

ART 2025

COLD RECYCLING - ***WHY SHOULD I DO THAT?***

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A brief history of asphalt road construction



Europe

>4.000.000 km of asphalt roads

**Number of active asphalt mixing plants
~3.500 to 4.000**

producing

~700.000 tons/day or ~250.000.000 tons/year

Age of preservation and rehabilitation

2025



- Aging infrastructure - need for maintenance
- Sustainability and Circular Economy
- CO₂ reduction and CO₂ – Legislation Targets
- Resource scarcity
- Reduction of costs
- Short construction times



Benefits of cold recycling at a glance:

- Reduces material disposal costs by up to **100%**
- Reduces transport volumes by up to **90%**
- Reduces resource consumption by up to **90%**
- Reduces CO₂ emissions by up to **60%**
- Reduces the use of binding agents by up to **50%**
- Reduces total costs by up to **50%**
- Reduces construction time by up to **50%**

Cold In-Plant Recycling



Cold In-Plant Recycling



- 1 Damaged asphalt surface
- 2 WIRTGEN cold milling machine
- 3 STREUMASTER binding agent spreader
- 4 Water tank truck
- 5 WIRTGEN WR 240(i) cold recycler
- 6 HAMM compactor
- 7 Water tank truck
- 8 Bitumen tank truck
- 9 Cement silo
- 10 WIRTGEN KMA 240(i) cold recycling mixing plant
- 11 JOHN DEERE wheel loader
- 12 VÖGELE paver
- 13 Recycled asphalt layer

► Production of BSM* with the KMA 240(i)

