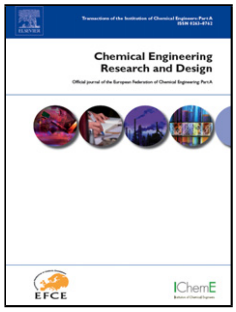

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Performance Evaluation of Process Tomography System for Cold Flow Catalytic Column

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HIGHLIGHTS

- Design and Development of industrial Process Tomography system.
- Analysis of Steady state three phase flow distribution across a plane.
- Process tomography for hydrodynamic studies in catalytic columns.
- Radiation imaging for process industries.

Abstract

In a typical catalytic trickle bed type of process reactor, capturing representations of steady-state flow features as well as situations like channelling or bypassing is a challenging task. Transmission-type industrial Process Tomography (PT) based on gamma radiation can be employed in many chemical and process industries as a tool for localizing the problem area for quick and economical troubleshooting. Industrial PT technology often makes use of either penetrating radiation like radioisotope based gamma rays, x-rays, microwaves or ultrasonic waves. We have developed a new gamma-ray transmission tomography system in collaboration with the Indian Oil Corporation Ltd (IOCL R&D Unit, Faridabad, India). The system makes use of thirty two scintillator based gamma-ray detectors in addition to a host of other sub-systems. This paper evaluates the performance of the system considering systematic and automated data acquisition, capabilities of the reconstruction software as well