

International ISAP Symposium on

Asphalt Pavements and Environment

August 18th–20th, 2008
Zürich, Switzerland

Final Program

Welcome and «Grüezi»

Welcome to the International ISAP 2008 Symposium on Asphalt Pavements and Environment in Zürich-Oerlikon! It is a great pleasure to say a warm Swiss «Grüezi» to many experts from all over the world who followed our invitation for sharing knowledge, experience and new ideas on how asphalt pavements can more actively contribute to an environmentally friendly, sustainable development. Our way of life is characterized by globalization and human needs of networking and mobility where asphalt roads play and still will continue to play a major role. I hope that this symposium will contribute to an environmentally even more beneficial use of asphalt which is a precious product from natural resources that should not be wasted but has to be taken care of. In this sense, I hope that this Symposium will also be able to trigger the creation of a new ISAP Technical Committee on this subject.



I would like to express my thanks to all local helpers and all members of the scientific committee for their effort and all sponsors for their valuable contribution; many thanks in particular to the secretary of the Symposium, Mrs. Michèle Köhli, who took much of the load of organization.

I am very grateful to the Director of the Swiss Federal Road Office FEDRO, Dr. Rudolf Dieterle, for serving as guest speaker during the opening session and to Prof. Gerhard Kennepohl for accepting the challenging task to hold the key note lecture. A big «Dankeschön» also to all authors and speakers and chairpersons of the sessions who invested many hours to make this symposium happen!

I wish all participants and accompanying guests a successful and motivating stay in Zurich-Oerlikon. We will try our best to make your stay in Switzerland as pleasant as possible. If you need any assistance, please feel free to contact one of the native participants.

A handwritten signature in blue ink, appearing to read 'M. Partl', written on a white background.

Prof Dr. Manfred N. Partl

*President of ISAP
Empa, Swiss Federal Laboratories for Materials Testing and Research
Road Engineering / Sealing Components
Ueberlandstrasse 129, CH-8600, Dübendorf, Switzerland
Phone: +41 44 823 55 11; Fax: +41 44 821 62 44
www.empa.ch/abt113*

