

Feedback: Euro-asphalt Eurobitume Congress Istanbul June 2012

RPF - 6 November 2012

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OVERVIEW

- Introduction
- Overview Topics
- Session highlights
- Conclusion



INTRODUCTION

- Istanbul Turkey
- Attendance 1000 delegates 23 countries
- 267 papers
- More than 100 posters presented in exhibition hall
- South African delegation:
 - Philip Hechter (Much Asphalt)
 - Saied Solomon (Sabita)
 - Kobus Louw (Colas)
 - Wim Hofsink (Soillab)
 - Hugh Thompson (WSP)
 - Mike Hughes (WSP)
 - Leon Alberts (Much Asphalt)
- Key note addresses followed by plenary sessions and moderators reports

OVERVIEW ON DIFFERENT TOPICS

8 Sessions over 3 Days:

- Social issues
- Energy & Carbon
- Health Safety
- Sustainability, Energy use and Climate Change
- Resource use and Recycling
- Warm Mix Asphalt and Low Temperature Techniques
- Durability & Performance: Binders
- Durability & Performance: Mixtures

OVERVIEW ON DIFFERENT TOPICS

Key Note addresses:

- Roads and their social impacts - Selected cases from Turkey
- Financing of road infrastructure and maintenance
- Responsible Sourcing and Green Procurement
- Health & Bitumen
- Communication, Social Media and Roads
- How to diminish the carbon footprint of asphalt roads
- Adapting asphalt roads to Climate Change – Views and needs of the Road Authorities
- Resource efficiency, regulation and recycling
- Durability & performance – mixtures, binders and pavements

OVERVIEW ON DIFFERENT TOPICS

I - Energy and Carbon

- Energy reduction and carbon footprint have become important considerations in recent years.
- Protocols for the quantification and declaration of embodied carbon and embodied energy in asphalt and other road materials are essential if these aspects are to be managed in the future.
- It is also important to understand practical ways of reducing the energy and carbon impact of asphalt in roads and the performance of the new low energy/carbon asphalts.



OVERVIEW ON DIFFERENT TOPICS

- II-Durability & performance - mixtures and binders and pavements

A sustainable pavement must be durable and its performance should meet the requirements over a long period. The required performance for the present and the future can be achieved by using an adequate design of the pavement and mixtures by using suitable binders and, where needed, additives.



OVERVIEW ON DIFFERENT TOPICS

II-Durability & performance - mixtures and binders and pavements

Papers submitted discussed the following topics:

- Advanced testing of properties and performance of mixes and pavements
- Mix design and Pavement Performance
- Ageing, durability and high and low temperature performance
- Self-healing
- Additives
- Perpetual pavements
- Sustainable construction techniques



OVERVIEW ON DIFFERENT TOPICS

III - Resource use and recycling

At the end of life the construction materials used in our roads have substantial residual value that can be recovered by applying recycling techniques. Tools that assist in making correct and accurate decisions to establish and diminish the environmental impact during the construction and life of the road are being developed.



OVERVIEW ON DIFFERENT TOPICS

III - Resource use and recycling

The focus in this session was on efficient (re-)use of pavement materials.

Papers covering the following topics were submitted:

- Re-use
- Recycling
- Material
- Pavement
- Use of secondary materials and waste



OVERVIEW ON DIFFERENT TOPICS

IV - Adapting to climate change

General agreement that our climate is changing, with a trend of progressive global warming. As a result of this the conditions under which asphalt will have to perform in the twenty first century will be different from those experienced in the last century. This will vary from region to region and country to country but with a common theme of higher sustained maximum temperatures and more extreme weather with storms and floods. **Asphalt and pavement design will need to evolve to match the new challenges.**



OVERVIEW ON DIFFERENT TOPICS

IV - Adapting to climate change

Papers submitted under this topics were:

- Predicting climate and weather change
- Adapting specifications and design protocols
- High temperature performance
- Waterproofing and drainage
- Storm water mitigation
- Moisture sensitivity
- Low temperature performance

OVERVIEW ON DIFFERENT TOPICS

V - Social impact

Roads connect people, goods and services and they are an essential element of economic growth. They can provide sustainable benefits for individuals, communities and business. Well made roads can improve access to markets, healthcare and education throughout the developing world.

