



News from Brussels - 2015

AV'15, Konference Asfaltové Vozovky
24.-25. November 2015, České Budějovice

Dr. Carsten Karcher

Director

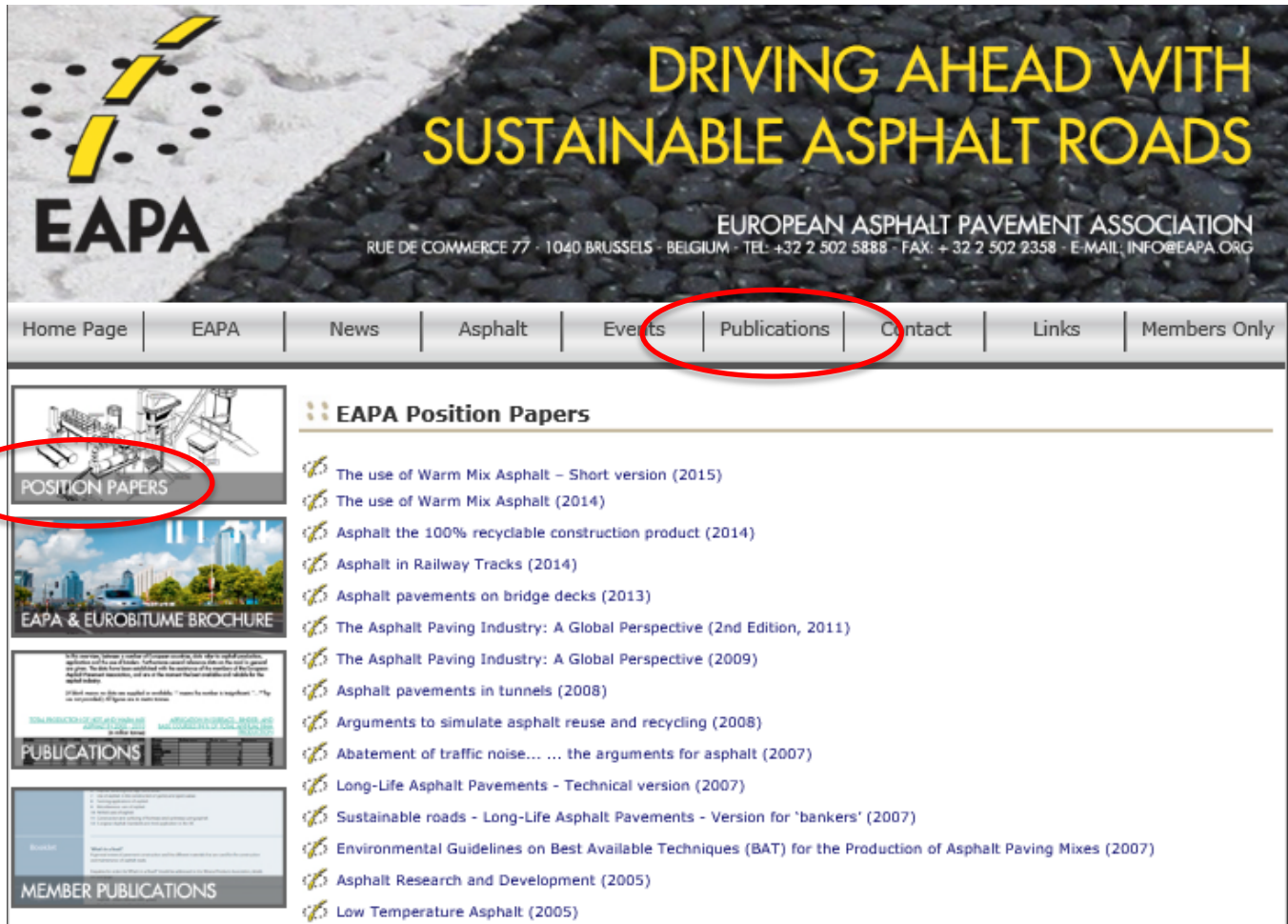
European Asphalt Pavement Association

- Latest EAPA Position Papers
- Asphalt Recycling
- Warm Mix Asphalt
- AsphaltAdvantages Campaign
- E&E Congress 2016 in Prague



