Abstract

Fleet management system is a system which can deliver report periodically about position, speed, and relatif distance of a fleet around specific area. It consist of three main technologies, Global Positioning System (GPS) to give the information about fleet position as geospatial data, Geographic Information System (GIS) to provide geographic information like photoes or statistic data, and Global System for Mobile Communications (GSM) as data transportation media between fleet and Control Center. This system will be analysed on how accurate the position, speed and relative distance of a fleet on specific geofence can be made by using two different Great Circle Distance Formula, Haversine formula and Vincenty formula.

Based on GPS fleet position data testing result, Vincenty formula have better accuracies than Haversine formula. Vincenty formula is able to calculate the fleet distance nearly 10-12 m accurately. While Haversine formula have error probability as 3,43%. Fleet position data from GPS can be influenced by receiver device capability, weather, and signal quality of GSM.

Keywords: fleet management system, Global Positioning System (GPS), Geographic Information System (GIS), Global System for Mobile Communications (GSM), geofence, Great Circle Distance, Haversine formula, Vincenty formula