The challenge for our industry is how we can build roads for a wide variety of users, in different climatic conditions that have minimum environmental impact.

OVERVIEW ON DIFFERENT TOPICS

V - Social Impact

Papers covering this topics were:

- Technology Transfer
- Education
- Noise reduction
- Congestion
- Maintenance strategies
- Other road users (cycles, motorcycles and pedestrians)
- Rural roads
- Off-road



OVERVIEW ON DIFFERENT TOPICS

VI - Responsible sourcing and green procurement

As sustainability becomes more prominent it inevitably becomes more important in the procurement process. Today's market is bombarded with numerous, often unsubstantiated, claims covering a range of sustainability issues from carbon and the environment, fair employment in the supply chain to overall economic stability. The development of such measures and systems is of interest and importance.



OVERVIEW ON DIFFERENT TOPICS

VI - Responsible sourcing and green procurement

Papers covering this topic were:

- Development of standards for responsible sourcing
- Development of green procurement
- Environmental product declarations
- Environmental measures in standards
- Development of sustainability certification schemes
- certification schemes

OVERVIEW ON DIFFERENT TOPICS

VII - Improving Health & Safety

For many years all actors of the road industry have been committed to delivering innovative solutions for safer roads. A Continuous focus on improving comfort and safety on the road for users, including the reduction of the impact of road works on the workers and the environment is therefore a necessity These are among the main challenges that the industry will face in this new decade.



OVERVIEW ON DIFFERENT TOPICS

VII - Improving Health & Safety

Papers covering the following topics were:

- Work Zone Safety
- Fume reduction (Warm/cold mixtures)
- Skid resistance
- Emissions from manufacturing
- Workers exposure and exposure control
- Visibility



OVERVIEW ON DIFFERENT TOPICS

VIII - Financing of road infrastructure and maintenance

Financing road infrastructure and maintenance is one of the major challenges we face at present. Funds must be found to carry out necessary and indispensable maintenance on the road network and to maintain the required properties at the right level for the comfort and the safety of the users. In this session, we will mainly focus on new and innovative approaches.

OVERVIEW ON DIFFERENT TOPICS

VIII - Financing of road infrastructure and maintenance

Papers covering the topics were:

- New contracts
- Design-Build-Finance-Operate
- PPP
- Road concessions
- Asset management

SESSION HIGHLIGHTS

SAT Feedback Session more detailed feedback per Topic:

- Sustainability, Energy use and Climate Change **(Saied Solomons)**
- Resource Use and Recycling **(Mike Hughes)**
- Warm Mix Asphalt and Low Temperature Techniques **(Riaan Odendal)**
- Durability & Performance of Binders **(Kobus Louw)**
- Durability & Performance of Asphalt Mixtures as well as Poster Sessions **(Wim Hofsink)**



SESSION HIGHLIGHTS

Testing and modelling to assess performance or durability

Durability, a Prerequisite for Sustainable Asphalt Pavements

- Prof AA Molenaar

answering the question whether:

*“sustainable pavements which are also highly
durable can be built using recycled materials”.*

SESSION HIGHLIGHTS

Testing and modelling to assess performance or durability

Challenges:

- Quickest Way to Reduce CO₂ is by Using less Asphalt Concrete
- Thinner Structures and Longer Lifetime
- Better Quality
- High RAP % in new mixtures
- Warm asphalt mixtures (foam) especially in combination with recycling
- CAN WE DO THIS?

