

GHOST DRIVERS

A DIRECT EXPERIENCE OF
TOLL ROAD OPERATORS



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Introduction

THE ASECAP Permanent Committee on Safety, Security, Environment and Sustainability (COPER II) has recently started a benchmarking activity amongst the members of the Association. The ASECAP members have been asked to provide their direct experiences in managing the issue of the so-called «ghost drivers». **This phenomenon consists in those vehicles driving in the wrong direction on a motorway posing a serious danger to other drivers.** Ghost drivers have been the cause of very serious accidents in different Member States and they represent an emerging threat to road safety policies in the EU, even if the phenomenon did not reach a considerable share of the overall number of accidents. Indeed, wrong-way crashes are relatively infrequent but they are more likely to produce serious injuries and fatalities compared to other types of crashes for at least two reasons: the high relative speed of collision and the personal conditions of ghost drivers, normally in a daze or unpaired.

This document sheds more light on the direct experiences of the ASECAP members confronted with this emerging issue and provides a comprehensive picture of the situation in different countries stressing the need for joint actions and initiatives between toll road operators and other relevant stakeholders. The commitment of public Authorities is crucial when stronger and more costly measures are needed, particularly when concrete interventions on road infrastructure and equipment have to be performed.

Causes of the phenomenon and consequences are shortly highlighted while concrete actions undertaken by toll road operators are outlined and clearly described in the following chapters.

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Main causes of the problem

There are many factors which could be directly linked to the phenomenon of ghost drivers. In this regard, a clear differentiation needs to be made between 'unintentional' and 'intentional' ghost drivers:

Unintentional ghost drivers

- ❖ poor visibility under unfavorable weather conditions;
- ❖ distracted drivers (caused, for instance, by different technologies such as TomTom, mobile phones, looking at babies on the back seats);
- ❖ old or unpaired drivers;
- ❖ dazed drivers (e.g. under the influence of alcohol or prohibited drugs);
- ❖ backward driving or turning maneuvers on the highway after incorrectly entering the highway or after missing an exit;
- ❖ drivers from different countries who are not familiar with local or European standards
- ❖ signalization and road arrangements;
- ❖ hard to follow signalization at the entrance and exit ramps;
- ❖ signing and markings of driving lanes temporarily unclear, because of road works.

Ghost drivers as consequence of a deliberate act

- ❖ suicide attempt;
- ❖ fraud attempt on the toll plaza;
- ❖ vehicles escaping the police control.

Concrete countermeasures developed and deployed on the ASECAP network

There are several measures available to help deter or prevent wrong-way driving and the accidents that may be directly caused. These measures include devices such as embedded sensors, video and flashing lights along with spikes or other physical barriers and other conceivable means of intervention. There is no one-size-fits-all solution to this problem given the very different causes to be tackled. In this regard, several countermeasures have been implemented to address the problem:

1. Reinforcing traffic signage and road markings (passive systems without detection) are the most diffused, being effective to unintentional ghost drivers and reliable in the long term;

On the other hand, some technologies and remote controlled devices have been tested and implemented:

2. dynamic detection and alarm signs (active systems with detection);
3. developing vehicle stopping systems coupled or not with detection devices.

In Austria, the “**Austrian Hand**” signal, a Black Hand draw, has been widely deployed. Given the success of this initiative, the “Austrian Hand” has been widely used in different European countries.

Austria



The number of reports for wrong-way driving remains considerably high: according to the radio station Ö3, approximately 400 cases per year occur in Austria. Nevertheless, barely 15% of radio announcements are validated by police observation – and wrong-way driving accidents play a less important role resulting in ten accidents a year. On the other hand, these accidents have very dramatic consequences and, therefore, their prevention remains a high priority in Austria. Compliance with the Austrian „**Wrong-way Driving Guideline**“ (RVS 05.06.31) differs according to the region, as it comprises a number of measures for slip roads in the regional road network which are only feasible in collaboration with the on-site responsible authorities.