LATEST POSITION PAPERS

www.eapa.org



DRIVING AHEAD WITH SUSTAINABLE ASPHALT ROADS

EAPA

EUROPEAN ASPHALT PAVEMENT ASSOCIATION
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POSITION PAPERS

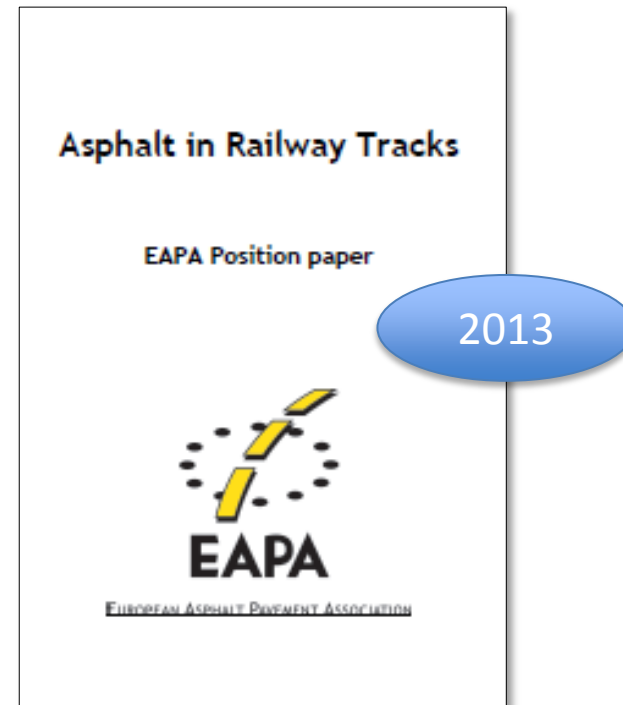
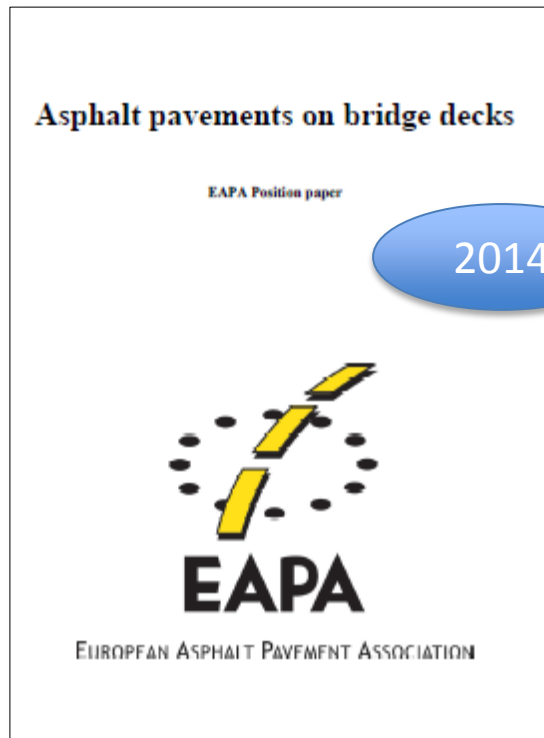
- The use of Warm Mix Asphalt – Short version (2015)
- The use of Warm Mix Asphalt (2014)
- Asphalt the 100% recyclable construction product (2014)
- Asphalt in Railway Tracks (2014)
- Asphalt pavements on bridge decks (2013)
- The Asphalt Paving Industry: A Global Perspective (2nd Edition, 2011)
- The Asphalt Paving Industry: A Global Perspective (2009)
- Asphalt pavements in tunnels (2008)
- Arguments to simulate asphalt reuse and recycling (2008)
- Abatement of traffic noise... the arguments for asphalt (2007)
- Long-Life Asphalt Pavements - Technical version (2007)
- Sustainable roads - Long-Life Asphalt Pavements - Version for 'bankers' (2007)
- Environmental Guidelines on Best Available Techniques (BAT) for the Production of Asphalt Paving Mixes (2007)
- Asphalt Research and Development (2005)
- Low Temperature Asphalt (2005)

