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Laboratory-scale experiments for evaluating pipe wear in slurry shield TBM

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ABSTRACT

Inspection and maintenance of pipe wear are essential to ensure efficient muck transportation and minimize downtime during slurry shield tunneling. In this study, a laboratory-scale test apparatus was developed to investigate pipe wear caused by slurry flow. Pipe wear tests were conducted using granite particles as the erodent material at various concentrations. Wear rates were evaluated in two test sections, a straight section and a bending section, by comparing the pipe weights before and after testing. The results showed that the wear rate was higher in the bending section than in the straight section and increased with granite particle concentration, consistent with trends reported in previous studies. Therefore, the developed test apparatus can be effectively used to examine other factors influencing pipe wear under slurry flow conditions.

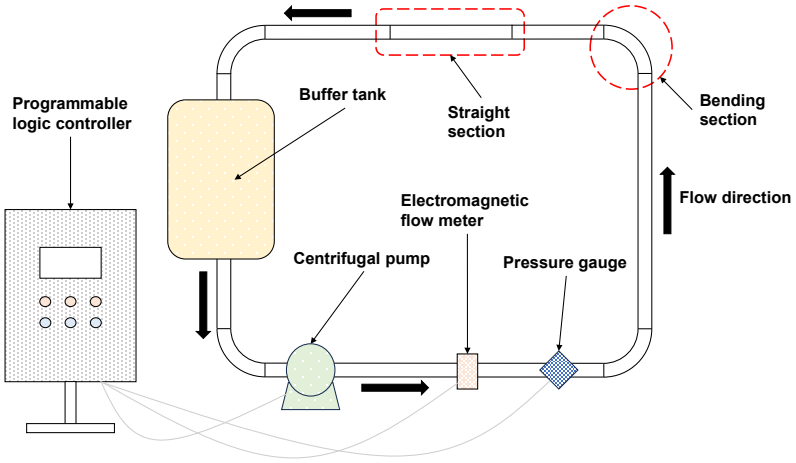

Fig. 1 Schematic of laboratory-scale test apparatus

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REFERENCES

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