ASFINAG continuously aims at improving monitoring and assessing those motorway junctions where wrong-way driving occurs more frequently. Such problem zones are treated immediately. At the same time, certain solutions to optically improve the road layout come into play, which currently cannot (yet) be found in the Austrian Guideline, such as active guidance elements (e.g. LED).

ASFINAG participates in relevant committees underlining the need to implement a multi-stage model for the design of motorway junctions in the Austrian Guideline – dependent on the risk potential and geometrical boundaries.

France



Source: ASFA (Professional association of Toll roads operators)

ASFA undertook some concrete analysis on accidents caused by ghost drivers on the French network between 2000 and 2016. These events represent 4,6% of all the fatal accidents in the national network. In order to address this issue, French concessionaires, together with the French Ministry of Environment and Transport, have elaborated and implemented a set of measures put forward by the national ministerial Committee on Road Safety in February 2008. These measures consist in:

- ❖ consistently improving road signs;
- ❖ improving the geometric profile of the road infrastructure near the entrance ramps;
- ❖ strengthening the directional arrows with changes in the composition of the road pavement near the service area entrance ramps;
- ❖ the installation of acoustic and visual devices/sensors for alerting purposes..

In 2009, ASFA has set l'*Observatoire National des contresens*, (National Observatory of "wrong-way driving") which is responsible for studying and analysing the issue of ghost drivers in order to improve the exchange of information amongst the concessionaires and the actual figures and measures undertaken.

The main objective of this concerted work is to have data and to analyse them to get a clear understanding on the phenomenon both from a quantitative and qualitative point of views.

Results and knowledge are the following:

- In 2015, there were 532 cases related to *ghost drivers* (348 in 2012, 422 in 2013), causing 45 accidents (33 in 2014). This work has been made additional to the one on accident analysis made by the toll road operator for each accident occurring on the network. This kind of accidents is better detected which partially explained the increase of numbers.
- Based on the analysis of fatal accidents caused by wrong-way driving over the period 2005-2015, few considerations have been put forward:
 - **Nearly 1 out of 2 fatal wrong-way driving accident occurred between 20 h and 6 am.**
 - **Highest percentage of old people:**
47 % of drivers are **over 65 years old**, **42 %** over **70 years old**, **27 %** over **80 years old**
 - **Many people involved were driving under the influence of alcohol or drugs:** Alcohol has been detected in 39 % of accidents on wrong-way driving and the average blood alcohol is 1.93 g/l.

The analysis carried out in France have underlined that wrong-way driving on motorway represents:

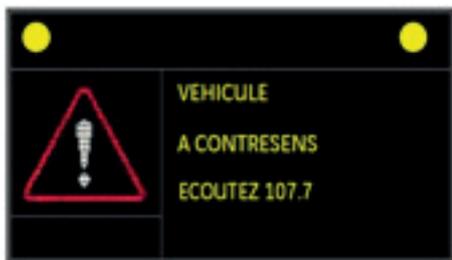
- ▶ 5.4% of killed people
- ▶ 4.5% of fatal accidents
- ▶ 0.2% of the total of accidents

Below, a chart highlighting the main measures undertaken by private concessionaires to address the phenomenon of ghost drivers:

Detection system	Devices with detection	
	Detection system	User detection alert system
<ul style="list-style-type: none"> • Classical signals • Enhanced signage • Light signals • Light barriers 	<ul style="list-style-type: none"> • Doppler radars • Automatic incident detection (Video) • Loops 	<ul style="list-style-type: none"> • Light signals (iode or flash) • Light barriere (spotlight) • Sound alarm

Extensive actions have been undertaken in order to :

- ▶ Provide harmonised messages to the drivers : VMS signs and common messages on specific motorway radio (FM 107.7)



(ghost driver : listen 107.7)



(danger : listen 107.7)

- ▶ Broadcasting of web spot on ghost driver
- ▶ Every year since 2014, several initiatives have been taken towards school driving, and insurance companies to enlarge the scope of actions.

Denmark



The phenomenon of ghost drivers is widely known also in Denmark. For this very reason, the Danish Road Directorate decided to install, 7 years ago, along many of the exit ramps of the Danish motorways, where ghost drivers were reported, the so-called “ghost gates”, by adapting these exit ramps in order to avoid their use by *ghost drivers*.