EAPA & EUROBITUME BROCHURE

PUBLICATIONS

MEMBER PUBLICATIONS

LATEST POSITION PAPERS



LATEST POSITION PAPERS

**Asphalt the 100% recyclable
construction product**

EAPA Position paper



EUROPEAN ASPHALT PAVEMENT ASSOCIATION

1

2014

2008

**Arguments to stimulate the government
to promote asphalt reuse and recycling**

EAPA - Position Paper



2005

**Industry Statement on the recycling
of asphalt mixes and use of waste
of asphalt pavements.**



ASPHALT RECYCLING

- In-situ Processes - Recycling roads
 - repave, remix, retread
- Ex-situ Processes - Recycling materials
 - Ex situ processes are employed when asphalt materials are excavated from the road and transported (even short distances) to processing units or plants in order to be used as an ingredient (raw material) in fresh/new asphalt mixtures
- Processes in stationary asphalt mixing plants
 - Cold recycling, Batch mixing or drum mixer plant (hot) re-use
 - For high percentages of re-use: Plant with parallel drum (hot) re-use
 - For Details go to EAPA website:
EAPA Position Papers and
Presentation A. Täube on „Asphalt recycling- Recycling practice in the European Asphalt Industry“ at EAPA Symposium 2015

ASPHALT RECYCLING

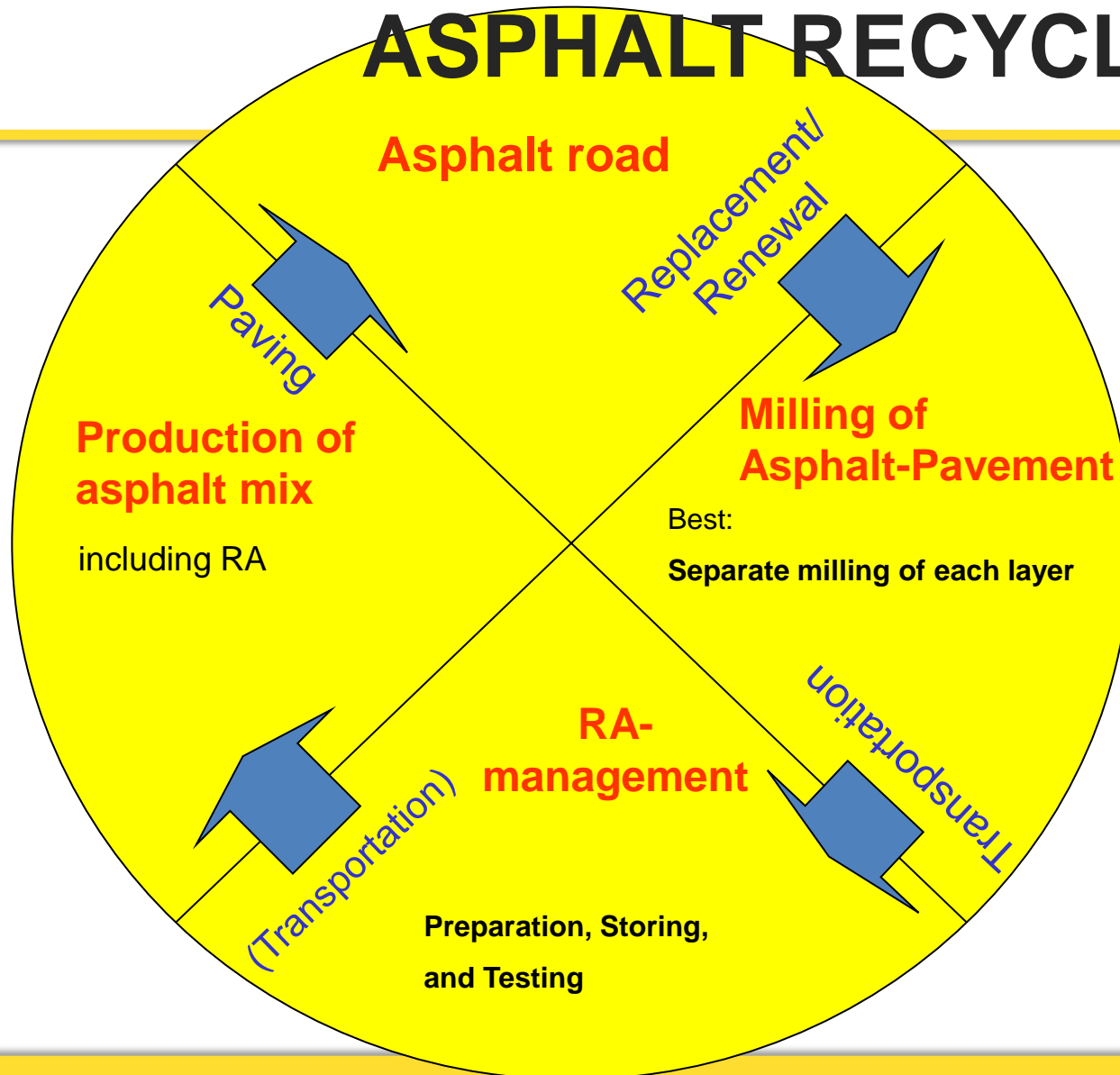
- The industry strongly supports Asphalt Recycling
 - Increasing of the re-use of RA
 - Re-use of RA at the highest possible level
- European Standards
 - allow / give the possibility to use RA in the asphalt mixtures, there is a European standard for RA: EN 13108-8
- European Commission
 - Circular Economy
 - CO₂ Emissions reduction
 - Green Public Procurement



