



**ITA-COSUF**

ITA Committee on Operational  
Safety of Underground Facilities

October 2009

## **FINAL PROGRAM**

### **ITA-COSUF Internal Workshop on Safety Challenges, 5 November, 2009**

Venue: Hotel Metropole Address: 85 Quai Joseph Gillet, Lyon, 69004, France
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13:15-14:30 (Joint Lunch with Participants of Road Tunnel Safety Forum),  
14:30-18:00 (Workshop on Safety Challenges)  
18:00-18:30 (ITA COSUF Award Celebration)

The next ITA-COSUF Internal Workshop on Safety Challenges will be dedicated to applications of new operational safety provisions in underground space use, or in improved safety management procedures to enhance operational safety.

#### **Program of the Workshop**

##### **Opening**

14:30 **Ben van den Horn** (ITA COSUF AG1 Coordinator)

##### **Session 1: New Safety Provisions in Tunnel Operation**

**Chairman: Niels Peter Hoj**

14:35 **Steve Collins (Traficon France):** *The 10 Steps to Successful Deployment of Automatic Incident Detection Systems in Tunnels.*

15:05 **Juha Huovilainen (Marimils):** *Old-fashioned Regulations not Supporting Development and Utilization of Modern Safety Technologies.*

15:35 **Kees Both (Efectis Netherlands):** *What Cracks Does Not Break – revisited.*

16:05 **Coffee break**

##### **Session 2: Recent Developments in Risk and Safety Management**

**Chairman: Ben van den Horn**

16:25 **Niels Peter Hoj (HOJ Consulting GmbH):** *Challenges in Risk-Based Design of Road Tunnels*

16:55 **Christiane Lellig (Basler & Hofmann):** *Should we educate the user to the tunnel or adapt the tunnel to the user?*

17:25 **Alain Picard (Groupe APRR):** *Conclusions of the European Forum of Road Tunnel Safety Officers*

##### **Closing remarks**

17:55 **Felix Amberg (ITA COSUF Chairman)**

18:00

## Summaries

**Steve Collins (Traficon France):** *The 10 Steps to Successful Deployment of Automatic Incident Detection Systems in Tunnels*

Because of increasing traffic volume and complexity, road safety is now more than ever a hot topic on the government agenda. Traffic managers at all levels are organizing today debates with the following central topic: how can we better protect the road user? 'More than 200.000 people killed each year in traffic' is simply no longer acceptable.

Traffic managers must look for intelligent, proven systems that have demonstrable safety benefits. Video Image Processing technology is today seen by many people as an ideal solution. This video detection technology detects faster than any other detection technology. By analyzing the video images in real time, you immediately receive a clear image of potentially dangerous situations. Result: the danger of the incident is substantially reduced and secondary impacts are prevented. In addition, the combination of both numerical data and visual image control sets video detection apart from other systems.

Implementing ITS projects often involves detailed promises to manage and to control the flow of vehicles. However, if not familiar with this intelligent technology, setting up a video detection system for the first time is not that easy and looking for the right partners is therefore very important. The aim should be to find experts who will guide clients from A-Z throughout the various stages of their project. Before implementing an automatic incident detection (AID) system, a detailed outline of what is required is necessary – as is a realistic timescale.

As a long-standing player with more than 350 tunnels worldwide equipped with a video detection system, Traficon shares its experiences by summarizing the key steps for starting and implementing an AID system. This presentation enumerates and discusses in great detail the 10 most vital guidelines to make sure performances match expectations.

**Juha Huovilainen (Marimils):** *Old-fashioned regulations not supporting development and utilization of modern safety technologies*

The demand for safety and emergency systems has risen steadily during the last couple of years because of recent tragedies in tunnels. These accidents have increased an urgent need for intelligent safety systems to provide critical rescue information and emergency lighting. Current passive emergency systems, cannot adapt to changes in real-time conditions and do not provide enough light, control, guidance, or information to people in danger. Old-fashioned legislations and regulations are based on old and conventional lighting technology without any intelligence and not supporting development and utilization of modern technologies for evacuation purposes. Low Location Lighting (LLL) safety systems are available offering real-time, intelligent control and guiding indication improving safety in difficult evacuation environments like tunnels. Due to the unique software and guiding light effects, these systems will automatically control and guide people towards the safest escape route and away from danger, when integrated with other safety systems such as fire detection, chemical or biological detection or other sensors. This presentation introduces the MILS-system: a dynamic and intelligent evacuation system based on LED-stripes.

**Kees Both (Effectis Netherlands):** *What cracks does not break - revisited*

The old (Dutch) saying what cracks does not break, refers to ice skating in winter times: you were perceived safe even if you heard the ice beneath you crack, since the cracking was in its own right no reliable identification of eminent danger. With two examples in civil engineering of concrete structures popular in tunneling and underground car-parks, the old Dutch saying appears less

applicable to other materials than ice. The presentation will highlight the findings obtained in lab and desk research into cracking of fire exposed immersed concrete tunnels and a real fire investigation in a car park in Rotterdam. The first item is related to the award event, part of the same COSUF event, and illustrates a lurking problem of large cracks at the unexposed side of tunnels, especially relevant for immersed and cut-and-cover tunnels. The second issue addresses the failure mode of hollow core pre-stressed slabs. The observed brittle failure mode in recent real fires as well as in some laboratory tests have a bearing on the current design codes for such slabs; especially in cases where emergency response services need to rely on structural integrity for their actions.

**Niels Peter Hoj (HOJ Consulting GmbH):** *Challenges in Risk-Based Design of Road Tunnels.* More and more tunnels with long lengths, high traffic, underground intersections and other challenging features are designed and constructed. At the same time it is required that the safety is not only maintained but also improved. The requirements given in the guidelines and codes can often not be fulfilled or they are not covering the special problems at hand. In this situation, it is often expected that the risk based design can solve the problems. This, of course, is a challenge for the risk analyses.

**Christiane Lellig (Basler & Hofmann):** *Should we educate the user to the tunnel or adapt the tunnel to the user?*

Human behavior is as critical to tunnel safety as a tunnel's technical outfitting. Nevertheless few tunnel safety research projects approach the subject of tunnel safety comprehensively, i.e. investigating both technical and psychological aspects simultaneously. This presentation will focus on all factors that impact human behaviour (road users, tunnel operators, rescue staff) in tunnels. Insight will be given on how tunnel safety can be improved by influencing human behaviour such as the tunnel design, processes, communication and training.

**Alain Picard (Groupe APRR):** *Conclusions of the European Forum of Road Tunnel Safety Officers*

Alain Picard will report about the results European Forum of road tunnel safety officers, who are responsible for the coordination of preventive and safeguard measures to ensure safety of tunnel users and operational staff. This presentation will clarify the first five years of experience with the European Directive 2004/54/EC of 29 April 2004 on minimum safety requirements for tunnels in the trans-European Road network. Especially with regard to the tasks, functions and responsibilities of the independent Safety Officer.

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