

Aircraft Taxiing Strategy

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Abstract

Developments in aviation technology have led to the emergence of new aircraft taxiing strategies such as electric driven aircraft nose gear. Selecting appropriate aircraft taxiing strategies is crucial in view of increasing concerns surrounding airport ground emission and fuel consumption. This paper reports on the performance of strategies regarding aircraft taxiing processes at airports. The research aims to optimize emission reductions hence simultaneously minimizing fuel consumption. The performance measurements of taxiing operations were based on total emissions and fuel consumption. Daily data on aircraft arrivals and departures, runways and gates were analyzed, and the preferred aircraft taxiing strategy was presented. Amsterdam Schiphol Airport and Kuala Lumpur International Airport were selected as the case studies. The International Civil Aviation Organization, (ICAO) emissions database was used to determine the emission index and fuel-burning index for each type of aircraft. In order to model the taxiing strategies, discrete event modelling tools of DELPHI 7 with TOMAS compiler were used. The result shows that the three alternative taxiing strategies reduced emissions and fuel burned at both airports as compared of full-engine taxiing. However, there is a slight increment of NO_x emission for operational towing strategy due to emissions from tow trucks.

Keywords (12 font)

Aircraft Taxiing; Emission; Fuel Consumption; Taxiing Strategy

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