

Centrico BRIEFING NOTE

Using ITS to manage Europe's busiest roads



Ramp Metering

SUMMARY

In 2000 CENTRICO looked to harmonise ramp metering systems for end-users and produced the CENTRICO ramp metering synthesis. The first results of the actual implementation plans are described in this briefing note.

HARMONISATION STRATEGY

Because it is not usual for drivers to be confronted with a traffic light at the entrance of a motorway CENTRICO took the opportunity to try to harmonise ramp metering systems for end-users. Of course other issues like legal aspects are technical matters were also discussed, but the end user aspects showed more divergences.

June 2000 saw the first Expert Group meeting. In December 2001, The CENTRICO Ramp Metering Synthesis was produced. The following guidelines were set up:

- Pre-signing on the slip-road is necessary.
- The look of the ramp metering traffic light should differ from urban traffic lights.
- It is advised a ramp metering sign uses a 3 aspect light, green, amber and red. This sign is combined with a one vehicle per green strategy.
- It is advised to put a low level (left or right) and a high level sign.

DEVELOPMENTS IN SHORT PER COUNTRY

Belgium: In Belgium only one ramp metering installation is in operation at Leuven. Several studies have been done at other potential sites in Flanders, but the results were not satisfactory. Most of the slip roads where ramp metering is desired are too short. Therefore the Flemish Ministry fears blocking the secondary road network.

England: In 2004 the Highways Agency completed successfully a ramp metering pilot project on the M3 and M27 in the South of England. The pilot project included an evaluation where the results have been used to develop standards and guidelines for implementing ramp metering elsewhere on the motorway network. The data was used to determine:

- The economic assessment of junctions on the motorways determined the baseline for a viable ramp metering site;
- A guidance note based on the evaluation of the sites was produced to assist with the selection of new sites; and
- Guidance for route managers to determine whether Ramp Metering is a suitable system that could alleviate congestion at the trial site.

Ramp metering is now operational on the M6 (between junctions 10 and 7) and the HA has analysed the collected data. There are plans for the wider deployment of ramp metering across England: Ten ramp metering installations will be implemented in the North West of the country and a further twenty locations are under consideration.

France: Several installations are operational in Paris and Bordeaux. Extensive research into ramp metering software has been done in France. Several strategies have been simulated and tested and this work continues especially on the ALINEA software. Currently France is participating in the European programme EURAMP concerning method-logical issues, harmonisation and new developments.

Centrico BRIEFING NOTE

Using ITS to manage Europe's busiest roads

Germany: On busy sections of motorway, entering vehicles often cause tailbacks, traffic disruptions and accidents at junctions. By means of ramp metering systems, traffic can be guided to the federal motorway in a controlled way using light signal installations. The examination of pilot installations showed that the system has very positive effects: it leads to a considerable reduction of accidents and disruptions as well as an increase of the speed level without having a negative impact on the secondary road network. Through international harmonisation recommendations (Ramp Metering Synthesis) it was possible to harmonise the design of ramp metering systems at international level, which also helped increase the acceptance of the system.



Main range of application of ramp metering systems is busy and accident sensitive sections of motorways in the area of conurbations with their closely sequenced junctions. In Germany, most of the ramp metering systems are situated in Nordrhein-Westfalen. Between 1999 and 2005 a total of approx. 40 ramp metering systems were set into operation. By the end of 2007 approx. 100 ramp metering systems will be installed in the conurbation area of Rhein-Ruhr. The ramp metering system is also used in Hessen, one pilot is operational since April 2003.

The Netherlands: The Netherlands has installed 44 ramp metering installations since 1989. Several strategies have been tested like ALINEA and FUZZY, but they were not implemented for practical reasons (too complex, maintenance problems). Ramp metering is considered an accepted traffic management measure.



NEW EUROPEAN INITIATIVE

In March 2004 a new European funded three year programme EURAMP was started. This programme handles methodological issues, harmonisation and new developments in detail. Several ramp metering sites in Europe are being used for demonstrations of new strategies and techniques. The five test sites are located on motorways and surrounding networks of various characteristics and levels of telematics infrastructure. In addition there will be simulation testing at two virtual sites, in Ile de France and Munich. The EURAMP demonstration sites are:

- A6 motorway, south of Paris (Ile-de-France)
- A28 Uithof, A2 Breukelen and A2 Maarsen, in Utrecht (The Netherlands)
- A94 in Munich (Germany)
- M6 motorway (UK)
- Ayalon Highway, Tel Aviv (Israel)

See also www.napier.ac.uk/euramp/

For more information on this topic, please contact:

Caroline Visser
C.M.Visser@vcnl.rws.minvenw.nl

For further information on other CENTRICO activities visit:

www.centrico.org



Supported by the European Commission DG TREN-TEN-T