SESSION HIGHLIGHTS

Testing and modelling to assess performance or durability

Thinner Structures and Longer Lifetime

- (Very) Heavy duty pavements are built in e.g. South Africa using only thin asphalt layers
- 50 mm asphalt concrete
- 150 mm high quality crushed
- stone base
- 150 mm cement stabilized
- sub-base

SESSION HIGHLIGHTS

Testing and modelling to assess performance or durability

Thinner Structures and Longer Lifetime

- Excellent base and subbase layers can be built using construction demolition waste (mixtures of crushed concrete and masonry).
(Common practice in the Netherlands)
- Stabilizing these materials with foamed bitumen or cement further enhances the mechanical properties
- Re-use of construction and demolition waste as road base material is at an embarrassing low level in Europe

SESSION HIGHLIGHTS

Testing and modelling to assess performance or durability

Better Quality

We build our pavements with too much variability

This results in:

- too early maintenance
- need for higher maintenance budgets
- more delays due to maintenance and rehab works

Variability is caused many times by not optimal logistics and weak control during production

- We can get more out of our precious materials and structures by doing a better job
- We can get a longer life and reduce environmental impact by just doing a better job



SESSION HIGHLIGHTS

‘Getting the Message’ Communication & Social Media

Officially, social media is “an umbrella term that defines the various activities that integrate technology, social interaction, and the construction of words, pictures, videos, and audio.”

SESSION HIGHLIGHTS

Social Media Research

- Do the general public in Europe talk about roads in social media networks?
- Who is talking about roads?
- What are they talking about?
- Where are they having conversations about roads?
- How do they feel about roads in Europe?

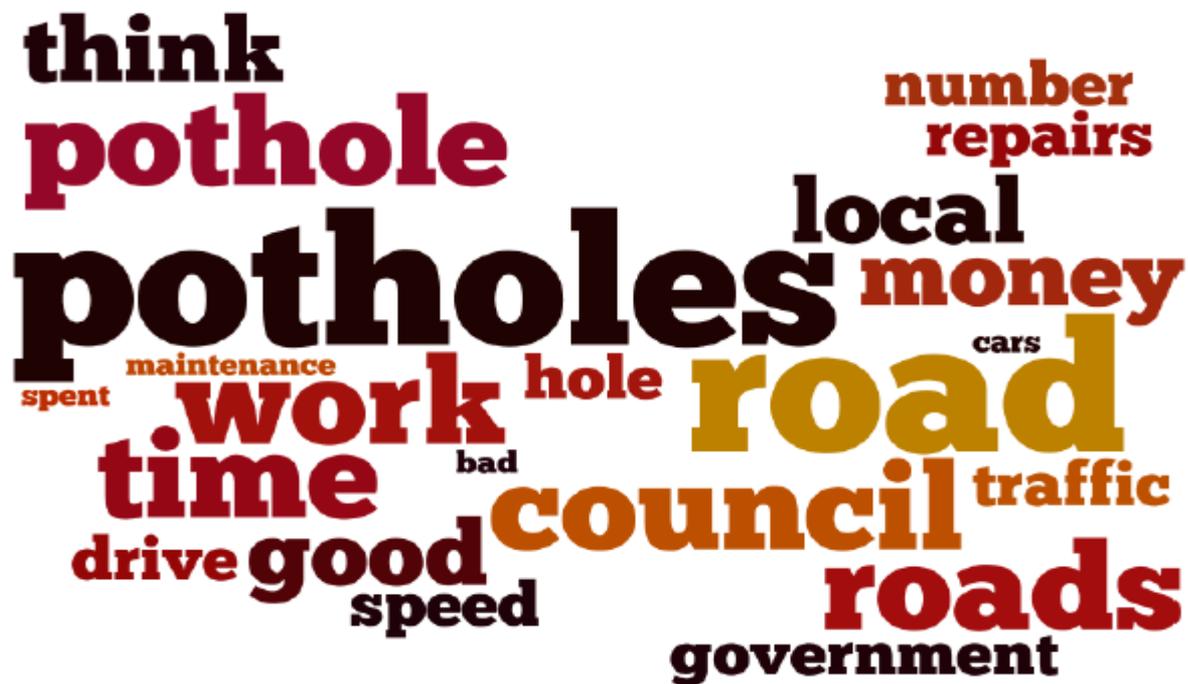
The key question:

- **Is there an opportunity for the road industry?**



SESSION HIGHLIGHTS

UK conversation Cloud



SESSION HIGHLIGHTS

Overall Conclusion of Research

General public is using social media as a platform to:

