

# Economic Analysis of Operating Systems in Container Yards

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*Received Date: March 4, 2012*

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*Accepted Date: April 10, 2014*

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## **Abstract**

Analysis and evaluation of economic efficiency and effectiveness of container yard equipment are among issues that managers of container terminals encounter all the time. This study with a distinctive perspective toward the concept of cost functions, tries to figure out the costs of container yard vehicles which are Straddle Carrier (SC), semi-automated Rubber Tyred Gantry (RTG) and automated Rail Mounted Gantry (RMG). Developing a pairwise comparison method, we present a novel approach for analysis and evaluation of economic efficiency and effectiveness of container yard equipment. The cost function analysis considers major cost attributes which are related to modern container terminal operations and include: 1) land purchase costs, maintenance and development of container yard costs, 2) equipment purchase costs, maintenance and running of an appropriate operational system in the container yard and 3) container transfer costs which play a determining role in determining the final costs of operational systems. The results showed that RMG automatic systems, compared to SC and RTG systems, led to lower costs for each container, for crane purchase, lower costs of maintenance and in general lower overall expenses for container yards.

*Keywords: Container Terminal, Cost Function Modelling, Sensitivity Analysis.*

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