ASPHALT RECYCLING

- EC Directive 2008/98/EC hierarchy on waste (Waste Framework Directive) shall apply
 - (a) prevention;
 - (b) preparing for re-use;
 - (c) recycling;
 - (d) other recovery, e.g. energy recovery; and
 - (e) disposal.
- 're-use' means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived;
- 'recycling' means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes.

- **Closed Curcuit of RA**



ASPHALT RECYCLING

- Examples for the technical progress in the last few years
 - Selective recovery and storage of RA
 - Screening and sieving of RA
 - Selective feeding of RA
 - Dry storage of RA
 - Use of parallel drum for gentle heating of RA



ASPHALT RECYCLING

Country 2013	Available reclaimed asphalt (tonnes)	% of available reclaimed asphalt used in			
		hot and warm recycling	half warm recycling	cold recycling	unbound layers
Austria	750.000	95		3	2
Belgium	1.500.000	61	No data	No data	No data
Czech Republic	1.450.000	18	0	25	20
Denmark	790.000	83			17
Finland	860.000				
France	6.900.000	64	No data	No data	No data
Germany	11.500.000	90			10
Greece	No data				
Great Britain	4.000.000-5.000.000				
Hungary	88.000	80	0	10	10
Iceland	15.000				
Ireland	150.000				
Italy	10.000.000	20			
Luxembourg	300.000	90	0	10	0
Netherlands	4.500.000	76			
Norway	686.268	21	0	5	74
Romania	22.000	20	20	20	30
Slovakia	26.000				5
Slovenia	26.000				54
Spain	205.000				8
Sweden	900.000				10
Switzerland	1.370.000				8
Turkey	1.200.000	3		1	96

- In total: >85% recycled in Europe
- Some countries have already more than 30 years of experience and re-use rates of >90%

ASPHALT RECYCLING

- It may even be possible to remix up to 100% RA



ASPHALT RECYCLING

- **Summary and Conclusions**
 - Asphalt is 100% re-usable / recyclable
 - Re-use / recycling is important
 - RA covered by European Standard EN 13108-8
 - Road authorities can stimulate re-use and recycling
 - They are the road-owner = product-owner of RA (and also responsible for it)
 - Tender documents should give possibilities to re-use RA
 - Legislation can stimulate re-use / recycling, End of Waste criteria

LATEST POSITION PAPERS

The use of Warm Mix Asphalt

EAPA - Position Paper

2014



EUROPEAN ASPHALT PAVEMENT ASSOCIATION

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The use of Warm Mix Asphalt

EAPA - Position Paper - 2015

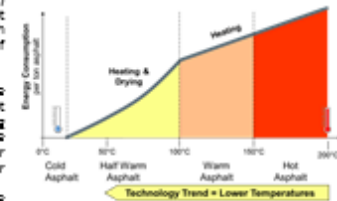
Introduction

Since the mid-1990s a range of techniques has been developed to reduce the mixing and laying temperatures and energy of manufacture of Hot Mix Asphalt (HMA).

