The time constrained multi-commodity network flow problem and its application to liner shipping network design

The multi-commodity network flow problem is an important sub-problem in several heuristics and exact methods for designing route networks for container ships. The sub-problem decides how cargoes should be transported through the network provided by shipping routes. This paper studies the multi-commodity network flow problem with transit time constraints which puts limits on the duration of the transit of the commodities through the network. It is shown that for the particular application it does not increase the solution time to include the transit time constraints and that including the transit time is essential to offer customers a competitive product. © 2015 Elsevier Ltd. All rights reserved.

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