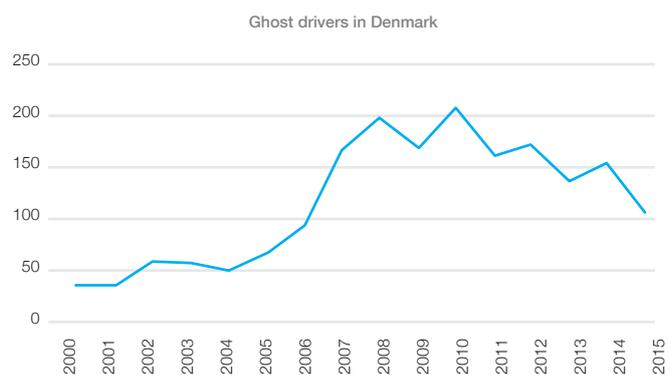
Denmark has in general adopted the Austrian Sign ‘*Austrian Hand*’, at many exit ramps adding flashing lights, strong colors and always the «forbidden entrance» sign. The flashing lights are activated every time a vehicle runs through, and they are working thanks to photovoltaic energy.

Moreover in Denmark, as in France, they have changed in several cases the composition of the pavement and put «no-access» panels near the entrance ramps. They have also introduced the “red running lights” along the line dividing the carriageways at double exit ramps, giving the particular optical effect of going towards the direction of the vehicle running in the wrong way, in order to alert it immediately. On 6 of these double exit ramps cameras have been installed and 29 “ghost drivers” have been observed stopping at these ramps.

For a short period (2010-2013), tests have been made at some exit ramps with raising spikes in the pavement activated by ghost drivers. These tests were stopped due to technical problems.

Concerning the figures, the *Danish Road Directorate* reported, over the period 1999-2009, 943 cases of *ghost drivers*. From a statistical point of view, in 100 cases, 72 are men and 27 are women. Moreover, 37 are caused by old people over 65 years old and 58 by people who are under the effect of alcohol and/or drugs or with mental diseases (4 cases).

The trend in the number of reported ghost drivers in the Danish motorways is illustrated in this figure. As it can be observed, a consistent increase has been experienced from 2004 to 2008 and a steady decrease between 2010 and 2015. This can be a direct consequence of the actions taken to stop ghost drivers at many exit ramps. However, it is very difficult to address the issue related to elder drivers and drivers under the influence of alcohol/drugs as these represent very serious and complex matters.



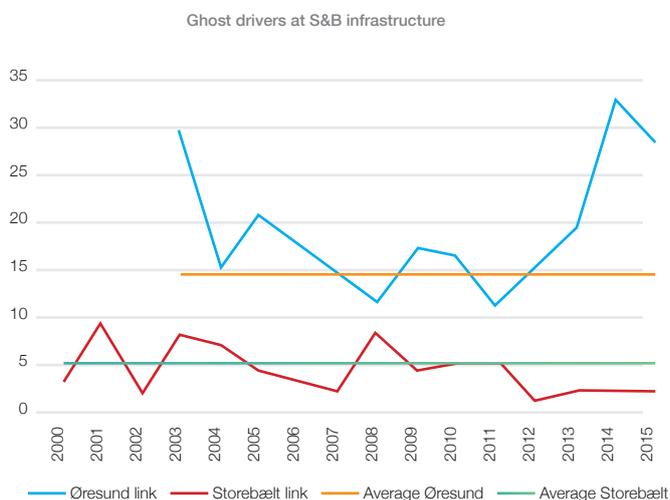
Ghost drivers at Sund & Bælts infrastructures (ASECAP member)

At the Storebælt fixed link as well at the Øresund fixed link several cases of ghost drivers have been reported by the control rooms (managed 24/7). As these motorways are toll roads, many of the ghost drivers are a consequence of wrong-way maneuvers at the entrance of the toll plaza by those drivers who do not want to enter into the toll road and use the emergency lane to find an alternative route.