This paper focuses on Warm Mix Asphalt (WMA) technologies for producing asphalt at temperatures slightly above 100 °C with properties or performance equivalent to that of conventional HMA.

A typical WMA is applied at a temperature around 20 - 40 °C lower than an equivalent Hot Mix Asphalt. Less energy is involved and, during the paving operations, the temperature in the mix is lower, resulting in lower emissions, lower exposure and improved working conditions for the crew.

This lower exposure supports the goal of the European asphalt industry to reduce bitumen fumes during paving operations.



Techniques available

Warm-Mix Asphalt (WMA) technologies operate above 100 °C, so the amount of water remaining in the mix is very small. Various techniques are used to reduce the effective viscosity of the binder enabling full coating and subsequent compactability at lower temperatures.

The most common techniques are:

- Organic additives, usually waxes or fatty amides; can be added either to the mixture or to the bitumen giving a temperature reduction of between 20 - 40 °C.
- Chemical additives, working as surfactants, may reduce the mix and compaction temperatures by about 20 - 40 °C.
- Foaming techniques; the two techniques that are commonly used for foaming are the use of injection foaming nozzles and the use of minerals containing water. With the injection foaming nozzles small amounts of water are introduced into the hot bitumen. The water turns to steam, increases the volume of the bitumen and reduces its viscosity for a short period. The use of a mineral as the source of foaming water can be seen as an indirect foaming technique. A second indirect foaming technique uses the moisture on the sand (or RAP) to generate naturally created foam. These techniques can enable a temperature reduction of the asphalt mix of about 20 to 40 °C.

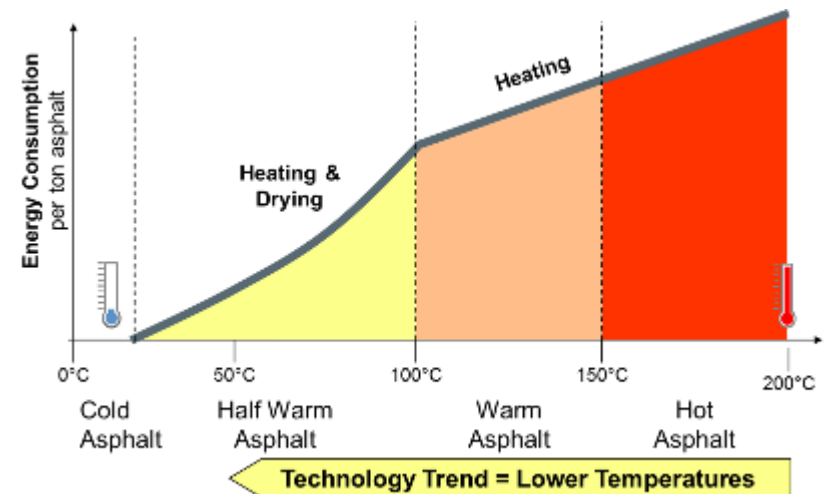
Next to the above mentioned techniques there are also combined products that can be used to produce Warm Mix Asphalt, like pellets with fibres and zeolite or fibres with organic additives.

As one can see the gain in temperature reduction is between 20 to 40 °C (more or less) from the technique used. One has to keep in mind that this gain also depends on the type of the bitumen used.

2015

WHAT IS WMA?

