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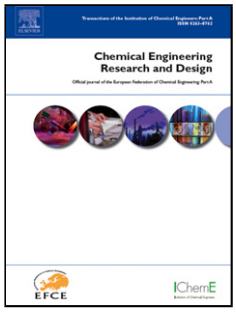

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An Improved Optimization procedure for production and injection Scheduling using a hybrid genetic algorithm

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Highlights

- Oil production and water injection optimization in a real field sector
- An efficient hybrid Genetic-Polytope approach for optimization
- A two level procedure for optimization speedup
- Streamline simulation for initial estimates of water injection rates

Abstract

This paper proposes an improved optimization workflow for oil production and water injection allocation for oil reservoirs under waterflooding by optimizing both oil production and water injection rates. Suitable initial estimations of water injection rates (from streamlines injection efficiency) and optimization of injection allocation are included in this work in addition to the work of Azamipour et al. (2016) to increase oil production. Besides, genetic algorithm (instead of simulated annealing) coupled with polytope search is used in two steps; a model with coarse grid blocks and a model with fine grid blocks for the reservoir description. NPV is considered as objective function. The results of applying proposed workflow for a field sector model used from

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