SIEMENS

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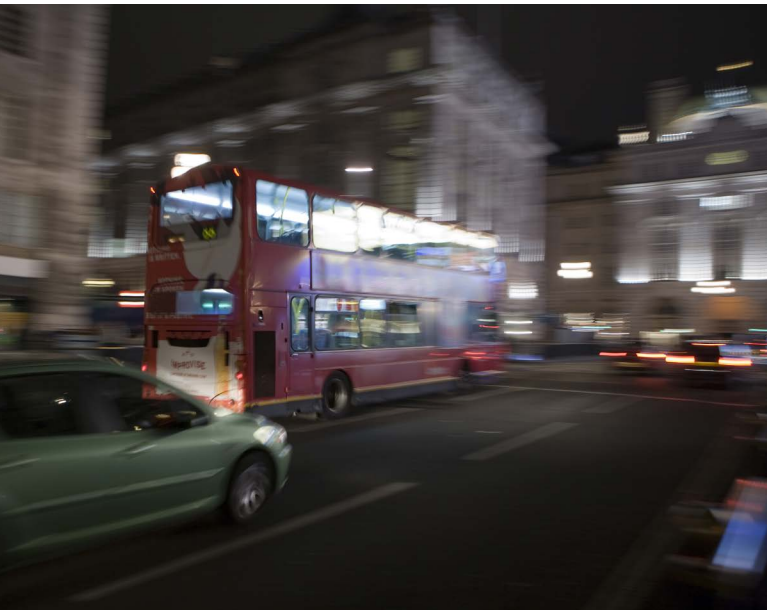
PC SCOOT

Urban traffic control system



- World leading adaptive control system
- Increased standardisation with traffic control centres
- Microsoft Windows operating system
- Customised congestion management tool kit
- Reduced equipment and maintenance costs
- Maximises network efficiency
- Improved access to management data
- Reductions in delay of over 20%
- Ease of use for new users
- Simple installation and migration

The successful management of traffic in the 21st century places many demands upon the service provider. As the volume of traffic using the highways continues to grow at a greater rate than the capacity of the road network, the effect of traffic congestion is an ever-increasing problem in towns and cities around the world. The operators in today's traffic control centres are continually working to maximise the efficiency of the highway networks whilst minimising any disruptions caused by incidents and events.

Many benefits are obtained from the implementation of an effective urban traffic control (UTC) solution, not only for traffic in the town or city, but also for the local economy and environment. Utilising the latest version of the SCOOT adaptive control software, Siemens' UTC has been proven in over 100 towns and cities around the world as effective in reducing congestion and maximising the efficiency of the road network.

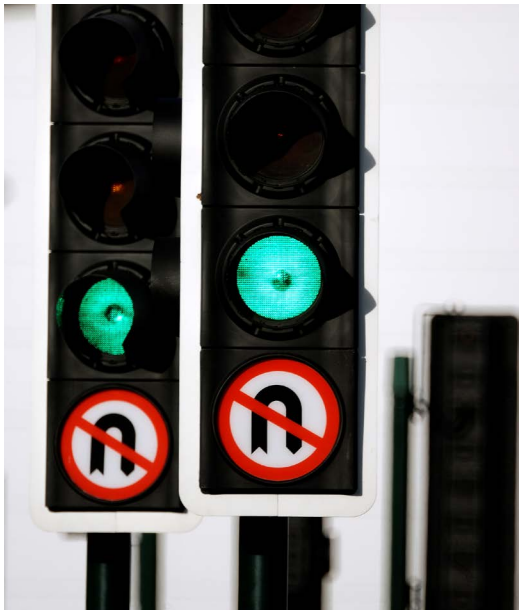
Implementation of PC SCOOT from Siemens allows more cost-effective systems integration and commonality of hardware across the range of traffic management and control systems. This in turn reduces maintenance requirements and provides more opportunities for implementing a wider range of traffic control solutions. Integrating the latest version of the SCOOT adaptive control algorithm, Siemens' UTC system offers a flexible solution to your traffic management needs from simple installations to the largest urban metropolis.

Urban traffic control

PC SCOOT from Siemens is the keystone of urban traffic management with a variety of solutions ranging from a single processor to a comprehensive integrated package including on-street equipment and complementary sub-systems networked together. The UTC system may operate as a stand-alone system or as part of a larger UTMC system, interfaced to strategic management and other traffic control and information systems. The system's flexibility allows engineers to control and monitor traffic over a wide area, combining traditional traffic control with a host of additional functions to best achieve maximum efficiency. Siemens' UTC offers the following range of features to the traffic engineer to make maximum use of any installed technology:

- SCOOT adaptive control
- Public transport priority
- UTMC compliant links to outstations and other systems
- Emergency vehicle green waves
- Fixed time signal control with automatic plan selection
- Traffic flow monitoring
- Queue and congestion detection
- Tidal flow control
- Pollution monitoring

Public transport priority is increasingly seen as crucial in maintaining the effectiveness of buses and light rail systems as viable alternatives to the private car. Siemens' UTC provides effective priority through SCOOT, allowing public transport vehicles to adhere to their schedule whilst minimising the disruption to other vehicles. Supporting interfaces via the traffic controller or directly into SCOOT from the AVL system, a flexible approach can be adopted to ensure the easy provision of priority with minimal additional infrastructure required.