- WMA is a procedure not a product
 - Warm Mix Asphalt (WMA), Half-Warm Mix, Cold Mixes
 - In recent years, up to 45 different WMA techniques have been developed, WMA is a specific procedure and not a product.
 - Procedures allow the production and paving 20 to 40 °C lower (or even more) than traditional hot-mix asphalt.
 - Low Temperature Asphalt (LTA) or Temperature Reduced Asphalt
 - “Bituminous mixtures” standard (EN 13108-1 to -7) can be applied no minimum temperature given



WHAT IS WMA?

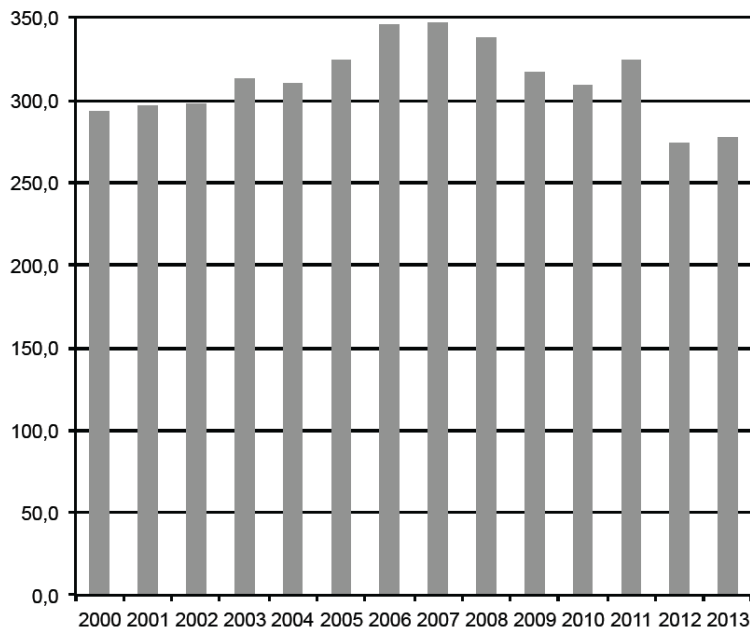
- General techniques to produce WMA
 - Organic additives
 - Chemical additives
 - Foaming techniques
 - Using mineral additives
 - Using water-based mechanical systems
- Combined products for WMA like pallets with fibres and zeolite or fibres with organic additives

WHY USING WMA?

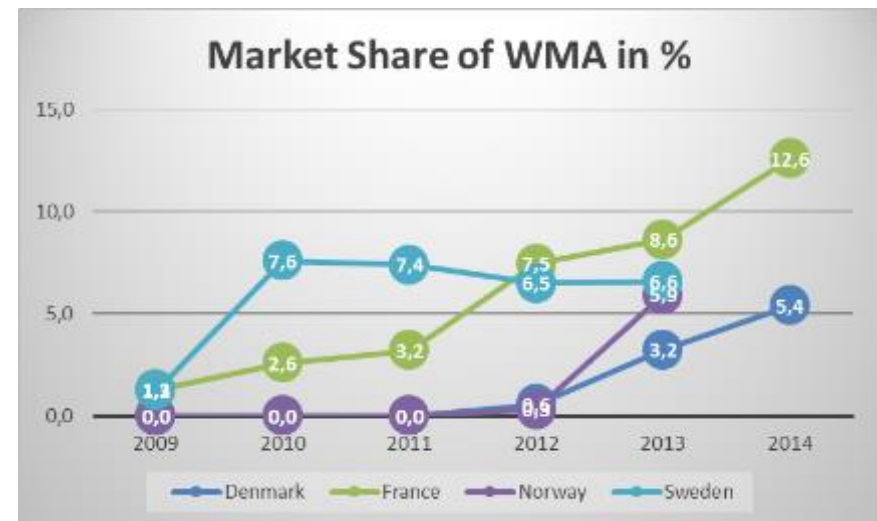
- The use of WMA is beneficial with respect to
 - Asphalt workers:
 - reduced exposure to fumes and odours and a cooler working environment
 - Environment:
 - less energy needed and less emissions, Carbon Footprint / environmental aspects will become more important
 - Economic issues:
 - Less fuel needed at asphalt mixing plant
 - Paving operations:
 - better workability, extending the construction season and earlier opening of the road, reduced ageing of the bitumen during the production stage

STATISTICS WMA

- Production Figures in Europe and US



Total Production of Hot and Warm Mix Asphalt
in Europe in million tonnes
[from: Asphalt in Figures, EAPA 2014]



APPLICATION OF WMA

- Czech Republic

- Experiences with WMA technology are available and in some tunnel projects WMA had been obligatory (e.g. the tunnel Blanka in Prague)
- In 2012 the Czech Ministry of Transport has published preliminary national specifications for WMA (TP 238). This specification is also valid for mastic asphalt.



