



Accident Prevention Systems for Lorries - Start of the Field Operational Test

A large-scale pilot aimed at reducing accidents, improving safety and positively affecting traffic circulation



Ministerie van Verkeer en Waterstaat



Buck
Consultants
International





Lorry traffic, safety and traffic jams

There is a general consensus that lorry traffic is vital to the economy and prosperity of the Netherlands. Of all the vehicles currently on Dutch roads, approximately 15% are lorries. This percentage is expected to continue increasing significantly until 2020.

This increase presents the Ministry of Transport and the transport industry with the challenge of effectively managing road haulage and improving traffic circulation. Traffic safety is also a major concern. Fifteen percent of fatal accidents involve lorries.

The Ministry of Transport therefore focuses on efforts aimed at optimising transport efficiency and reducing both the number and the severity of accidents involving lorries. The use of advanced technology, such as driver assistance systems, could contribute to this effort.

Until now, however, little research has been done into the contribution made by these driver assistance systems, which is why the Ministry of Transport, Connekt/ITS Netherlands, TNO and Buck Consultants International are conducting a comprehensive FOT (Field Operational Test). This FOT will test five different systems that can help to prevent accidents involving lorries, as well as a registration system that records driver behaviour. The effects of these advanced systems will be measured for a minimum period of four months. Dutch industry associations TLN, BOVAG, KNV, EVO, VERN and RAI Vereniging, in addition to several OEMs will be closely involved in the FOT.



A large-scale test

The FOT will involve approximately 3,000 vehicles owned by more than 60 hauliers. Five different accident prevention systems and a registration system will be tested. Vehicle movements of lorries involved in the FOT will be recorded and processed for at least four months and the Ministry of Transport expects the first results in December 2008. This is the most comprehensive FOT ever conducted with accident prevention systems.

The objectives of the FOT can be divided into three aspects:

1. To reduce the number of accidents involving lorries and analyse the traffic safety effects.
2. To assess the impact of large-scale implementation of accident prevention systems on traffic circulation.
3. To gain insight into the effectiveness of the various systems with regards to lorry traffic safety.

Systems involved

The FOT will address the three most common types of accidents: rear-end collisions, side collisions and single-vehicle accidents. A separate registration system will also be tested.

Rear-end collisions

A rear-end collision may occur due to sudden deceleration by a vehicle in front. Rear-end collisions can be prevented by systems warning the driver of insufficient distance from the vehicle in front. The systems described on the next pages will be tested.

"TLN fully supports the FOT of Accident Prevention Systems for Lorries. The practical experiences with the various systems can be instrumental in future policy-making in the Netherlands and the EU. In addition to the behaviour of drivers and other road users, as well as infrastructure and law enforcement, new in-car technologies can also contribute to lorry traffic safety. The pilot is likely to clarify the added value that the tested systems will have for everyone's safety."

Secretary for Policy-Making and Sub-Markets at Transport en Logistiek Nederland, Rob Aarse

"Traffic safety is important to us. Our busy roads require drivers to be alert all the time. An accident prevention system is a good investment, which will help them do so. We also believe that this will have a sustainable positive effect on driver behaviour. In addition, we expect that the investment in the system will be fully or largely recovered due to the improved efficiency and the reduction of accident-related expenses, such as deductibles, insurance premiums and administrative fees."

Assistant Manager at ATT Transport BV, Ben de Haan

Headway Monitoring (HWM) and Forward Collision Warning (FCW)

These systems automatically detect vehicles in front, road markings and other obstacles, and warn the driver in order to prevent collisions. The system immediately gives a signal when a vehicle gets too close or unintentionally drives off the carriageway, or if there is a risk of a rear-end collision.

Adaptive Cruise Control (ACC), ex factory

This cruise control system uses sensors to automatically keep a safe distance to the vehicle in front and to maintain a driver-set speed. As soon as the ACC system detects a vehicle in front, it measures the distance and calculates the difference in speed. If necessary, it adapts the vehicle's speed in order to maintain sufficient following distance.