Advisory Committee

Manfred N. Partl

Chairman, Empa, Switzerland

Gerald Huber

Heritage Research Group, USA

Eugene Skok

ISAP, AAPT, USA

Guy Doré

Université Laval, Canada

Gerhard J. A. Kennepohl

University of Waterloo, Canada

David E. Newcomb

NAPA, USA

Scientific Committee

Omar Abd El Halim
Carleton University,
Canada

Gordon D. Airey
University of
Nottingham, UK

Hussain Al Khalid
University of
Liverpool, UK

Imad Al-Qadi
University of Illinois,
USA

Silvia Angelone
University of Rosario,
Argentina

Hussain Bahia
University of
Wisconsin, USA

Wojciech Bańkowski
IBDiM, Poland

**Liedi Legi Bariani
Bernucci**
Universidade de
São Paulo, Brazil

Egbert Beuving
EAPA, Belgium

Ray Brown
USA

Mike Butcher
Dept. of Transport
South Australia, Aus-
tralia

William G. Buttler
University of Illinois,
USA

Francesco Canestrari
Università delle
Marche, Italy

Alan Carter
ETS, Montréal,
Canada

Andrew Collop
University of
Nottingham, UK

John d'Angelo
FHWA, USA

Jo Sias Daniel
University of New
Hampshire, USA

Chantal de la Roche
LCPC, France

Hervé di Benedetto
ENTPE, France

John Emery
John Emery
Geotechnical
Engineering Ltd.,
Canada

Gilda Ferrotti
Università delle
Marche, Italy

László Gáspár
KTI Inst. for Transport
Science, Hungary

Zhogyin Guo
Tongji University,
China

John T. Harvey
University of Cali-
fornia at Davis, USA

R.Gary Hicks
California State Uni-
versity, Chico, USA

Kenji Himeno
Chuo University,
Japan

Shin Che Huang
Western Research
Institute, USA

Martin Hugener
Empa, Switzerland

Ulf Isacson
Royal Institute of
Technology, Sweden

Kim Jenkins
University of
Stellenbosch, South
Africa

Agnès Jullien
LCPC, France

Robert Karlsson
VTI, Sweden

Niki Kringos
Delft University of
Technology,
The Netherlands

Rita B. Leahy
Nichols Consulting
Engineers, USA

Leni Leithe
Petrobras Research
Centre, Brazil

Andreas Loizos
NTUA, Greece

Sam Maccarrone
ExxonMobil
Asia-Pacific Pte. Ltd.,
Singapore

David Mangan
Chadwick T&T,
Australia

Mihai Marasteanu
University of
Minnesota, USA

Fernando Martinez
University of Rosario,
Argentina

Antonio Montepara
Università degli studi
di Parma, Italy

Marco Pasetto
Università di Padova,
Italy

Bryan Pidwerbesky
Fulton Hogan Ltd.,
New Zealand

Jean-Pascal Planche
Total, France

Laurent Porot
Shell Global Solutions,
France

Ian Rickards
Pioneer Road Services
Pty Ltd., Australia

Charles W. Schwartz
University of
Maryland, USA

Hilde Soenen
NYNAS Bitumen,
Belgium

Jorge Sousa
Consulpav, Portugal

Bruce Steven
University of
California at Davis,
USA

Lijun Sun
Ministry of
Education, China

Dariusz Sybilski
IBDiM, Poland

Gabriele Tebaldi
Università degli studi
di Parma, Italy

Sandor Toth
Hungary

Ann Vanelstraete
Belgian Road
Research, Belgium

Jia Yu
Jiangsu Transpor-
tation Research
Institute, China

Final Program

	17th August	18th August	19th August	20th August			
8 h		Welcome & Registration					
9 h			Session 4a	Session 4b	Session 8a	Session 8b	
10 h			Opening Plenary Session				
11 h		Coffee	Coffee	Coffee			
12 h		Session 1 (Plenary)	Session 5a	Session 5b	Session 9a	Session 9b	
13 h		Lunch	Lunch	Lunch			
14 h							
15 h		Session 2a	Session 2b	Session 6a	Session 6b	Session 10a	Session 10b
16 h		Coffee	Coffee	Coffee			
17 h	Welcome & Registration	Session 3a	Session 3b	Session 7a	Session 7b	Session 11 (Plenary)	
18 h						Closing Session	
19 h	Icebreaker Reception	Symposium Reception (ETH main building)					
20 h		Discover Zurich Guided Tours	Banquet				
21 h		Open Night					
22 h							

Welcome and Registration

Sunday, August 17th, 2008

16.00 Welcome and Registration

18.00 Icebreaker Reception

19.30 End

Track A, Room: Zürich

Monday, August 18th, 2008

08.00 Welcome and Registration

09.00 Opening Plenary Session, Rooms Zürich and Basel

Welcome speech by the Director of Swiss Federal Roads Office, ASTRA (FEDRO)

Rudolf Dieterle

10.00 Coffeebreak

11.00 Session 1 (Plenary), Rooms: Zürich and Basel

Chair: Manfred Partl

Asphalt Pavements and the Environment

Gerhard Kennepohl

12.30 Lunch

14.00 Session 2a: Environmentally Sustainable New Materials

Chair: Jorge Sousa

Effect of base bitumen composition on asphalt rubber binder properties

Ould Henia, M.; Dumont, A.-G.

Analysis of technical feasibility of the use of the copolymer ethylene vinyl acetate (EVA) distracted by the Brazilian footwear industry in asphalt mixtures

Leomar Fernandes jr., J.; Ildefonso, J. S.; Oda, S.

Effect of incinerator bottom ash aggregates on binders' permanent deformation using a dynamic shear rheometer

Hassan, M.M.; Khalid, H.

The use of steel slag aggregate in hot-mix asphalt in South Africa

Bouwmeester, M.; Judd, D.; Bredenhann, S.J.; Jones, N.

15.30 Coffeebreak

16.00 Session 3a: Environmentally Sustainable New Materials

Chair: Francesco Canestrari

Performance properties of paving mixtures made with modified sulphur pellets

Strickland, D.; Colange, J.; Martin, M.; Deme, I.

Saving the landfill: long term performance of toner modified asphalt pavements

Solaimanian, M.; Yildirim, Y.

Fundamental study on the reduction of pavement temperature by use of solar reflective technology

Iwama, M.; Yoshinaka, T.; Omoto, S.; Nemoto, N.

Effectiveness of a photo-catalytic wearing course through experimental analysis

Crispino, M.; Lamburgo, S.