WMA by use of the chemical additive Evotherm
6 km – 3 asphalt layers
35 mm SMA
85 mm binder course
20 mm thin asphalt layer
All with highly modified SBS bitumen
30 °C reduction in production temperature.



SUMMARY WMA

- Many techniques available
- No limitations for the use in the European asphalt standards
- The use is growing in many European countries and industry becomes more and more experienced
- The overall experiences with the material show equivalent performance and durability compared with Hot Mix Asphalt.
- Many advantages: **WMA is the future**
- For more details check the **EAPA Position Papers**

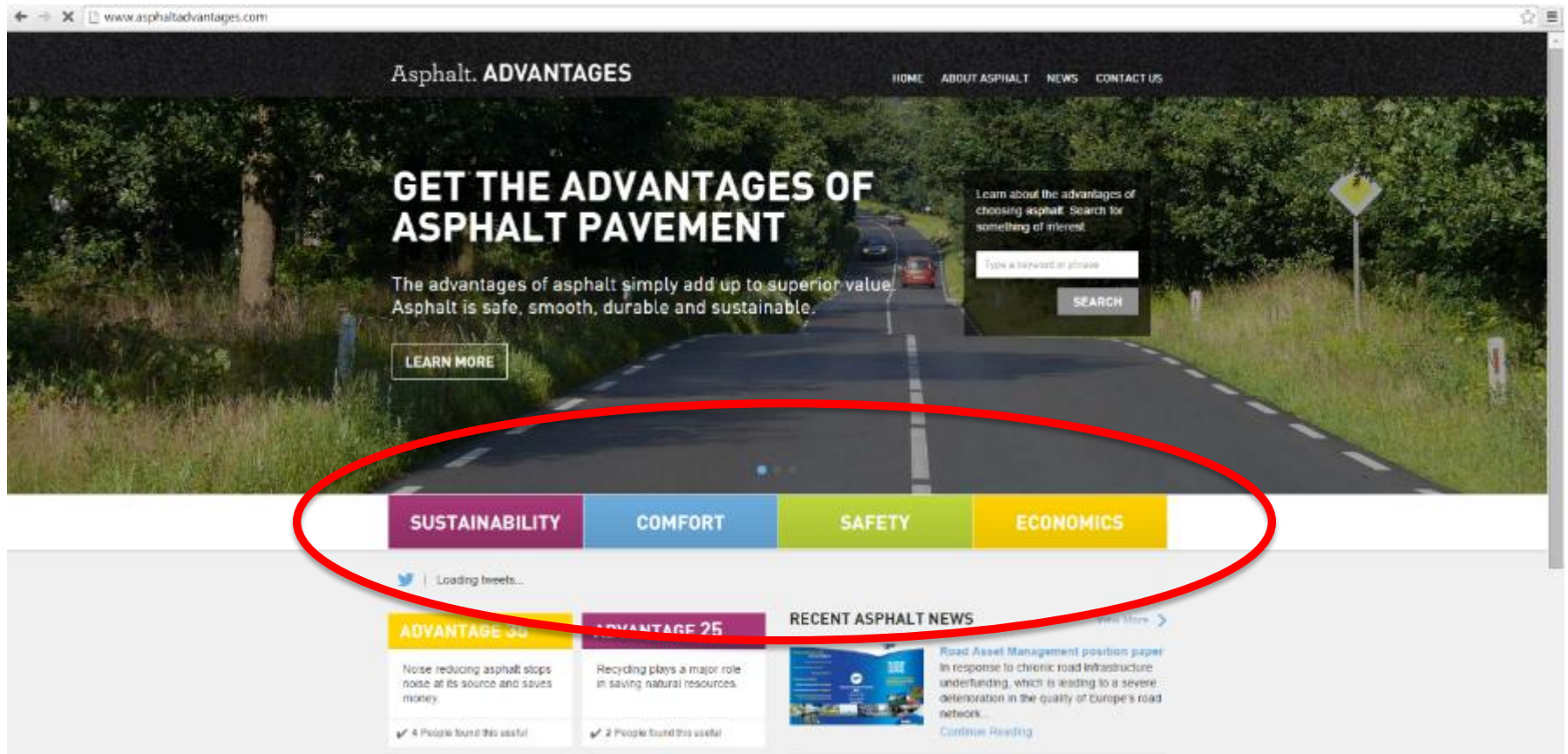
ASPHALT ADVANTAGES

- Communication is important
- Raise awareness to get better image
 - We have to inform people about the importance of roads
 - We have to inform people about the benefits that asphalt roads bring to their everyday life
 - We have to inform politicians and stakeholders about it
 - And especially road users
- If they do not hear our message, they do not realise the role of asphalt roads in their lives



Asphalt. **ADVANTAGES**

ASPHALT ADVANTAGES



4 Themes for the Asphalt Advantages

ASPHALT ADVANTAGES

SUSTAINABILITY

02

Hot Mix Asphalt protects the environment by providing impermeable caps for abandoned landfills and deposits of hazardous materials.

[Learn More](#)

06

Asphalt pavements require about 20% less energy to produce and construct than other pavements.

[Learn More](#)

13

Asphalt is 100% recyclable.

[Learn More](#)

15

Up to 100% reclaimed asphalt is re-used in high quality asphalt.

[Learn More](#)

16

Bituminous asphalt pavements with intrinsic visco-elastic properties can several times be re-used at the highest performance level, even in new asphalt roads having the same performance level.

[Learn More](#)

18

Asphalt is the quiet pavement.

[Learn More](#)

25

Recycling plays a major role in saving natural resources.

[Learn More](#)

29

Only the necessary pavement thickness depending on traffic and the climate must be applied to get a durable, cost-effective and sustainable road.

