

ABSTRACT

Paris Metropolitan is the major transport systems that serving millions of commuters everyday in metropolitan areas. The networks are a high frequency service established mainly in underground tunnels or on elevated tracks separated from other traffic. There are 16 lines that are mostly in underground railway tunnel with 214 km in length and 301 stations which 62 of them to facilitate transfer to another line.

The problem faced in the subway system is the operational cost that cause by the energy consumption need to be reduce. The reducing of energy consumption also lead to the “green transportation” and stakeholders (major of the city) could use the budget for the transportation to another field like education, rural area development, etc.

This research is start from evaluating the effectiveness and efficiency. Effectiveness in engineering terms means “do the right things” that related to the service quality. Service quality itself in this research related to the end user. Efficiency in engineering terms means “do the things right” that related to the energy consumption. The typical inter-station run out, a train accelerates from a station to maximum speed and maintains the train speed as much as possible until it is necessary to brake to a halt for the next station. Usually, the running time is the shortest and the energy consumption is the highest as the train is running close to the maximum permissible speed throughout the trip. The traction motors are allowed to turn off once the train accelerates above a certain speed if coasting is allowed. With the application of coasting, the momentum of the train carries it through and the brake is still needed to bring the train to stop at the next station. Inter-station run time is longer but the energy saving can be achieved because the train spends less time on motoring.

In the present study resulting :

- 1. The time consumption could be reduce between 8% - 51%*
- 2. The energy consumption could be reduce between 10% - 81%*
- 3. The carbon emission could be reduce between 10% - 81%*
- 4. The CO₂ emission could be reduce between 10% - 81%*