

ABSTRAK

Berkembangnya jumlah pengguna kendaraan adalah salah satu faktor yang mempengaruhi peningkatan volume lalu lintas, sehingga menyebabkan permasalahan lalu lintas yang disebut kemacetan seperti pada simpang empat tak bersinyal di kawasan Selokan Mataram, Sleman. Metode yang digunakan untuk mengkaji kinerja simpang dengan Pedoman Kapasitas Jalan Indonesia 2014 dan pemodelan dengan *software PTV VISSIM 9 Student Version* pada waktu jam puncak (*peak hours*). Hasil kondisi eksisting dengan PKJI 2014 berupa nilai arus lalu lintas total (q_{TOT}) = 3861,7 skr/jam, kapasitas simpang (C) = 2888,961 skr/jam, derajat kejenuhan (DJ) = 1,337, tundaan (T) = 848,219 detik/skr, peluang antrian (PA) = 74 – 155 %. Melihat hasil kondisi eksisting tersebut, dapat dinilai bahwa kinerja simpang belum memenuhi syarat derajat maksimum simpang ($DJ \leq 0,85$). Hasil kondisi eksisting dengan pemodelan *PTV VISSIM 9 Student Version* berupa nilai tingkat pelayanan yaitu $LOS(All) = LOS E$ dan $VehDelay(All) = 36,84$ detik, sehingga tingkat pelayanan simpang dikatakan buruk. Berdasarkan hasil dari kedua metode didapatkan bahwa menggunakan PKJI 2014 kondisi kinerja simpang masih buruk, begitu juga tingkat pelayanan yang dihasilkan dari VISSIM juga buruk, sehingga kondisi eksisting dari kedua metode tersebut masih memerlukan upaya perbaikan. Direncanakan perbaikan dengan 3 alternatif permasalahan lalu lintas, dengan hasil terbaik yaitu pada alternatif 3 berupa menggeser letak median dan rekayasa lalu lintas, yang menghasilkan nilai $DJ = 1,029$ dengan $T = 14,452$ detik/skr dan nilai $LOS(All) = LOS C$ dengan $VehDelay (All) = 16,56$ detik. Hasil emisi gas buang kendaraan kondisi eksisting menunjukkan hasil yang lebih baik dari alternatif 3, hal ini dikarenakan jumlah kendaraan alternatif 3 lebih besar daripada jumlah kendaraan kondisi eksisting.

Kata – kata kunci : kinerja simpang, tingkat pelayanan, PKJI 2014, PTV VISSIM, emisi gas buang kendaraan

ABSTRACT

The growing number of vehicle users is one of the factors that affect the increase in traffic volume, causing traffic problems called congestion such as at unsignalized intersection in the Selokan Mataram area, Sleman. Method used to assess the intersection performance with Highway Capacity Manual Indonesia 2014 and modeling with the PTV VISSIM 9 Student Version software at peak hours. Results of existing conditions with PKJI 2014 in the form of total traffic flow value = 3861,7 skr/hour, intersection capacity = 2888,961 skr/hour, degree of saturation = 1,337, delay = 848,219 sec/skr, and the chance of queue = 74 – 155 %. Seeing the results of the existing conditions, it can be assessed that the intersection performance does not meet the maximum degree of intersection ($DJ \leq 0.85$). The results of the existing conditions with PTV VISSIM 9 Student Version modeling in the form of service level values are LOS (All) = LOS E and VehDelay (All) = 36,84 seconds, so that the intersection service level is said to be bad. Based on the results of the two methods it was found that using PKJI 2014 intersection performance conditions were still poor, as well as the level of service produced from VISSIM was also poor, so that the existing conditions of both methods still needed improvement efforts. Improvements are planned with 3 alternative traffic problems, with the best results, the third alternative is to shift the location of the median and traffic engineering, which produces DJ value = 1,029 with $T = 14,452$ sec/skr and LOS (All) = LOS C value with VehDelay (All) = 16,56 seconds. The results of exhaust emissions of existing vehicles show better results than alternative 3, this is because the number of alternative vehicles 3 is greater than the number of existing vehicle conditions.

Keyword : intersection performance, level of service, PKJI 2014, PTV VISSIM, vehicle exhaust emissions