17.55 Deployment to ETHZ Main Building by special busses

18.15 Symposium Reception at ETHZ Main Building

19.30 Discover Zürich, Guided Tour on foot for registered participants and partners, family

Track B, Room: Basel

Monday, August 18th, 2008

08.00 Welcome and Registration

09.00 Opening Plenary Session, Rooms Zürich and Basel

Welcome speech by the Director of Swiss Federal Roads Office, ASTRA (FEDRO)
Rudolf Dieterle

10.00 Coffeebreak

11.00 Session 1 (Plenary), Rooms: Zürich and Basel

Chair: Manfred Partl

Asphalt Pavements and the Environment

Gerhard Kennepohl

12.30 Lunch

14.00 Session 2b: Innovative Design

Chair: Hervé di Benedetto

Development of a cool pavement for mitigating the urban heat island effect in Japan

Kawakami, A.; Kubo, K.

Fatigue free asphalt pavements

Parneggiani, G.

A study to minimize the effect of interlayer slippage during pavement design

Mehta, Y.; Siraj, N.

Development of rutting prediction models for flexible pavements using LTPP database

Lee, Y.-H.; Ker, H.-W.; Wu, P.-H.

15.30 Coffeebreak

16.00 Session 3b: Drainage and Water Susceptibility

Chair: Gerald Huber

Evaluation of AASHTO T-283 moisture sensitivity test

Sebaaly, P. E.; Hajj, E. Y.

Field permeability measurements of coarse-graded asphalt pavements

Williams, S. G.

Minimally invasive technologies for measurement of water in pavement systems

Gamache, R.; Kianirad, E.; Pluta, S.; Spinelli, S.

Permeability and surface friction of 4.75mm superpave mixtures

Williams, S. G.

17.55 Deployment to ETHZ Main Building by special busses

18.15 Symposium Reception at ETHZ Main Building

19.30 Discover Zürich, Guided Tour on foot for registered participants and partners, family

Track A, Room: Zürich

Tuesday, August 19th, 2008

09.00 Session 4a: Recycling, Repeated Recycling and Material Resources

Chair: Hussain Al-Khalid

High stiffness underlayers with high percentage of reuse as developed in the NR2C-project

Bueche, N.; Vanelstraete, A.; Thøgersen, F.; Gáspár, L.; Kálmán, B.

Cold in-place recycling in Washington State

Uhlmeyer, J.; Pierce, L.; Kinne, C.T.; Anderson, K.W.; Muench, St.; Mahoney, J. P.; Valentine, C.

Recycling of asphalt pavements using composite binders

Zhdanyuk, V.; Prusenko, Y.; Govorucha, O.

European survey on the use of RAP

Planche, J.-P.

10.00 Coffeebreak

11.00 Session 5a: Energy Saving and Production

Chair: Egbert Beuving

The effect of thermal conductive fillers on thermal properties of asphalt mixtures

Wu, S.; Li, B.; Xiao, Y.; Pang, L.; Mo, L.

Capturing solar energy from asphalt pavements

Mallick, R.; Chen, B.-L.; Bhowmick, S.; Hulen, M.S.

Laboratory and field evaluation of warm mix asphalt technology

Mogawer, W.; Austermann, A.J.

Environmental/structural evaluation of warm asphalt in the Canadian climate

Tighe, S.; Davidson, J.K.

12.30 Lunch

14.00 Session 6a: Energy Saving and Production

Chair: Marco Pasetto

Fischer-Tropsch paraffin modified bitumen - performance parameter and reduction of energy consumption

Wagner, M.; Stangl, K.; Blab, R.

Low energy asphalt LEA®: new half-warm mix asphalt for minimizing impacts from asphalt plant to job site

Olard, F.; Romier, A.; Héritier, B.; Martineau, Y.; Beduneau, E.

A study to minimize the effect of interlayer slippage during pavement design

de Visscher, J.; Vervaecke, F.; Vanelstraete, A.; Soenen, H.; Tanghe, T.; Redelius, P.

Fatigue behaviour of half-warm mix asphalts

Sauzéat, C.; di Benedetto, H.; Olard, F.; Nguyen, M. L.

15.30 Coffeebreak

16.00 Session 7a: Emission and Noise Reduction

Chair: Ludo Zanzotto

Laboratory investigations on the total organic compounds emissions of half-warm mix asphalt technology versus traditional hot mix asphalt

Gaufroy, V.; Olard, F.; Le Quernec, F.; de la Roche, C.;

Environmental assessment of a hot mix asphalt process

Jullien, A.; Monéron, P.; Ventura, A.; Paranhos, R.; Schemid, M.; Lombardi, B.; de Sars, T.

Emissions during hot-recycling of recycled asphalt pavement containing tar

Hugener, M.; Emmenegger, L.; Mattrel, P.

Laboratory identification of fumes during manufacturing of hydrocarbon mixtures

Gaufroy, V.; Deygout, F.; Viranaiken, V.; Le Coutaller, P.; Paranhos, R.; de la Roche, C.