"The involvement of the Royal Dutch Transport Federation (KNV) in the FOT regarding accident prevention systems arises out of its responsibility for the safety of transport company employees and other road users. Modern technologies and insights will visualise the performance of accident prevention systems. This is vital to the selection and usage of these systems, which can help to increase employee and traffic safety, as well as improve - on balance - traffic circulation on Dutch roads. This will clearly benefit the logistical sector, as well as the economy and society as a whole."

Deputy Secretary at KNV, Astrid de Haes



Side collisions

Side collisions may occur as a result of a lorry crossing the lane markings unintentionally and hitting another vehicle consequently. Side collisions can be prevented by systems that assist the driver when he changes lanes. The system being tested is called:

Lane Departure Warning Assist (LDWA)

This system issues a warning when the vehicle is about to leave its current lane unintentionally. A camera is programmed to recognise the difference between the road surface and the markings. The system immediately gives a signal if the vehicle begins to make unexpected or illogical movements.

Single-vehicle accidents

Single-vehicle accidents often involve cars that go off the road or turn over due to manoeuvres by other road users

"Lorry manufacturers have developed various systems to increase lorry safety. RAI Vereniging is very pleased with the Dutch Ministry of Transport's initiative to conduct a comprehensive FOT in order to demonstrate the added value of these systems. Improvements in traffic safety obviously will reduce the amount of traffic jams, and that will benefit everyone."

Communications and Public Relations Manager at RAI Vereniging, Harald Bresser

or over-correction following a steering error. Single-vehicle accidents can be prevented by using systems such as:



- Anti-tilting systems that immediately intervene if the vehicle is about to turn over.
- Systems that detect driver fatigue and immediately warn the driver.
- Field-of-vision improvement systems (mirrors, cameras).
- Warning systems.

The system being tested is called:

Directional Control (DC), ex factory

This system corrects for oversteering and understeering. If the system detects a discrepancy between the driver's intended path and the direction in which the vehicle is actually travelling, the system intervenes by controlling the brakes and helps to bring the movement of the vehicle back in line with the driver's intentions.

Registration

In addition to the five accident prevention systems described above, the following registration system will be tested:

Black Box

A black box is a registration system that measures and records the driver's behaviour while driving. This can be done either with or without feedback to the driver.

Additional tests

The tests will be supplemented by parallel FOTs such as:

- Test track measurements with anti-tilting sensors. In addition to testing the accident prevention systems on public roads, anti-tilting measurements will be carried



out in order to determine under which conditions a risk of tilting occurs.

- Random checks with behaviour observation. Random drivers will be asked about their experiences with the accident prevention systems.
- Monitoring large groups of lorries already equipped with accident prevention systems and/or specific target groups (e.g. tanker lorries).

During this test, tanker lorries already equipped with ex factory ACC and LDWA systems will be equipped with registration units so that their driving behaviour will also be analysed.

"Modern society and mobility are inextricably linked. Everyone agrees that lorries are indispensable for the economy and prosperity of the Netherlands. EVO, the organization that represents the interests of 30,000 companies that transport goods, wants this lorry traffic to be as safe as possible, and without delay. EVO therefore supports measures aimed at improving traffic safety that prove to be effective in relation to the main causes of accidents involving lorries. Many EVO members have thus responded with much enthusiasm to the invitation by the Ministry of Transport to participate in the testing of five different accident prevention systems. Safety is a key concern for all those involved, especially the business community!"

*EVO's Managing Director,
Machiel van der Kuijl*

"We decided to participate in this test because we hope that these accident prevention systems can be combined with our current onboard computers. Preventing accidents is also very important. This will reduce damage expenses and improve traffic circulation."

Fleet Manager at VT Verkerk Transport & Logistics BV, Wim Verheul

Test plan

The FOT involves:

- Comparable groups of several hundreds of lorries.
- Each group being equipped with one type of accident prevention system.
- One reference group without any accident prevention system.
- All lorries being equipped with the same registration system for monitoring driver behaviour and traffic safety.

