The LNG Inventory Routing Problem with Pick-up Contracts

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Abstract

We will describe a combined inventory management and routing problem arising in the LNG business. The LNG supply chain is long and complex, stretching from exploration and extraction, via liquefaction, transportation and regasification to distribution to end customers. In this presentation we will focus on the part of the chain from the liquefaction plants to the regasification terminals. The actor purchases the liquefied gas at the liquefaction plants and delivers it to regasification terminals. The purchases are controlled by contract having upper and lower limits on the amount of LNG that can be loaded. The contracts also have origin-destination clauses that limit to which regasification terminals some of the LNG must be delivered. At the regasification terminals, upper and lower limits on inventory levels have to be obeyed.
This problem is an extension of the LNG inventory routing problem, and we will present and discuss a path-based model and a solution method based on branch and price.

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