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Slurry Pipeline Design of Multi-sized Solids : Application of Innovated Models

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The paper presents a design procedure for horizontal pipeline systems, such as those used in bulk solids handling/transportation in mining operations.

The mean velocity as well as pressure drop are important parameters in the design of the slurry pipeline. Accurate prediction of the parameters is needed for the selection of pipe diameter and the type of pump suitable for the slurry system. The objective of this paper was to provide a pipeline design procedure, especially for mixed-sized slurry flows typically found in the coal mining industry.

This study covered the evaluation methods for determining flow regimes, concentrations, and optimum pipe diameter. Critical velocity and transport velocity of flow were also discussed. The innovated models for mixed-sized slurry flows by Seitshiro et al. were applied for the prediction of the hydraulic gradients.

In conclusion, the design procedure proposed in this study was verified with field data.

Key Words : Pipeline Design, Multi-sized Slurry, Innovated Models.