

ABSTRAK

Kota Semarang telah menerapkan sistem manajemen lalu-lintas berbasis *Area Traffic Control System* (ATCS) pada 22 titik persimpangan prioritas untuk mengurangi potensi kemacetan dan meningkatkan kinerja lalu lintas akibat adanya peningkatan volume kendaraan. Penelitian ini bertujuan untuk mengetahui besar pengurangan emisi kendaraan bermotor (TSP, NO_x, CO, HC dan SO₂) terkait penerapan ATCS pada lima simpang yang menjadi lokasi penelitian yaitu simpang Krapyak, bundaran Tugu Muda, simpang Polda, simpang Bangkong, dan simpang Fatmawati. Metode perhitungan emisi menggunakan metode Tier 1 dengan menghitung besar pengurangan emisi yang dihasilkan oleh jenis kendaraan motor dan mobil yang melintas pada saat adanya penambahan waktu nyala lampu hijau *traffic light* yang terjadi selama satu minggu pemantauan.

Hasil analisis menunjukkan bahwa penerapan manajemen lalu-lintas berbasis *Area Traffic Control System* (ATCS) dapat memberikan dampak positif berupa pengurangan tingkat pencemaran emisi kendaraan bermotor akibat adanya peningkatan kecepatan dan penurunan konsumsi bahan bakar kendaraan. Pengurangan emisi tertinggi akibat adanya penerapan ATCS terjadi pada simpang Krapyak dengan persentase pengurangan emisi sebesar 17,47% untuk emisi TSP, 36,78% untuk emisi NO_x, 25,11% untuk emisi CO, 28,25% untuk emisi HC, dan 35,58% untuk emisi SO₂. Sedangkan pengurangan emisi terendah terjadi pada simpang Bangkong dengan persentase pengurangan emisi sebesar 12,69% untuk emisi TSP, 22,81% untuk emisi NO_x, 15,40% untuk emisi CO, 16,88% untuk emisi HC, dan 21,73% untuk emisi SO₂.

Kata kunci : *Area Traffic Control System*, Emisi Kendaraan, Pengurangan Emisi.

ABSTRACT

Semarang City has implemented traffic management system based on Area Traffic Control System (ATCS) at 22 points of priority intersections to reduce congestion potential and increase traffic performance due to the increase of vehicle volume. The aim of this research is to know the amount of vehicle emission reduction (TSP, NO_x, CO, HC and SO₂) related to the implementation of ATCS at five intersections which become the research location of the Krapyak intersection, Tugu Muda roundabout, Polda intersection, Bangkong intersection and Fatmawati intersection. The method of calculating emissions is using Tier 1 method by calculating the amount of emission reductions generated by motorcycles and cars passing during the addition of the green traffic light that monitored during one week.

The result of the analysis shows that the application of traffic management based on Area Traffic Control System (ATCS) can give positive impact in the reduction of vehicle emission contamination level due to the increasing speed and decrease of vehicle fuel consumption. The highest emission reductions due to the implementation of ATCS occurred at Krapyak intersection with emission reduction percentage of 17.47% for TSP emissions, 36.78% for NO_x emissions, 25.11% for CO emissions, 28.25% for HC emissions, and 35.58% for SO₂ emissions. While the lowest emission reductions occurred at Bangkong intersection with emission reduction percentage of 12.69% for TSP emissions, 22.81% for NO_x emissions, 15.40% for CO emissions, 16.88% for HC emissions, and 21.73% for SO₂ emissions.

Key words: *Area Traffic Control System, Vehicle Emissions, Reduction of Emissions.*