two operational scenarios. The simulation results were compared with existing validation data. Compared to studies that treat DPM as a