INTERNATIONAL ROAD CONGRESS

Innovation in Road Infrastructure

INTERNATIONAL ROAD FEDERATION
FÉDÉRATION ROUTIÈRE INTERNATIONALE

ADVANCED TECHNOLOGY not only for WORKZONE SAFETY

- Liliane Krafczyk
- Key Account Manager Eastern Europe
- Volkmann & Rossbach GmbH & Co. KG – Germany

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Executive Summary

Workzones and other Temporary Modifications of the Road Network as Black Spots for Fatal and Severe Accidents

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5. Mobile or Temporary Steel Barriers
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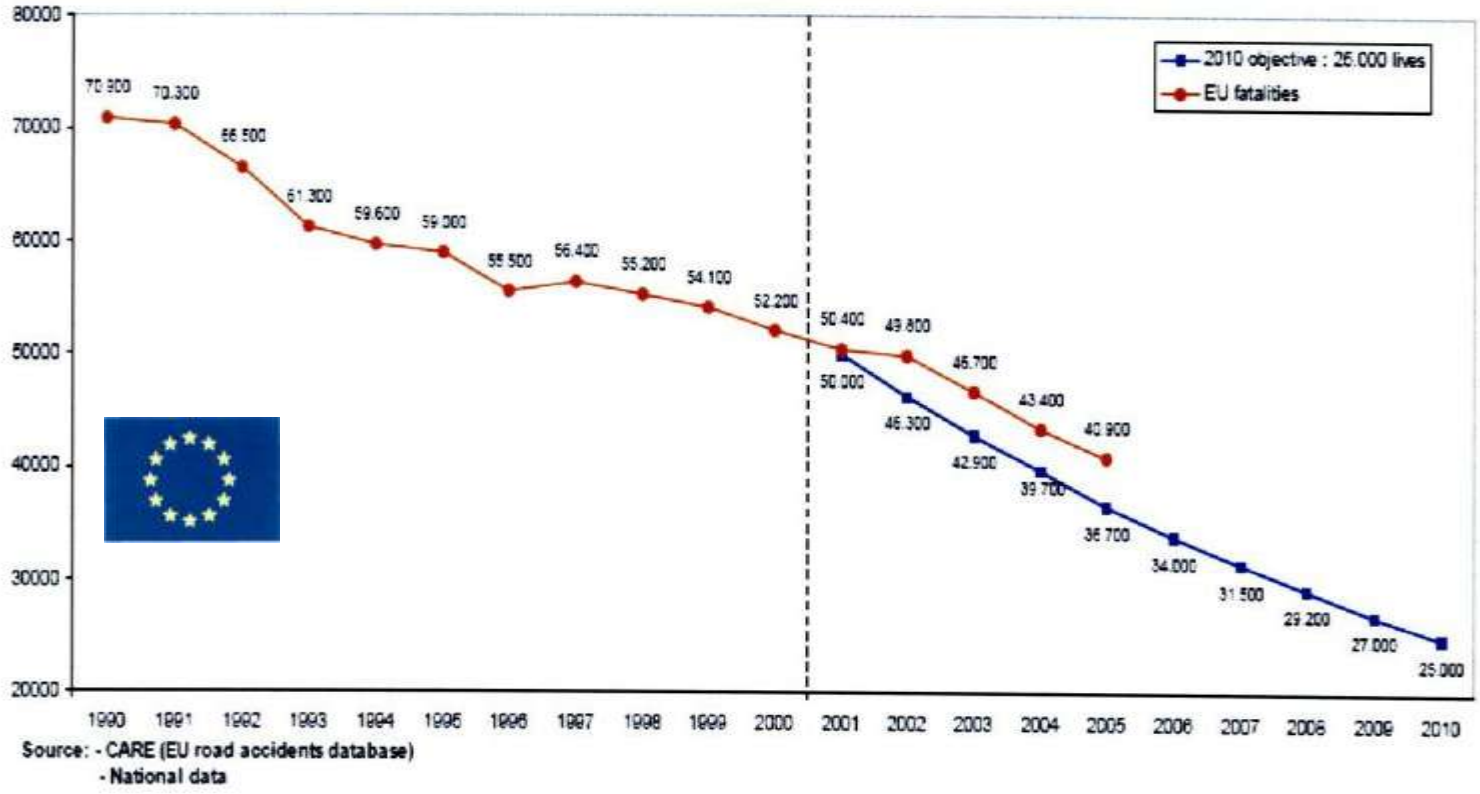
General Remarks

