

Asphaltrecycling in the Netherlands

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- Development / history
- Facts and figures
- Technique
- Requirements



Year 2010

	Production HMA million tons	RAP in HMA %
Spain	34	3
France	39	7
Austria	8	5
USA	327	17
Germany	45	26
The Netherlands	10	32



History
 Favourable circumstances (1970 -1980)

- technique
- economy
- policy



Circumstances in the Netherlands Technique

- available technique
- support by the client
- Dutch standard specifications



Environmental Circumstances

- global environmental awareness
- scarcity of quarry material
- alternative construction materials



Economic Circumstances

- oil crisis
- high bitumen prices
- return on investment
- min. 50% reclaimed asphalt in specs



Summarising

- accepted technology
- co-operation client - industry
- environmental policy
- scarcity of natural aggregates
- waste reduction
- oil crises



Today's incentives

- Dumping not allowed
- Economic value
- Mixing plants equipped
- Standard technical specifications
- Green Procurement

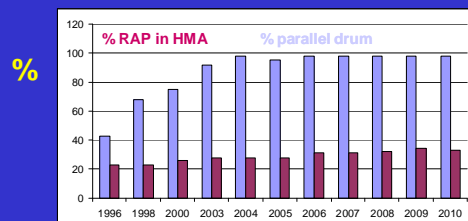


ENVIRON-MENTALITY



Facts and figures

- production HMA 8 - 9 million tns/yr
- 40 asphalt mixing plants equipped for recycling
- RAP 3.5 - 4 million tns/yr




Availability

- right place
- right time
- right quantity
- right quality



Requirements for RAP

- reclaimed bitumen quality
- aggregate size
- aggregate shape
- no pollution
- no tar
- homogeneity





Quality!
Pavement demolition
=
Preparing valuable material
No Waste!!



RAP = Reclaimed Asphalt Pavement

Quality test on existing pavement



RAP = Reclaimed Asphalt Pavement

Cold Milling:

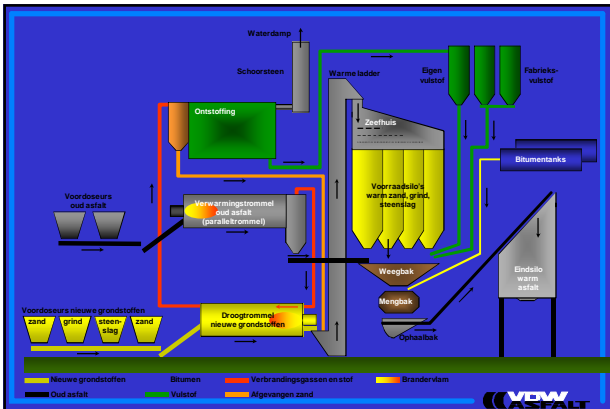
Possibly in layers



RAP = Reclaimed Asphalt Pavement

Crushing





Percentage RAP in Mix

Subbase	> 50 %	(98 %)
Binder	45 %	(90 %)
Wearing course	35 %	(50 %)
Porous asphalt	30 %	(20 %)
Stonemastic asphalt	25 %	(1 %)

**Requirements
for
hot mix with reclaimed asphalt
=
hot mix with 100% new materials**

Possible solution
~~Recipe approach~~
Performance based requirements

- ### Conclusions
- Success-factors**
- acceptance of technique
 - environ-mentality
 - co-operation
 - return on investment
 - market