SCOOT

First introduced in 1983 SCOOT has been continuously developed since, to meet the needs of traffic managers from around the world. The most recent developments introduced in SCOOT MMX implement new features directly aimed at the multi-modal nature of today's traffic signal installations and the need to optimise for all users.

As part of an Urban Traffic Control system, the world renowned adaptive signal control algorithm SCOOT monitors traffic flow in real-time to optimise traffic signal operation, and adjusts signal timings to match prevailing conditions. Following the introduction of SCOOT-based systems, 'before and after' studies have shown substantial reductions, both in journey times and delays. Vehicles are detected on all approaches to each junction under SCOOT control with occupancy being measured every quarter second. This creates a profile for each link which the SCOOT model uses to predict queue behaviour at each stop line which is then used in the optimisation calculation. The model also predicts delays and the build-up of congestion as part of the efficiency index.

SCOOT models traffic detected on-street to continuously adapt three key traffic control parameters – the amount of green for each approach (Split), the time between adjacent signals (Offset) and the time allow for all approaches to a signalled intersection (Cycle time). These three optimisers are used to continuously adapt these parameters for all intersections in the SCOOT controlled area, minimising wasted green time at intersections and reducing stops and delays by synchronisation of adjacent traffic signal installations. As a result the signal timings evolve with the changing traffic situation without any of the traditional disruption caused by changing fixed time plans on other urban traffic control systems.

SCOOT MMX

SCOOT MMX introduces a number of key new features which provide invaluable assistance to the traffic manager in maximising the efficiency of the road network. These new facilities offer the opportunity to optimise for pedestrians at junctions, improve operation during low flow periods and provide enhanced estimations of emissions. As part of the ongoing developments, these were extended in 2012 with an update package including functionality to optimise performance for reliable journey time along network corridors.

Pedestrian optimisation

As part of the SCOOT MMX upgrade, a new facility targeted primarily at traffic junctions with pedestrian crossing facilities has been developed, enabling greater account to be taken of pedestrians at sites where the pedestrian demand is high. Where there are large numbers of pedestrians waiting to cross, the green man invitation period, and hence the overall time available to pedestrians to cross, can now be varied by SCOOT according to expected demand. This can be managed by time of day or automatically by monitoring the frequency of push-button detections and using this as a measure of pedestrian demand. In future, the option will also exist to incorporate directly pedestrian volume detectors as they become available to the market.

Low flow operation
Further new developments to reduce cycle time during quiet periods and introduce sub-regions have also been added to SCOOT MMX. These changes introduce greater flexibility for the traffic engineer in managing network efficiency under low flow conditions, improving network performance and reducing waiting times at red signals. Additionally under low flow conditions, SCOOT is now able to accommodate the lower demand for side roads and the corresponding reduction in cycle time which can be achieved for optimum operation whilst maintaining coordination.

Emissions modelling updated
The emissions estimates originally introduced in 1996 as part of a previous SCOOT release have also been updated in SCOOT MMX and take account of an improved understanding of vehicle emissions and the changing mix of increasingly cleaner vehicles on the road network.

Journey time reliability
For many traffic managers and engineers, Journey Time Reliability is a key performance outcome along key network corridors. There are many contributing components to this which include planned (such as roadworks and events) and unplanned (such as accidents) interventions. Functionality released in the 2012 service update included specific features to allow optimisation based upon the performance of a complete route as well as the individual nodes. In this way, the journey time reliability along a route can be managed effectively, with SCOOT being used to ensure targets are met, optimising the signals accordingly.

Under normal operations the link saturation along a SCOOT corridor and the ability of corridor links to self heal under abnormal conditions are a major contributing factor to overall journey time reliability. In the latest release of SCOOT, users are able to achieve an outcome based version of SCOOT, which will operate route based links at user defined degrees of saturation. This new facility in SCOOT provides a tool for the traffic engineers to maintain journey time reliability of a route by controlling the SCOOT link maximum saturation and managing the overall optimisation to achieve the desired level.

Printed in the UK

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Printed on Cocoon Silk. Made with 100% FSC post-consumer waste. Cocoon Silk is 100% FSC recycled paper, process chlorine free.

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