*BSM: asphalt milled material with foamed bitumen / emulsion



Cold In-Situ Recycling



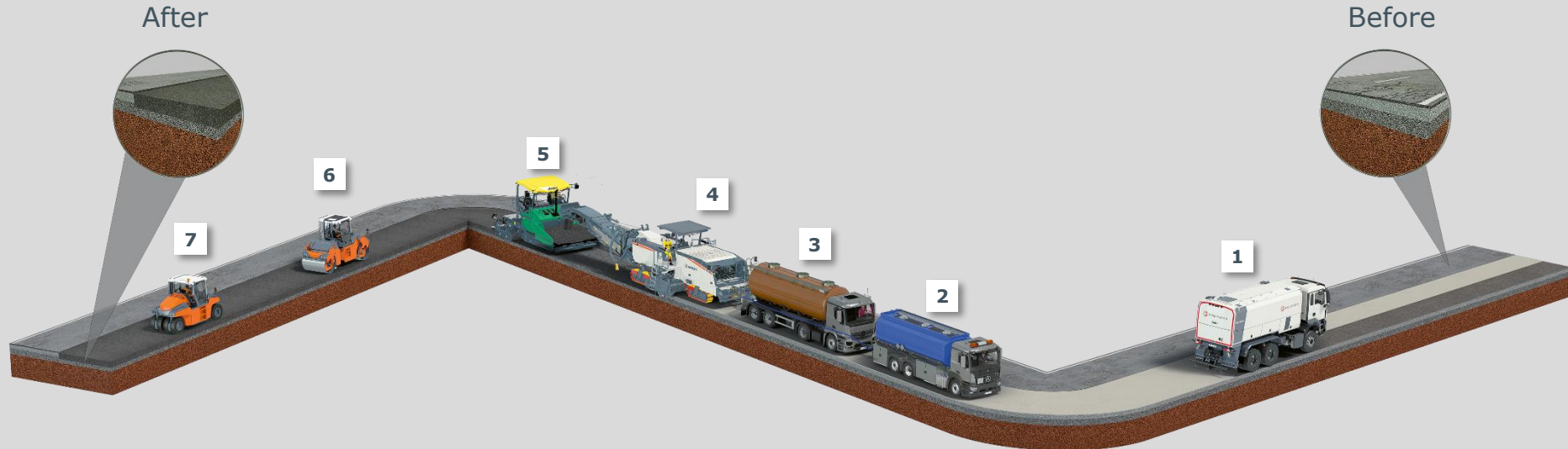
Cold In-Situ Recycling

► W 380 CR(i) with rear loading



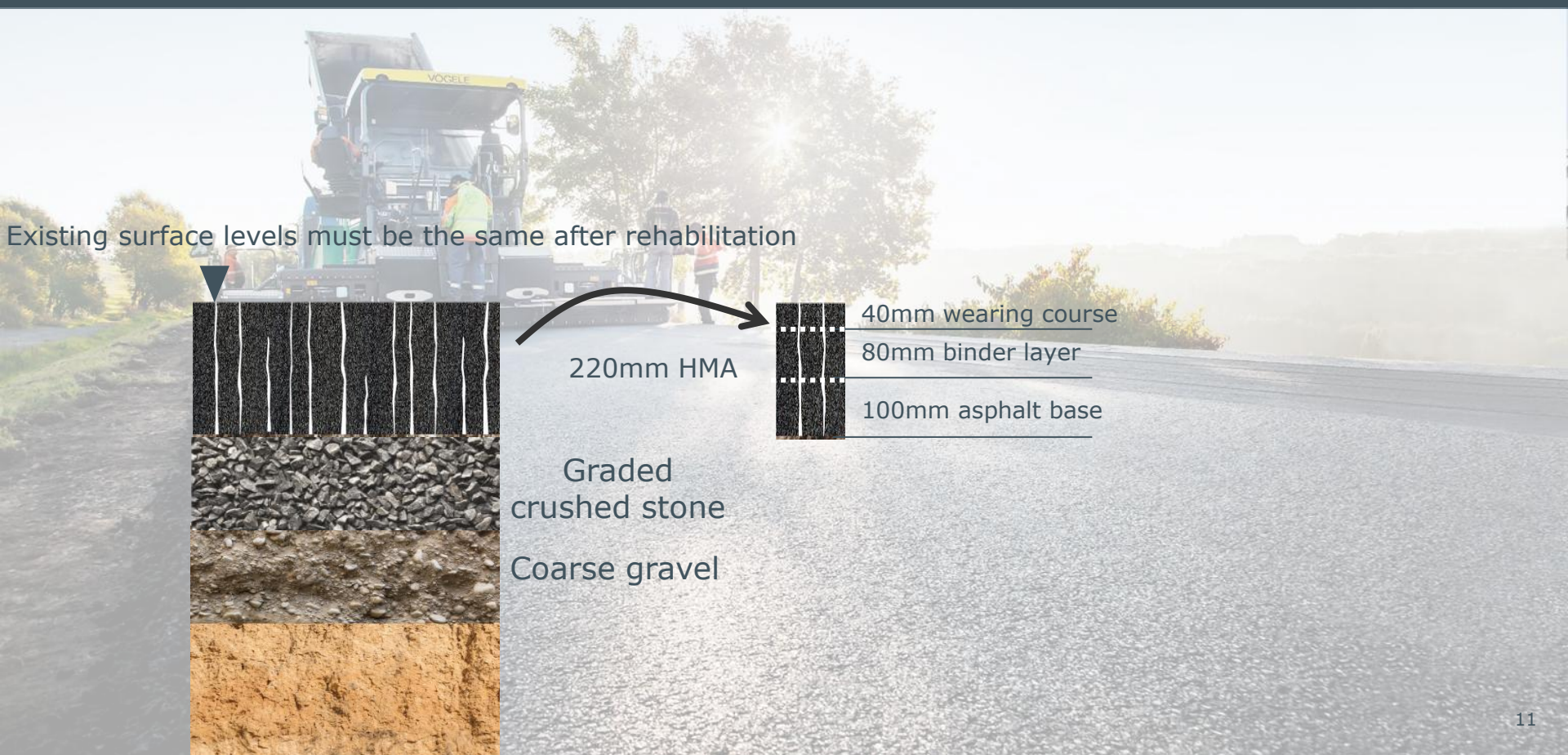
- 1** STREUMASTER binding agent spreader
- 2** Water tank truck
- 3** Bitumen tank truck
- 4** WIRTGEN W 380 CR(i) cold recycler