19.30 Banquet

Track B, Room: Basel

Tuesday, August 19th, 2008

09.00 Session 4b: Drainage and Water Susceptibility

Chair: Imad Al-Qadi

Magnitude and rate of frost penetration on asphalt pavement of Northeast United States

Solaimanian, M.; Bae, A.; Stoffels, S.M.

The effect of rainwater seepage on the mechanical properties of pavement subgrade

Nakashima, S.; Tsutsumi, S.; Oshita, T.

Numerical simulation of response of asphalt pavement subjected to water/loading coupling action

Zejiào, D.; Yiqui, T.; Liping, C.; Feng, Z.

Influence of moisture conditioning and aggregate type on properties of HMA

Khosla, P.; Harikrishnan, K.I.

10.00 Coffeebreak

11.00 Session 5b: Drainage and Water Susceptibility

Chair: Matthew Witczak

The effect of thermal conductive fillers on thermal properties of asphalt mixtures

Recknagel, C.; Goebbels, J.; Meinel, D.

Capturing solar energy from asphalt pavements

Vasconcelos, K.L.; Bhasin, A.; Little, D.N.

Moisture susceptibility of asphalt mixtures combined with surface energy and fracture property characterisation

Airey, G.; Caro, S.; Masad, E. A.; Bhasin, A.; Little, D. N.

Polymer modified mastics for reinforced concrete highway bridge deck waterproofing

Zhdanyuk, K.; Shevchenko, V.; Syzonenko, v.; Zhdanyuk, V.

12.30 Lunch

14.00 Session 6b: Durability and Aging

Chair: Dariusz Sybilski

Green Roads: A sustainability rating system for roadways

Muench, St.; Söderlund, M.; Willoughby, K.; Weston, J.; Uhlmeyer, J.

Life cycle analysis – Energy consumptions assessment for winter maintenance operations

Mauduit, C.; Jullien, A.; Sayagh, S.; Livet, J.

Experiences of the de-icing chemical effect on the runway asphalt in Finland

Alatyppö, V.; Valtonen, J.; Pellinen, T.

Anti-kerosene asphalt binders designed for airfield pavements.

A rheological approach to fuel resistance evaluation

Merusi, F.; Giuliani, F.

15.30 Coffeebreak

16.00 Session 7b: Durability and Aging

Chair: John Harvey

Optimum compaction effort to improve mixture durability

Prozzi, J.; Aguiar, J.; Izzo, R.

Surface-related pavement damage due to various tire rolling conditions

Wang, H.; Al-Qadi, I.

Causes of premature ravelling with single-layer porous asphalt

Voskuilen, J. L. M.; van de Ven, M. F. C.; Nijssen, W. A. M. G.

Development of long lasting safe and durable mix for the Japanese motorways

Kamiya, K.; Yamaguchi, K.; Tanaka, T.

19.30 Banquet

Track A, Room: Zürich

Wednesday, August 20th, 2008

09.00 Session 8a: Emissions and Noise Reduction

Chair: Carlo Mariotta

An experimental apparatus to evaluate the water quality of leachate generated from various pavement surfacing materials

Kayhanian, M.; Signore, J.; Harvey, J.; Troxler, M.; Jones, D.J.

A new experimental trial protocol for laboratory investigations of bitumen fumes: influence of stirring and steamed water emissions

de la Roche, C.; Gaudefroy, V.; Viranaiken, V.; Paranhos, R.

Assessment of clogging in open graded asphalt mixes in California

Ongel, A.; Harvey, J.; Partl, M. N.

Flow conditions in porous asphalt layers

Haselbauer, M.; Manhart, M.

10.45 Coffeebreak

11.00 Session 9a: Emissions and Noise Reduction

Chair: Björn Birgisson

Practice of porous asphalt pavement on Yan-Tong freeway

Yang, J.; Chaoen, Y.; Dongwei, C.; Sumin, G.; Quinquan, L.; Guochao, Q.

Sustainability of noise reduction and winter skid resistance on porous asphalt pavements

Chiba, M.; Maruyama, K.; Tako, J.

Road and tire emission notes from asphalt rubber concrete pavement in Saskatchewan

Dai, L.; Sachakamol, P.

Acoustic characterization of different road materials

Santagata, F.; Canestrari, F.; Pasquini, E.; Ayr, U.; Pisciotta, M.

12.30 Lunch

14.00 Session 10a: Emissions and Noise Reduction

Chair: Chantal de la Roche

Overview of research on flexible quiet pavement in California

Harvey, J.; Ongel, A.; Kohler, E.; Lu, R.; Steven, B.; Motumah, L.

