STEADY STATES OF A CONTINUOUS MODEL DESCRIBING COUNTERCURRENT DECANTATION

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ABSTRACT. In this work, we study the modeling and numerical analysis of the solid-liquid separation process in a countercurrent decantation circuit. The liquid-solid separation is a fundamental part of many processes of hydrometallurgical treatments, in which liquids or settlings have to be recovered with the best possible quality. A system of conservation laws with discontinuous flux in space is proposed to describe the CTs that make up the CCD circuit network, with source term describing the coupling between the different tanks. A particular kind of steady states solutions are studied. Conditions on the control variables are obtained for all units involved in the CCD to be in optimal operation. Some numerical simulations illustrate the behavior of the solutions in particular cases.

Keywords: Conservation laws with discontinuous flux, Countercurrent decantation, Steady states, Finite volume method.

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