- 5** VÖGELE paver
- 6** HAMM tandem roller
- 7** HAMM pneumatic tire roller

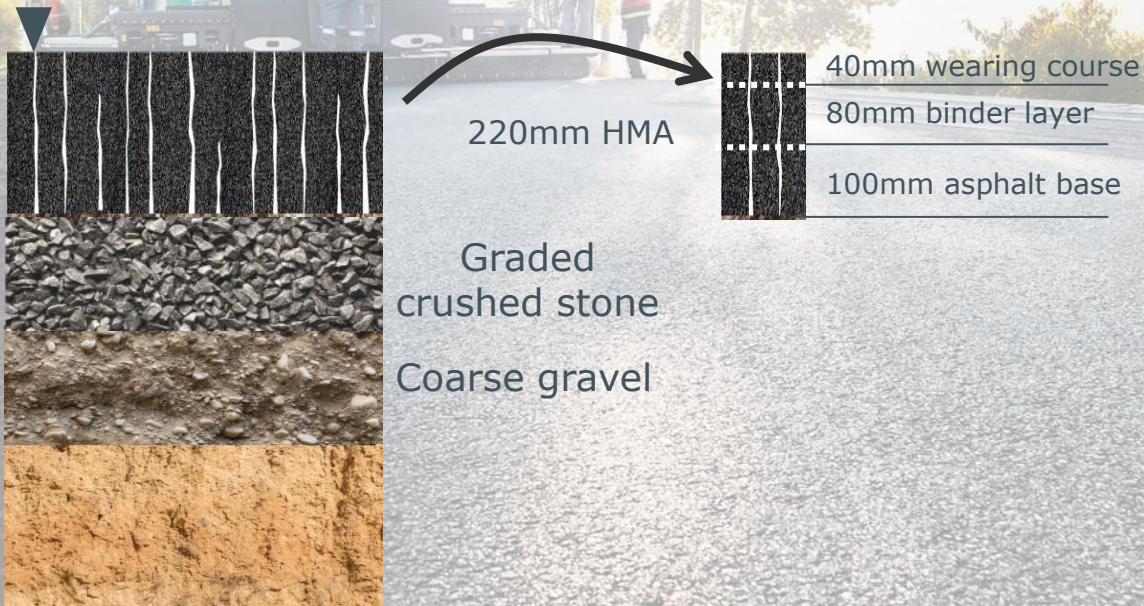


► The recycling train when paving a bituminous base layer (BSM)