Evaluation of pavements acoustic behaviour in Brazil

do Nascimento, L. A.; Leite, L. F. M.

Optimization of noise reducing thin pavement layers in Denmark and the Netherlands

Bendtsen, H.; Voskuilen, J. L. M.; Thomsen, S. N.; Sule, M.S.

Tests of different noise reducing asphalt pavements on an Austrian motorway

Haberl, J.; Litzka, J.

15.30 Coffeebreak

16.00 Session 11: Plenary ISAP TC Session, Rooms Zürich and Basel

Chair: Manfred Partl

17.00 Closing Session, Rooms Zürich and Basel

17.30 End

Track B, Room: Basel

Wednesday, August 20th, 2008

09.00 Session 8b: Durability and Aging

Chair: Hussain Bahia

Validation of a plastic deformation model for UGNs using accelerated pavement test results

Werkmeister, S.; Oeser, M.; Alabaster, D.; Arnold, G.

Rheology of environmentally sustainable synthetic and blended asphalt binders

Airey, G. D.; Mohammed, M. H.; Collop, A. C.; Hayers, C.; Parry, T.

Prediction of bonding characteristics of hot-poured bituminous sealants to aggregates

Al-Qadi, I. L.; Fini, E.; Masson, J.-F.

Adhesion - testing of compacted asphalt as a function of mixture variables and conditioning parameters

Koenders, B.; Colange, J.; Stoker, D.; Andersen, E.

10.45 Coffeefbreak

11.00 Session 9b: Durability and Aging

Chair: John Emery

How laboratory tests simulate environmental field aging of SBS modified bitumen – a field study

Stangl, K.; Blab, R.

The effect of ageing on mechanical properties of hot-mix asphalt

Pellinen, T.; Xiao, S.; Shah, A.

Ageing of compacted asphalt mix: a case study

Raghavendra, S.; Zapata, C.; Mirza, M. W.; Houston, W. N.; Witczak, M. W.

Effect of Montmorillonite on ageing properties of SBS modified bitumen

Yu, J.; Li, B.; Feng, S.; Li, L.; Mo, L.; Liu, M.

12.30 Lunch

14.00 Session 10b: Durability and Aging

Chair: Ian Rickards

Advantage of constant crude and refining process for bitumen properties

Besamusca, J. Th. M.; van de Ven, M. F. C.; Noordergraaf, J. B. T.

Towards performance-based selection guidelines for roadway crack sealant

Al-Qadi, I. L.; Yang, S.-H.; Fini, E.; Masson, J.-F.

Comparison of the conventional and energetic fatigue failure criterion for bituminous mixes

Bańkowski, W.; Sybilski, D.

Tack coat application rate optimization and environmental effect on HMA

Overlay-PCC pavement bonding

Leng, Z.; Al-Qadi, I. L.; Özer, H.; Carpenter, S.

15.30 Coffeefbreak

16.00 Session 11: Plenary ISAP TC Session, Rooms Zürich and Basel

Chair: Manfred Partl

17.00 Closing Session, Rooms Zürich and Basel

17.30 End



Directions to ETH Main Building on Monday, August 18th, 2008

If you miss for any reason the special busses:

Alternative 1

From Oerlikon to Zürich HB take train
S2 / S5 / S6 / S7 / S8 / S14 or S16

walking distance from Zürich HB to ETH Main Building ca. 15min

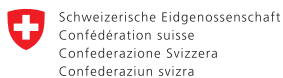
Alternative 2

From Oerlikon to ETH take tram No. 10 till «ETH/Universitätsspital», use main entrance of ETH vis-à-vis hospital entrance (Universitätsspital).

Partner Tour on Tuesday, August 19th, 2008

08.15	Meeting at Swissôtel lobby and boarding into special busses <i>(Please be punctual, the busses will start on time!)</i>
08.30	Start of the trip towards St. Gallen via highway A1
09.45	Guided tour at the Monastery Library, a World Heritage Site, and the Cathedral of St. Gallen
11.30 – 13.30	Lunch
14.00 – 16.00	Visit of the chocolate factory Maestrani in Flawil, where you will cast your own chocolate bar and see how they produce chocolate
ca. 17.00	Arrival at Swissôtel

Supporters



Bundesamt für Strassen ASTRA



Schweizerischer Verband der
Strassen- und Verkehrsfachleute



International Union of Laboratories and Experts
in Construction Materials, Systems and Structures