# Mixed-integer linear programming model for tree-like pipeline scheduling problem with intermediate due dates on demands

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## Abstract

Multi-product pipelines are a significant and extensive mean of transporting petroleum based products from refineries to distribution centers. Previous contributions on tree-like pipeline scheduling problem have considered a simple structure with a single refinery connected to a mainline and some secondary lines only emerged from the mainline. In practice, however, a tree-like pipeline may also have several branches on a secondary line resulting in a complex structure, the so called multi-level tree-like pipeline. This paper addresses the short-term scheduling of multi-level tree-like pipelines with multiple refineries through a continuous time mixed-integer linear programming (MILP) model that considers multiple intermediate due dates for product demands. The objective is to satisfy product demands on time at the minimum operational costs, such as pumping, interface and backorder costs. The proposed model performance's is shown by solving four examples.