The number of ghost drivers is shown on the graphic chart.

The number of ghost driver has been very low at the Storebælt link and this is the case also at the Øresund link until recently, where a building site close to the motorway in Sweden approaching the toll plaza has distracted many drivers who were performing wrong-way maneuvers started driving in the wrong direction. The Øresund link is connecting Denmark and Sweden close to Copenhagen airport and, over the period 2000-2003, the ghost drivers were mainly those people who wanted to go to the airport but, mistakenly, drove further in the tunnel to Sweden.

By using extra fixed signs along the urban motorway written in two languages “Last Exit in Denmark” and with additional painted signs on the motorway pavement with a similar message, the numbers of ghost drivers have been significantly reduced. Fortunately, ghost driving at both fixed Storebælt and Øresund links have resulted in no injuries or fatalities so far.



Slovenia



In Slovenia, the problem of wrong-way driving emerged recently due to the late construction of state's highway cross and, in part, due to the closed toll collection system. The problem gained the attention after opening the video surveyed short tunnel Golovec on the Ljubljana ring and of the intelligent highway section Kozina–Koper (June 2004) with video detection and surveillance cameras in tunnels and in some parts of the open highway. More frequent reports in public media (radio, TV) indicate that the problem has intensified after the introduction of vignettes, thus closing the toll booth stations on exit and entry highway ramps.

In the period 2012-2014, wrong-way driving was reported 373 times. According to the police data, there have been 3 fatalities in 2014.

The vast majority of wrong-way drivers correct their mistakes before causing a crash by simply turning around and heading in the right direction. None or little information is available on these ghost drivers' incidents that are resolved by themselves, because they are simply not recorded. Therefore, most of the information concerning wrong-way driving like origin of wrong-way movement and reasons for it to happen (poor traffic signalization in that sector of motorway, influence of alcohol and/or drugs, age of the drivers, an intentional act or a mistake due to a misperception of installed signalization, weather conditions, etc.) stem from the investigation of the occurred accident. Based on a small sample of 'observed parameters', it is not feasible to make good statistics according to the few data available.

DARS introduced on its network a large sign with yellow fluorescent background, red no entry signal and the Austrian hand with the visible sentence "NAPACNA SMER" ("WRONG WAY") underneath. These are posted on one side only of every exit ramp close to the junction with the highway. A second measure was to paint large white arrows on the road surface near the junction exit ramp/local road, pointing the right way.

An experimental dynamic microwave/video wrong-way detection system was installed on the exit ramp in the Koper freeway H5 towards Trieste.



In 2015 DARS carried out a wrong-way driving research covering the past 10 years. The main conclusions of this analysis are:

- The results show that the lowest number of wrong-way driving accidents occurred in March (20 or 5.36% of the total) and, on the other hand, most of them occurred in October (45 or 12.06% of the total). The results led to the conclusion that the lowest percentage of wrong-way driving accidents were recorded between February and June and the highest between September and January (49.6% of the total).
- It is also evident from the results that no day of the week stands out – though somehow more accidents were observed on Wednesdays and Saturdays.
- The results reveal a considerable «fluctuation» within a day. It is worth stressing that there are more accidents in the morning (from 8 a.m. to 1 p.m.: 27.3% of the total) rather than the afternoon (from 3 p.m. to 6 p.m.: 15.3% of the total), and especially in the evening/night time: from 6 p.m. to 3 a.m. - Approx. 40% of all wrong-way driving incidents!
- In 67 cases (18% of the total), the age of the drivers was recorded. The analysis shows that as many as 58% of all violators were aged over 60!
- In 106 cases (28.4% of the total), information on gender was recorded. In view of the results it can be established that there is no significant difference in terms of gender of wrong-way drivers (approx. 60% were men).

- The majority of violators were personal car drivers (94%), 3% presented heavy vehicle drivers, 2% van drivers and 1% motorbike drivers.
- In 68 cases (18.2 % of the total), 31% were driving under the influence of alcohol and 3% under the influence of drugs.

