

PP1.3.4 A Dynamic Modelling of Saturation Profile in Drainage Channel aided Filter Medium for Gas-liquid Filtration

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Based on the developed coupled flow model that links the porous media flow and free channel flow, a dynamic simulation method was further applied to predict the saturation profile in drainage channel augmented fibrous media. The model has shown a capability of continuously monitoring the concentration of discrete phase and also plotting of in-depth penetration of oil droplets in different regions within porous media. A parametric study was performed to evaluate the variation of aerosol concentration in the stream as it passed through the filter medium characterized by different filter coefficients. The model also investigated the effect of drainage channels on both capture efficiency and flow dynamics including pressure and velocity distribution.

Keywords: Modeling; Filtration; Drainage Channel; Saturation.