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Original

A New Soil-Washing Instrument due to a Hydrodynamic Classification and a Suction Consolidation

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Summary

The purpose of the present study is to develop a simple system of the wet classification for the contaminated soil, where the sieve is replaced by a hydrodynamic-classification devise and the consolidation of flocculation-sediments is performed by a suction-consolidation devise located in the sedimentation tank. The hydrodynamic classification can process a large amount of soil continuously, and the suction-consolidation devise can improve the volume reduction rate for the muddy water treatment since polymer liquid is unnecessary. Soil washing experiments showed that the classification was carried out within the range of 10μm difference in diameter compared to the threshold value of the present devise. The accuracy can be improved by optimizing the size of the channels in the classification layer. Also, a partition plate, laminated inclined-settlers and the suction-consolidation devise could reduce the suspended solids in the circulated water by a few hundred mg/L and stabilize the muddy water treatment in the sedimentation tank. Furthermore, the clay layer developed by the suction consolidation on paper drains of the devise, which water content ratio is around 110 %, was shown to be peel off by vibrators, so that the muddy-water treatment can be operated continuously.

Key Words: Soil washing, Hydrodynamic-classification, Suction-consolidation, Lamella settlers