**Abstract**

Signalized intersections in the urban roadway network have a significant role in achieving the better operational performance of the entire traffic flow system.It is expected to control intersection safety and efficiency especially at inter-green periods at signalized intersection because that time affects the occurrence of severe traffic conflicts and delay and driver’s decision for departure from stop line as well. By displaying the remaining phase time to drivers, countdown-timers are expected to reduce fuel consumption, driver’s anxiety, and frequency of crashes. Countdown signals are common in many countries but there are only few studies reported in literature on evaluating the effect of countdown signal timer on various traffic operations at signalized intersection.

The present study evaluates the influence of Signal countdown timers (SCTs) on intersection traffic operations and safety. The data for the study was collected using video recording method and RADAR/LIDAR at two locations of signalized intersections in Hyderabad city. The safety measures like red light violation (RLV), average approaching speed, and efficiency measures like startup loss time, and average control delay are estimated and compared under with and without SCTs conditions at both intersections. Signal countdown timer is found to have significant influence on these measures. It has been observed that the presence of signal countdown timer increases the average approaching speed of vehicles during signal transition phase and decreases average red light violation (RLV) from 9 to 7 RLVs and 4 to 5 RLVs per cycle at both intersections respectively. The average startup time was estimated at an intersection approach under SCT switch on and switch off situations. The average start-up loss time is found to be decreased (4.8 to 2.9 Sec. and 5.8 to 2.9 Sec.) when SCTs was switched on, which have shown a significant increase in the capacity of both signalized intersection. Signal countdown timer has no impact on saturation headway. Average control delay at both intersections has been decreased in timer on condition. So from the present study it can be concluded that signal countdown timer helps to enhance safety and efficiency of signalized intersection.

***Key Words:*** Signal countdown timer, red light violation, approaching speed, startup lost time, control delay.