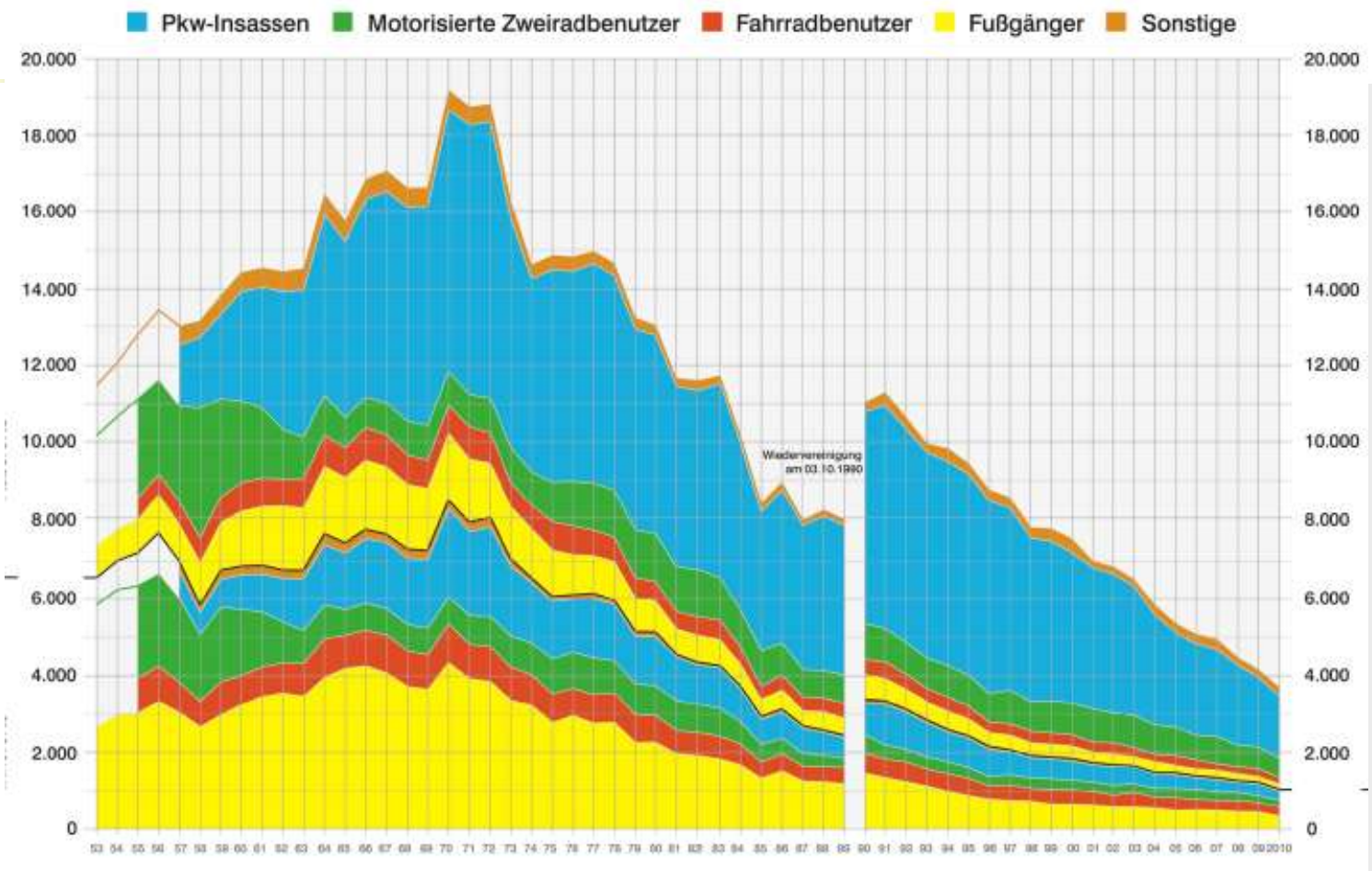
- 2001 - European Union introduces Road Safety Action Program. Target: 50% reduction of fatalities until 2010.
- To reach goal, most nations concentrate efforts on accident blacksports like bridges, structures, steep slopes and workzones.
- Most critical blackspots - according to most national research projects - are workzones.

