

INTISARI

Jumlah penduduk yang tinggi menyebabkan kemacetan pada bidang transportasi. Salah satu titik kemacetan di Kota Surakarta yaitu pada Simpang Bersinyal Tugu Lilin yang berlokasi di Kecamatan Laweyan. Penelitian ini bertujuan untuk menganalisis kinerja Simpang Bersinyal Tugu Lilin serta membuat pemodelan alternatif solusi yang sesuai.

Survei lapangan terlebih dahulu dilakukan guna memperoleh data geometrik, waktu sinyal, dan volume lalu lintas sebagai dasar perhitungan derajat kejenuhan (DS) serta tundaan simpang (DI) menggunakan MKJI 1997 sebagai acuan. Selanjutnya dilakukan pemodelan alternatif solusi menggunakan *software* PTV Vissim 8.0.

Hasil penelitian ini menunjukkan bahwa nilai DS mendekati bahkan melebihi batas yang disarankan oleh MKJI 1997 ($DS > 0,85$) serta memiliki indeks tingkat pelayanan simpang yaitu F. Berdasarkan hasil tersebut maka dibuat skenario alternatif solusi yaitu dengan perubahan waktu sinyal lalu lintas, jumlah fase, dan lebar jalan. Alternatif solusi yang dimodelkan mampu menurunkan nilai DI secara keseluruhan meskipun tingkat pelayanan simpang belum memberikan perubahan yang signifikan.

Kata Kunci: simpang bersinyal, derajat kejenuhan, tundaan, tingkat pelayanan simpang, Vissim.

ABSTRACT

High population causes congestion in the transportation sector. One of the congestion points in Surakarta City is at the Tugu Lilin Signalized Intersection which is in Laweyan District. This study aims to analyze the performance of the Tugu Lilin Signalized Intersection as well as to model the appropriate alternative solutions.

A field survey was first conducted to obtain geometric data, signal timing, and traffic volume as the basis for calculating the degree of saturation (DS) and intersection delay (DI) using the Indonesian Highway Capacity Manual (MKJI) 1997 as a reference. Furthermore, modelling of the alternative solutions using PTV Vissim 8.0 software is carried out.

The results of this study indicate that the DS value is close to and even exceeds the limit suggested by MKJI 1997 ($DS > 0.85$) and has an intersection service level index, namely F. Based on these results, an alternative solution scenario is made by changing the traffic signal time, the number of phases, and the width of the path. This alternative model solution is able to decrease the overall DI value even though the level of service at the intersection have not provided a significant change.

Keywords: *signalized intersection, degree of saturation, delay, level of service intersection, Vissim.*