- Talk about Roads
- Form opinions
- Organise debates
- Attempt to influence decision makers

**** No central forum exists for organising and joining in conversations about and the image of Roads**

SESSION HIGHLIGHTS

ADHESION

Several papers dealt with the search for adequate tests for adhesion:

- either by a simple test to assess the stickiness of a binder
- or by evaluation of the adhesion between binder and aggregate, or by testing the mixture itself

In general it is clear that tests on the binder level alone are not sufficient

Even binder-aggregate tests may give an incomplete picture

SESSION HIGHLIGHTS

STIFFNESS MODULUS

- Several papers dealt with the determination of the modulus (determination by indirect tensile testing)
- Study shows that acceptable values for the repeatability and reproducibility were found

SESSION HIGHLIGHTS

AGEING

- Laboratory ageing methods were developed for porous asphalt to simulate 10 years of field ageing of the binder
- The mortar ageing method in which the mortar is heated for 2 hours at 165 °C and then placed in a PAV at 90 °C for 7 days under air pressure of 2,1 MPa can very well mimic 10 years of field ageing of the binder of PA.



NEW TEST METHODS AND EQUIPMENT

A new roller sector compactor is under development to compact large-sized asphalt (e.g. with 32 mm maximum size aggregates). The system is also equipped with an automatic system for the levelling of the asphalt and with a heating system for the surroundings of the mould

PRODUCTS APPLIED TO IMPROVE THE PERFORMANCE

Several papers reported on the advantages of additives/modifiers to the mix or binder to improve the performance. They mostly confirm earlier findings that :

- the advantages for applying highly polymer modified binders for either thin high-performing wearing courses or wearing courses with high demands for durability

The positive impact of crumb rubber on performance

- **increase in performance in fatigue and/or in rutting depends highly on the technique used for blending**

PRODUCTS APPLIED TO IMPROVE THE PERFORMANCE

The addition of polypropylene fibres increases the stiffness modulus and resistance to permanent deformation

- Polyphosphoric acid is used as an additive especially for the improvement of the stiffness and the ageing performance

Several papers demonstrate the advantages of the application of hydrated lime in asphalt

No really new materials were discussed in the papers

IMPORTANCE OF PRODUCTION, LAYING AND APPROVAL SYSTEMS FOR PERFORMANCE

- Testing of the mix is an important step to guarantee performance, but production and laying are crucial as well
- Process performance is important and innovations in that field should therefore be encouraged.
- Performance contracting and longer guarantee periods create also the need on the contractor's side to reduce the risks of premature failures.
- A better control of the laying process is important. This requires also systems to monitor the pavement during laying.

MONITORING OF DURABILITY IN THE FIELD

- Long term monitoring of many sites with thin surface systems in the UK indicate that, if a thin surfacing is in a good condition after its first year in service it will be serviceable for at least 5 years and the typical life of a thin surfacing is about ten years.

The average life of 10 and 14mm ACM and SMA surfacing's is about 13 years or more.



SUSTAINABILITY

- Repeatability and Reproducibility of Wheel-Tracking Test, Fatigue, stiffness and resistance against deformation are the main topics of these papers
- The Hamburg wheel tracking test appears to be a proven benchmark method worldwide



SUSTAINABILITY

With the test methods and asphalt tests frequently single aspects are discussed, which have to be merged for practice. Basically there are some questions about the test results for example:

- How accurate are the test methods?
- What is measured?
- Are the results comparable with the results of others?
- Are the results repeatable?



SUSTAINABILITY

- How are the samples produced for the laboratory test?
- Are the laboratory test results comparable with the results of the samples from the site?
- Are the results really "performance based"?

For the present and future a lot of questions have to be answered.

CONCLUSIONS

- Some of the papers are highly theoretical
- Much more practical context in future research can add a lot of value.
- There are still many fields for researches. An important field would be a proper quality assurance system during the asphalt production stages and during asphalt paving.
- With these measures an important input for the sustainability is given.
- Another opinion raised was to encourage well-founded training for the workers, which should have good knowledge about all construction materials

Can We Do it?

Yes We Can !!