DARS constantly invests into different measures in order to effectively tackle this issue. Based on this research analysis several measures have been put forward:

- I. better traffic signs;
- II. upgrading of traffic counters (for detecting wrong-way drivers);
- III. separation of traffic lanes at junctions.

Italy



In Italy, to tackle the ghost drivers phenomenon, an enhancement of traffic signage was decided, installing (experimentally) a further “no-entry” sign on the interchanges and on the entrance ramps to service areas and sand parking/rest areas.

At first, the «Austrian Hand» signal (with the Black Hand drawn) was used, lately replaced and replaced with another one sign more coherent with the National Road Code's application Regulation (“no entry” sign on a fluorescent yellow background and the word «ALT»).



Based on the accident data provided by the Road Police, it can be observed that, since 2008 (when this new signal was introduced) there was a reduction of the detected accidents which then have been remaining more or less constant in the following years.

Taking into consideration the 2009-2013 period, the detected accidents involving at least one ghost driver were about 38 per year on average, equivalent to approximately the 0.5% of the total accidents with consequences to people (injured/dead) registered on the tolled network in the same years. Out of these 38 accidents, 12.5% were fatal. In that given period, fatal accidents with ghost drivers represented on average the 2.3% of all the fatal accidents along the tolled motorway network.

If a ghost driver is detected (e.g. by means of phone calls by other drivers, direct reports by operating personnel on the road, images from video cameras systems, etc.), in addition to the prompt intervention of the Road Police (which is the only specialized entity entitled and allowed to operate on the motorway network), the concessionaires activate a proper and harmonized information to the drivers by means of VMS and FM radio broadcasting (i.e. the dedicated motorway channel and the other national and local channels regularly used).

More recently, in 2014, 337 cases occurred in Italy causing 29 fatalities and 251 injuries. Last year, nearly 300 cases of ‘ghost drivers’ have been recorded in Italy: 18 people have lost their lives and 139 have suffered injuries. The primary cause is related to drivers under the influence of alcohol or drugs.

Spain

Accidents along the 1509 Km of the motorway network managed by ABERTIS are constantly assessed and studied by the responsible department of ‘mobility and road safety’. This department aims at decreasing the number of road accidents in order to provide the highest standards of safety.

In 2011, a study was carried out to analyse the consequences of accidents caused by ghost drivers. 5 specific cases were examined which occurred on the motorway, two of them with casualties.

The study concluded that the main profile/factors involved in these accidents were:

- ❖ **Driver:** foreign drivers, elderly drivers, drivers under the influence of alcohol or other prohibited substances;
- ❖ **Placement:** access and exit of toll motorways with free flow, service areas and entrance ramping to a toll station.

This phenomenon, which has been experienced since the construction of motorways, is currently being seen in many European countries as shown in the following table:

Year	Country	N. of Alerts of ghost drivers	Km-motorway	Km of detection
2012	Germany	1,914	12,845	0,15
2012	France (ASFA)	348	8,891	0,04
2012	Spain (Abertis)	124	1,509	0,08

Table 1. Comparison in the number of signal alerts of vehicle going in the wrong direction per km

The index of alert per km - motorway is represented, as a mean of comparison, in table 1. The figures underline a greater index on the German motorways which include all types of motorways (with physical barriers or open motorways).

Currently, on the Abertis motorways, the information of warning/alert concerning ghost drivers comes from different sources: calls from other drivers, sightings from staff working for the motorway company or/and partner organizations, automatic alert detection systems in tunnels and emergency centre 112.

Year	Number of occurrences
2012	124
2013	118
2014	137

Table 2. Number of warnings/alerts concerning vehicles going in the wrong direction

Warnings/alerts concerning this phenomenon occur more often during the holiday season from July to September, representing 34% of the total events.

Distribution per month of the year											
January	February	March	April	May	June	July	August	September	October	November	December
5%	5%	6%	6%	7%	9%	13%	11%	10%	8%	9%	10%

Table 3. Percentage of the distribution of warnings/alerts of ghost drivers during the year

Concerning the day of the week, 33% of the warnings/alerts are received on Monday or Sunday. The day with the lowest concentration is Wednesday with 11%.

