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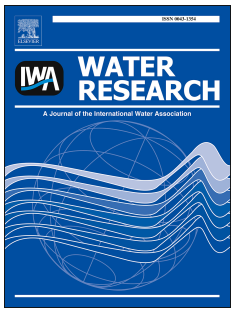

Temperature Enhanced Backwash

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Temperature Enhanced Backwash

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Abstract

Decentralized drinking water treatment is limited by supply of service, consumables, spare parts and in particular, power. Therefore, gravity-driven dead-end ultrafiltration is applied to purify surface water with high suspended solid loading. To obtain high flux in the long term, an effective membrane backwash is mandatory. Also, disinfection and cleaning is required regularly. Here we propose a new process coping with these particular challenges in decentralized water production: Temperature Enhanced Backwash. Herein, the membrane is backwashed at elevated temperature and corresponding steam pressure. A mathematical description of the Temperature Enhanced Backwash reveals that membrane pores are filled predominantly with liquid phase, irrespectively of whether membranes are charged with saturated steam or boiling liquid. A steam - water mixture is discharged at the module outlet suggesting evaporation at the end of the pores. This evaporation at membrane - fluid interface supposedly creates high volume fluxes shearing off potential fouling layers. Combined with gravity-driven filtration, the overall process

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