[Learn More](#)

30

Asphalt is used in domestic water reservoirs, fish rearing ponds, and canal liners.

[Learn More](#)

34

Recent research in the Netherlands showed the potential of asphalt pavements to reduce rolling resistance and depending on that reducing fuel consumption.

[Learn More](#)

39

When used together with re-used asphalt, the CO₂e emissions of asphalt can be further reduced.

SUSTAINABILITY

ADVANTAGE 15

UP TO 100% RECLAIMED ASPHALT IS RE-USED IN HIGH QUALITY ASPHALT

A major advantage of asphalt is its ability to be recycled back into asphalt. Other materials used in road construction can also be recycled, but only into another product: for example, concrete is recycled as an aggregate substitute. In Germany and The Netherlands the percentage of reclaimed asphalt being re-used in asphalt again is now at 87% and 95% respectively, which is an astonishing record!

Essential maintenance frequently requires replacement only of the topmost layer of the road. Higher-grade surface material can be reused in situ by being planned off, treated and re-laid during maintenance reducing energy costs to a minimum (no transport, no storage, no reproduction, no transport to jobsite again)

From: EAPA publications and position papers:

EAPA asphalt in figures:

<http://www.eapa.org/publications.php?c=7>

http://www.eapa.org/usr_img/position_paper/industry_statement.pdf

<http://www.eapa.org/publications.php?c=75>

APA:

http://asphaltroads.org/images/documents/HWY_Noise_757265452_162006121.pdf

FHWA:

A Study of the Use of Recycled Paving Material: Report to Congress, June 1993, Federal Highway Administration and United States Environmental Protection Agency, Washington, DC. FHWA-RD-93-147 and EPA/600/R-93/095.

ASPHALT ADVANTAGES

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- More than 250 full papers currently under review
- More than 75% of the exhibition sold
- On-line registration opens 30 November 2015

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