The first series of devices, a combination of registration equipment and accident prevention systems, will be installed in June 2008 and subsequently tested. These devices are retrofit systems, i.e. they are installed in lorries already on the roads. Possibilities for combining these with factory systems such as DC and ACC will also be investigated. A plan will be prepared jointly with various manufacturers in order to determine which lorries already have DC and ACC systems and which new lorries are being manufactured. In addition, buyers are encouraged to have accident prevention systems and registration units built in.

Participating hauliers/shippers

(as at 18 June 2008)

AL Langen B.V. • Albert Keijzer transport • ATT B.V. • Bakker Logistiek Groep • Baks Logistiek • Centraal Boekhuis • Centrum Transport B.V. • D&T Logistics • Darvi Transport • De Rijke Groep • Den Hartogh Logistics • DHL Freight • Eikelenboom European Food Transport • Emons Groep/TWO-DS • Fiege Logistics Services • G. Snel Transport B.V. • G. Kuyf KTK • Gé Simons • Gerrit van Beek Logistics • H&S Food Trans • Heisterkamp Trucking • HEMA • Holwerda • Hoyer Nederland • IJmond Transport Groep • Internationaal Transportbedrijf • G.A. van Velthoven • ITC Holland • J. Heebink Logistic Services • Jan de Rijk • Jan Dohmen • Jan Krediet • Jo van Beek Logistics • Kruidenier

Foodservices • L. Bos Logistics • Loetoning Vervoer B.V. • Nabuurs Groep • Nijhof Wassink • Nijman/Zeetank • Plieger • Ploeger Groep • Post en Haveman B.V. • Post-Kogeko • Prins Transport BV • Raben Group • Reining Transport • Rutges Cargo • Schenk Tanktransport • Schuitema • St vd Brink B.V. • Stubbe B.V. • Tielbeke Transport • Timmermans Transport & Logistics • TNT Express • Van den Anker • Van der Lee • Van der Luyt Transport • Van Noort • Van Oort Transport • VDS Logistics • Veenstra Transport • Verbrugge B.V. • VT Verkerk Transport & Logistics BV • WETRON Transport & Logistics • Wigchers Int. Transport • Wincanton Trans European •



Short-term approach to congestion

The project Accident Prevention Systems for Lorries is one of more than 40 FileProof projects being carried out by the Ministry of Transport in order to reduce the number of traffic jams between 2006 and 2009. Until 2009 the Ministry of Transport will be collaborating with stakeholders and other government authorities to pull out all the stops and develop creative and effective solutions to help to reduce traffic jams.

At the Minister's request, Ministry of Transport employees investigated new possibilities to reduce traffic jams in the short term through relatively simple solutions during the first quarter of 2006. Local governments, private citizens, businesses, interest groups and knowledge institutions

also provided a host of creative ideas. External experts evaluated the nearly 3,000 ideas for feasibility, which resulted in a Ministry-wide programme including approximately forty projects aimed at finding short-term solutions to traffic jams. The project Accident Prevention Systems for Lorries is one of those forty projects and fits into the category of projects aimed at reducing occasional traffic jams.



Colophon

Editors-in-chief

FileProof

For more information about the various projects of Short-term approach to congestion please contact the project organisers of FileProof on + 31 88 798 25 70, or by e-mail: fileproof@rws.nl

For more information about the project Accident Prevention Systems for Lorries, please contact Robbert Verweij at the Ministry of Transport's Directorate General of Transport and Aviation, on + 31 70 351 15 49, or by e-mail: robbert.verweij@minvenw.nl

More information is also available at www.vanAnaarBeter.nl under 'Hoe kan ik de files helpen verminderen?' (What can I do to help reduce traffic jams?) and 'Wat doet de overheid?' (What is the government doing?).

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