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Advances in the steady-state process modeling of oil shale retorting processes

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Steady-state process modeling of oil shale retorting processes using simulation software Aspen Plus is advanced. More components are included to allow all significant mineral reactions to be represented. In addition, stoichiometric reactor block models are replaced with kinetic reactor block models that predict the extents of conversion as a function of temperature, composition, volume, and particle size. The enhancements allow the models to more accurately predict product compositional changes due to feed rate and feed composition changes. Example simulations are presented for both lump and fines retorting processes. Models are used to reconcile real plant data and estimate performance parameters for scale-up.