Distribution per day of the week						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
16%	12%	11%	14%	16%	14%	17%

Table 4. Distribution of Warnings/alerts per day

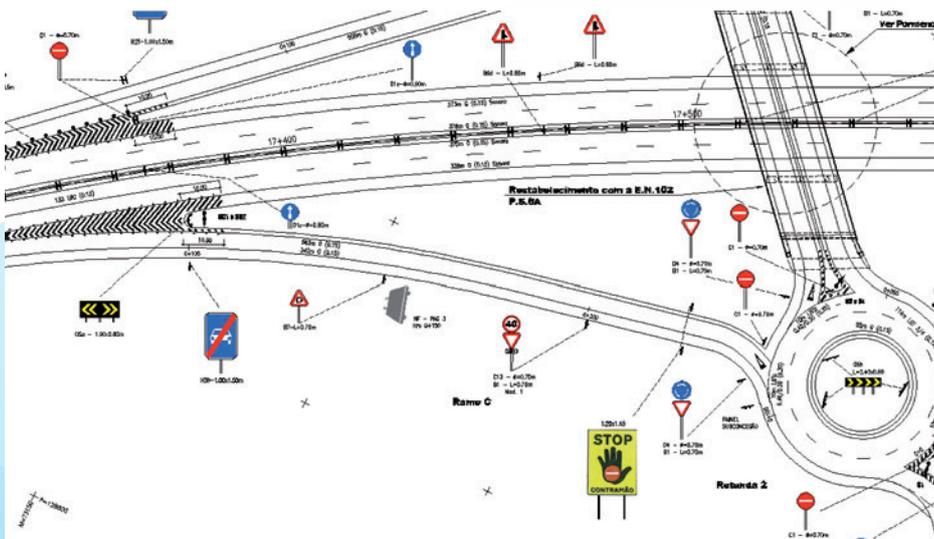
Portugal

APCAP undertook some concrete analysis, concerning the accidents caused by ghost drivers on the Portuguese network between the decade 2005-2014. In order to address this issue, Portuguese concessionaires, together with the grantor, have elaborated and implemented some measures:

- ❖ Consistent improvement of the road signs;
- ❖ Installation of visual devices/sensors for alerting purposes.

On the photos below some examples can be clearly seen.

There is no systematic data available concerning ghost drivers' accidents. On the ghost drivers' cases examined, the reasons this is happening are normally related to the abuse of alcohol and/or drugs, the age of the drivers and distraction.



Croatia

On the motorway network (1.100 km) maintained by the Company HAC ONC LTD, 152 cases of wrong-way driving were reported in 2015.68 of them were false reports and could not be classified as wrong-way driving, as the detailed road inspection conducted by the road operator patrol and video-surveillance did not find any such case.

The data on traffic accidents in 2015 have been collected by the Ministry of internal affairs. The official statistics of the Ministry of internal affairs are available only for part of the network i.e. for the Rijeka-Zagreb Motorway Company(187 km) but not for the rest of the network under HAC ONC. These data confirmed that in 2015 none of above mentioned wrong-way driving cases resulted in traffic accidents, while in the 2011-2014 period, the official data from the Ministry of internal affairs provided the following statistics on wrong-way driving accidents: there were 6 accidents on Rijeka-Zagreb Motorway caused by wrong-way driving of which 50% were caused by drivers under drug or alcohol influence. One of these accidents resulted in 1 fatality and 3 heavy injuries.



Croatia introduced the «Austrian black hand sign» model and implemented it on critical locations such as junctions and rest areas exits, as shown below:

This was accepted in 2012 by all the concessionaries in Croatia, and was implemented through the Procedure which determines settings of traffic signalization and actions of operating services. This Procedure was adopted by HUKA's Technical Committee for Traffic and Safety.



Number of cases with wrong-way driving could be reduced by separating the opposite directions with a physical barrier and an adequate static signalisation. This solution was implemented on the Rijeka bypass junctions. The road marker installation, as shown below (the so-called «snake»), significantly reduced the number of cases where vehicles entered in the wrong direction on the Rijeka bypass.

