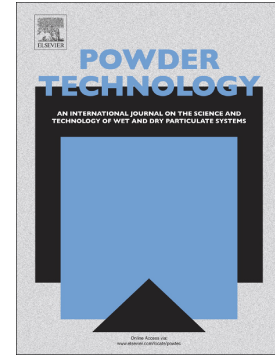


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Effect of coefficient of friction on arch network in shearing process under low confinement

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ABSTRACT

Subsea pipelines, trenching picks and ploughing blades are examples where soil-structure interaction occurs at very low vertical effective stress. **Arches are multi-particle structures encountered during the interface shearing process, the existence of which dictates the properties of the overall granular assembly.** In order to understand the behavior of dense granular materials in response to shearing under low confining pressure, physical modeling together with discrete element method (DEM) modeling of granular layers has been performed. **Since friction can control the behaviors of granular flow, this study focuses on the effect of μ on the arch network as a parametric study.** Grains have been subjected to horizontal shearing by a triangle wedge at an enlarged scale so that observations of the shearing process and behavior of particles can be made. The model was validated against physical modeling by comparing the rearrangement of selected particles, velocity vector field and arch network. During the shearing process, the arch network changed with the formation

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