EU Fatalities - Evolution 1990-2010



Despite the change of conditions by the joining of 10 new members, the actual decline of fatalities is still quite close to the objectives.

Example Germany - fatalities 1953-2010



Germany ranks among the countries with the largest decline of road fatalities within the European Union.

Most recent Research…

Research Project *ARROWS*

(**A**dvanced **R**esearch on **Ro**ad **W**orkzone **S**afety Standards in Europe 1996 – 1998)

and

Euro Test Research Programme

(carried out in 2005 by ADAC, the German Automobile Club, in cooperation with the Clubs of 14 EU-Countries and under the patronage of FIA)

..and ist Results

Workzones and other Temporary Modifications of the Road Network are with reference to their exposure to accidents

- underestimated
- extremeley dangerous (fatality risk: + 50%)
- in most of the cases inadequate protected

Means to improve Workzone Safety

Status Quo in most of the countries world-wide:

Domination of attention – raising and guidance – related systems (like cones, bollards, road studs, tapes and chains which provide no protection at all)

and

Systems for sheer stopping or blocking of impacting errant vehicles (like traditional concrete barriers) neglecting the protection of the occupant in most of the cases and causing due to their high weight quite a lot of logistical problems on site.

Getting blackspots safer

To get critical blackspots under control, systems should

- provide state-of-the-art safety
- be tested successfully to int. (EU) Standards
- have proved their efficiency on global scale
- be seldom or not applied in your country so far
- be financially affordable with high efficiency
- be easy to handle with reduced efforts and costs for transport, assembly and disassembly

Most significant contribution to improvement of workzone safety is realized by

PROTECTIVE DIVICES

in combination with

REFLECTING ELEMENTS for high visibility and guidance

These systems are known as…

Mobile Barriers

or

Temporary Barriers

- Protective Steel Barriers as the most efficient Safety Devices with immediate Effect to Reduction of Fatal and Severe Accidents

- Intensive research and development of protective and mobile systems since 1985 and their extensive application in workzones has proven that Mobile Steel Barriers have the highest protective effect, which is the overall aim of our efforts to improve Roadside Safety

Some of the systems applied on our roads


Witzel

Classes acc. to EN 1317-2

Containment levels		Acceptance test
Low angle containment	T1 T2 T3	TB 21 TB 22 TB 41 and TB 21
Normal containment	N1 N2	TB 31 TB 32 and TB 11
Higher containment	H1 H2 H3	TB 42 and TB 11 TB 51 and TB 11 TB 61 and TB 11
Very high containment	H4a H4b	TB 71 and TB 11 TB 81 and TB 11
Higher containment – Enhanced safety	L1 L2 L3	TB 42 and TB32 and TB 11 TB 51 and TB32 and TB 11 TB 61 and TB32 and TB 11
Very high containment – Enhanced safety	L4a L4b	TB 71 and TB32 and TB 11 TB 81 and TB32 and TB 11

Tests acc. to EN 1317-2

Test	Impact speed (km/h)	Impact angle (degrees)	Total mass (Kg)	Type of vehicle
TB 11	100	20	900	Car
TB 21 TB 22 TB 31 TB 32	80 80 80 110	8 15 20 20	1 300 1 300 1 500 1 500	Car Car Car Car
TB 41 TB 42 TB 51 TB 61 TB 71 TB 81	70 70 70 80 65 65	8 15 20 20 20 20	10 000 10 000 13 000 16 000 30 000 38 000	Rigid HGV Rigid HGV Coach Rigid HGV Rigid HGV Articulated HGV


30.11.2004

Conclusions

- Workzones and similar types of temporary modifications of the existing road network are traditionally very much exposed to road accidents.

- Protective Systems like Mobile Steel Barriers with different containment levels like MiniGuard and VarioGuard are the most adequate Safety Devices with immediate effect to the reduction of fatalities and severe injuries.

Outlook: Road Safety is

- Vehicle Driven
- Education Driven
- Infrastructure Driven

Final request

- Fatalities and severe injuries are a high burden for the society. It is your responsibility to reduce this burden by adequate and highly efficient decisions.
- Make the application of protective safety systems for workzones, deviations and roads a mandatory element of your Tenders and their application an essential part of your Maintenance Management Concept.

Many thanks for your attention