Situations where road operator cannot prevent drivers from entering in the wrong direction are U-turnings. While analysing dangers that are present in the U-turning cases and the methods of warning the drivers who are approaching the forthcoming danger, HAC ONC is considering the idea of a new traffic sign that could be applied in those dangerous cases.



Proposition 1



Proposition 2



Proposition 3



A01 sign

The current and relevant Book of regulations regarding traffic signs, signalisation and equipment on the roads does not provide this kind of traffic sign for this specific road danger, but within the Procedure of managing the uncommonly road situations (Wrong-way driving, HUKA, 2012), the A01 sign is used. The Book of regulations regarding this sign says: «The «danger on road» (A01) sign marks the proximity of the road section or segment of the road on which certain road danger exists, for which there's no special road sign marking the danger within the Book of regulations. The road sign should be supplemented with an additional board which explains the type of danger threatening ahead...»



Article 22 of the Book of regulations says that the road danger sign should be expanded with an additional board explaining the type of threat. When used on the LED traffic/VMS sign, the additional information provided is textual, limited to 7 letters or symbols entry. If there is no adequate description of the specific road danger, the Book of regulations assigns the word «OPREZ» (Eng. «CAUTION») which still does not specify the type of danger.

Each one of the above mentioned propositions could demonstrate the type of danger much clearly, so the widely spread discussion regarding this topic should be unfolded at ASECAP level.

Croatian Motorways LTD decided to test the upgraded «Austrian black hand sign» by implementing a radar which recognizes forthcoming vehicles and alarms the driver by flashing lights implemented in and on the sign itself. This initiative is still in a test period, therefore no results are available at the moment.



In order to prevent the opposite entrance of users at the motorway interchanges, various measures may be implemented including:

- Strengthening of the Directional Signing;
- Reshaping of the interchange geometry in order to discourage user's entrance;
- Strengthening the signing with warning messages (ex. Wrong Way) as on the pictures below:



However, given that the opposite entrance of a vehicle may happen, special instructions have been issued by HELLASTRON members regarding the wrong-way driving accident management and at defining the required actions by the company's personnel - in cooperation with the competent authorities-, for the prevention of an eventual accident and for the protection of users and the company's personnel.

The wrong driving of a vehicle on the motorway has many unpredictable variables (user's disorientation, regular movement on the left lane, possibility of u-turn before his detection and of course possibility of serious accident of head collision).

It is a dynamic incident, whose location is not stable on the road, its confrontation requires fast actions and actions readjustment by the TMC personnel and by the field personnel, always according to the available information and current conditions (traffic density, traffic speed, motorway morphology, i.e. 2 or 3 traffic lanes, position of available forces, vehicle's distance from tunnels and toll stations etc.).

The main instructions are summarized below. It is considerably important to stress that the following basic instructions for the incident confrontation intend to protect the users and the field personnel while, in any case, the final actions should be implemented showing the necessary judgment and special attention.

For the confrontation of this incident and according to the available information and the vehicle's location, the following basic tools can be used:

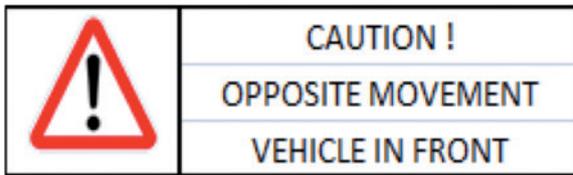
- ❖ The tunnel areas cameras, MVMS and dynamic signing (VSLs and LCS) equipment
- ❖ The open road cameras, MVMS or/and LCS equipment [where available]
- ❖ The toll stations, personnel and cameras
- ❖ The company's field personnel
- ❖ The Traffic Police

In case of wrong-way driving detection by a third-party information or by a project camera (tunnels, tolls or open road):

A. the TMC:

- a. Proceeds to the immediate traffic closure, by activating the dynamic signing of tunnel areas with the respective MVMS or by interrupting the transactions in the closest to the incident Toll Station;

Indicative message to the VMS:



- b. Informs the closest Patrol Officer and according to his position, gives him the proper instructions for dealing with the incident;
- c. Informs the second Patrol Officer or/and Intervention Team (estimating their time of arrival according to their location) for their contribution to the incident, by closing the entrance to the closest previous I/C, so that vehicles cannot enter from this entrance to the contra-flow vehicle;
- d. Informs the Traffic Police and
- e. Constantly monitors the vehicle through cameras [where available] until the end of the incident.

According to the available information regarding the incident's course, the company's forces position and the Traffic Police forces location, it escalates the mobilization with the available means, by closing the traffic in other interchanges, according to the above.

Outing the incident, it remains alert and makes every effort to naturally detect the wrong-way driving (through cameras, Traffic Police, other field personnel).

In case a reasonable period of time passes without being able to detect the incident (calculated based on the relevant distance between the «detection» location and the traffic immobilization location), due to possible U-turn of the vehicle or exit to an interchange, then the TMC releases the traffic (by giving the proper instructions to raise the physical/electronic closures).

B. The field personnel - moving with an equipped company vehicle:

Can interfere to the management of such an incident either because it has detected it during its movement or because it has been informed by the TMC.

Their «optical contact» with the contra flow moving vehicle can happen when their vehicle is in the same or opposite traffic direction with the said vehicle.

In any case, their actions are described below:

B.1. Field personnel moving in a different traffic direction with the contra flow vehicle:

- Informs the TMC about the exact position of the contra flow vehicle and for its movement (traffic lane, speed).
- Moves his vehicle to the left lane of his traffic direction, activating the warning signs for left lane closure and moves in parallel (and slightly ahead) of the contra flow vehicle.
- With the luminous and sonic means of his vehicle tries to inform the contra-flow vehicle driver, in order to interrupt his course and move to the EL, while keeps the sound means operating, trying to warn the normally moving drivers in the opposite traffic direction.
- Thus, he «accompanies» the incident until it is immobilized, while regularly informing the TMC.

B.2. Field personnel moving in the same traffic direction with the contra flow vehicle:

In this case he expects to find «in front of him» the moving vehicle and possibly on the left lane. For this reason, he tries to slow down and eventually immobilize the traffic as follows:

- He activates the luminous means of his vehicle, raises its FLR in «X» position and puts on his VMS the message «DANGER-CLOSED ROAD», while progressively - and according to the traffic conditions - moves his vehicle to the right lane, by gradually slowing down and preventively stopping the traffic.

In case of arrival and detection of the contra flow moving vehicle, he guides the user to U-turn and immobilizes his vehicle on the EL. Then he also parks protecting the vehicle on the EL and releases the traffic while at the same time informs the TMC.

Conclusion

Over the last 15 years, the number of fatalities on the ASECAP network has decreased by more than 60 % and the ASECAP network represents the safest road network in Europe. Nevertheless, some new phenomena are rising and they have to tackle with timely and adequate efforts. This is the case of ghost drivers because of the great danger they pose to road safety in different Member States. It is therefore becoming an issue which urges to be addressed at European level. The data collected by several ASECAP members underline the increasing numbers of accidents and, related fatalities, caused by ghost drivers on toll motorways in Europe.

The causes of this phenomenon are different and they are very difficult to be tackled given their very different nature and the social aspects involved. Nevertheless, toll road operators have been proactive in studying this phenomenon over the last years and they have already started taking concrete actions to prevent the very harsh consequences it has in terms of loss of human lives and serious injuries. Well targeted and long-term initiatives at European level could be very positive in raising awareness amongst European citizens and in supporting the deployment of real solutions across the different Member States.

Concrete examples of traffic signage and road markings



Austria (Source: ASFINAG - Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft)



Croatia (Source: HUKA - Hrvatska udruga koncesionara za autoceste s naplatom cestarine)



Denmark (Source: SUND & BÆLT Holding A/S)



Slovenia (Source: DARS - Družba za Avtoceste v Republiki Sloveniji d.d.)



“ “ Very serious accidents
have been directly caused
by “ghost drivers”
across Europe ” ”



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