The cold recycling process with BSM



Existing surface levels must be the same after rehabilitation

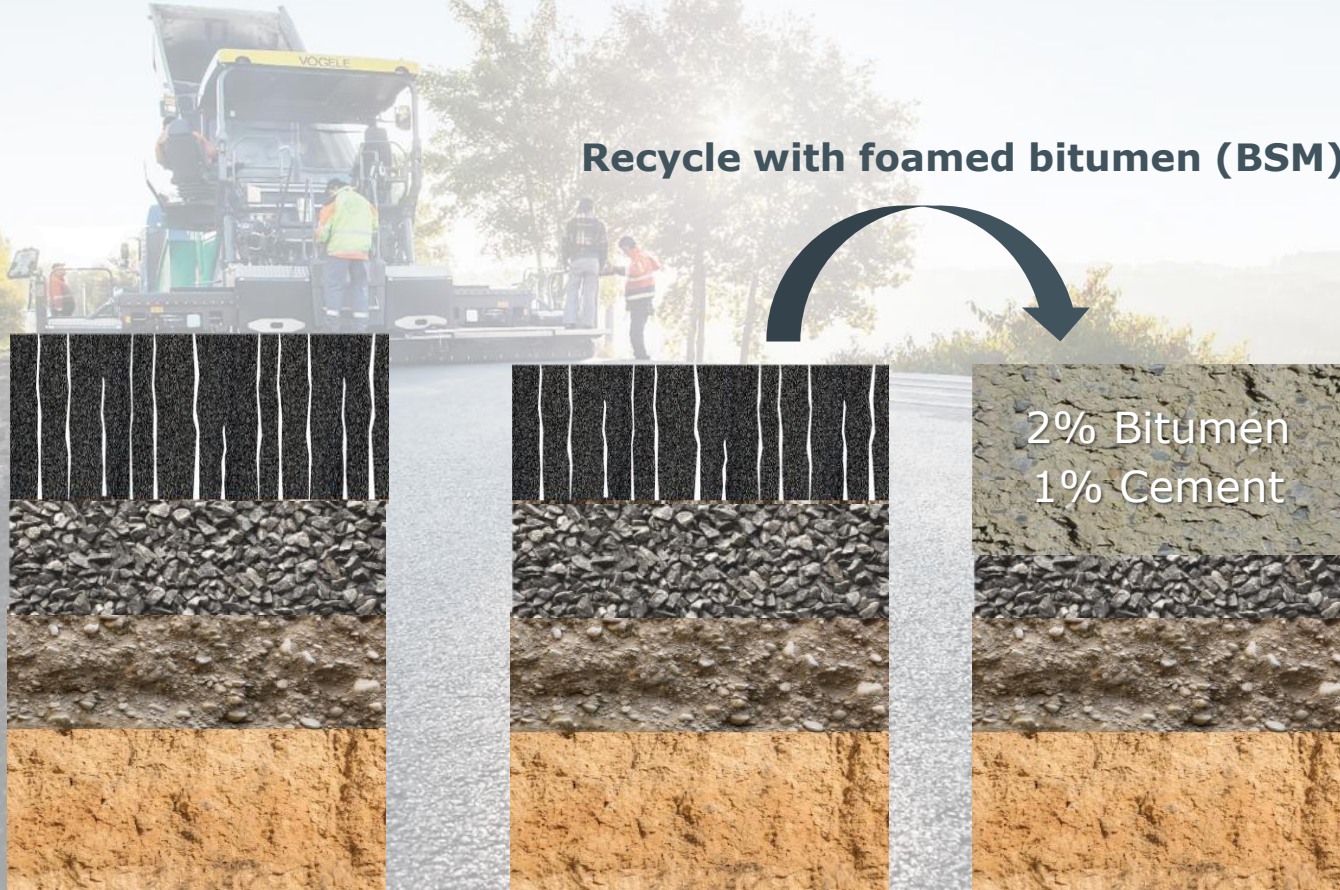


The cold recycling process with BSM



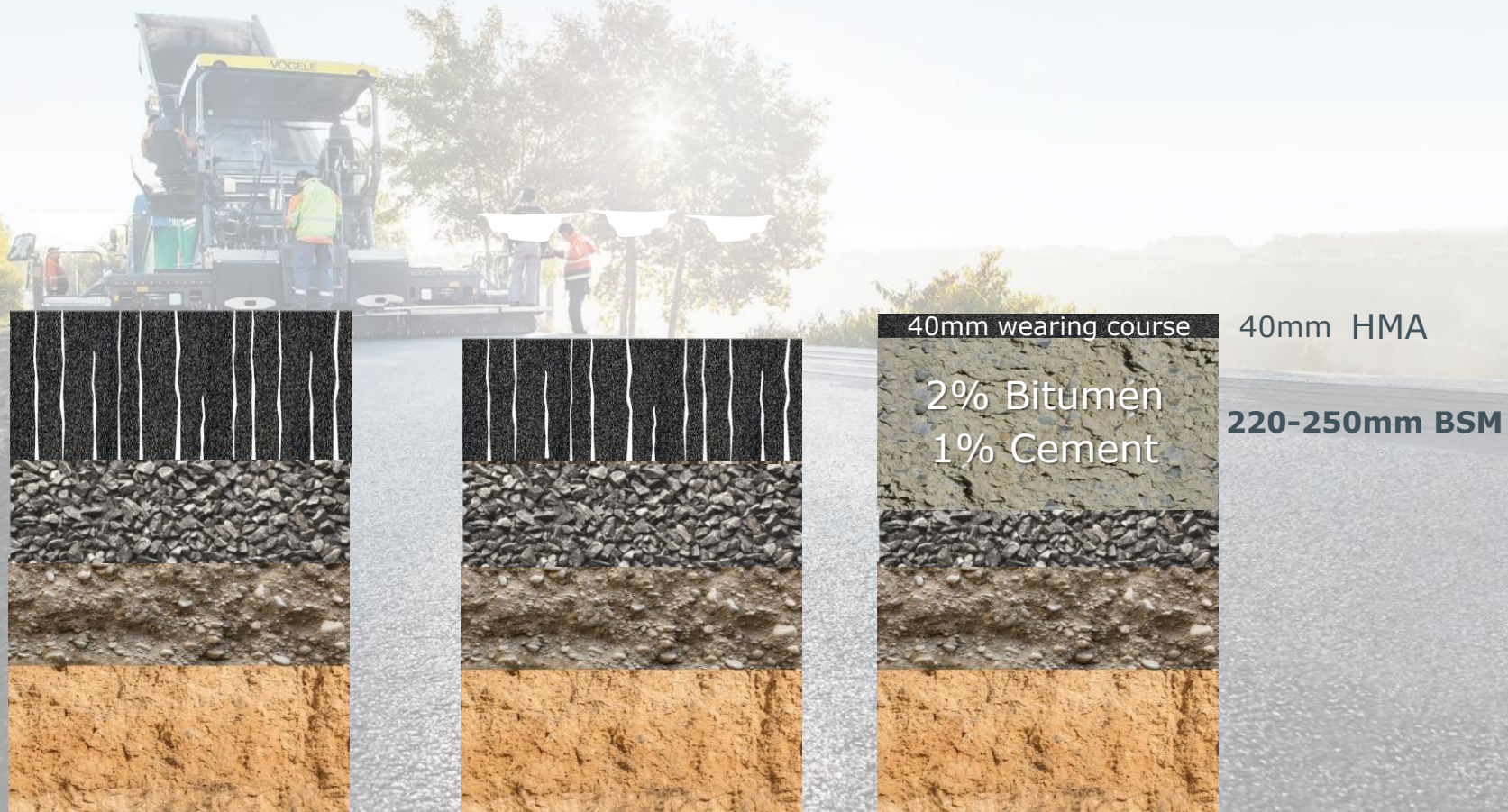
The cold recycling process with BSM

Recycle with foamed bitumen (BSM)



220-250mm BSM

The cold recycling process with BSM



COLD RECYCLING IN-PLANT & IN-SITU





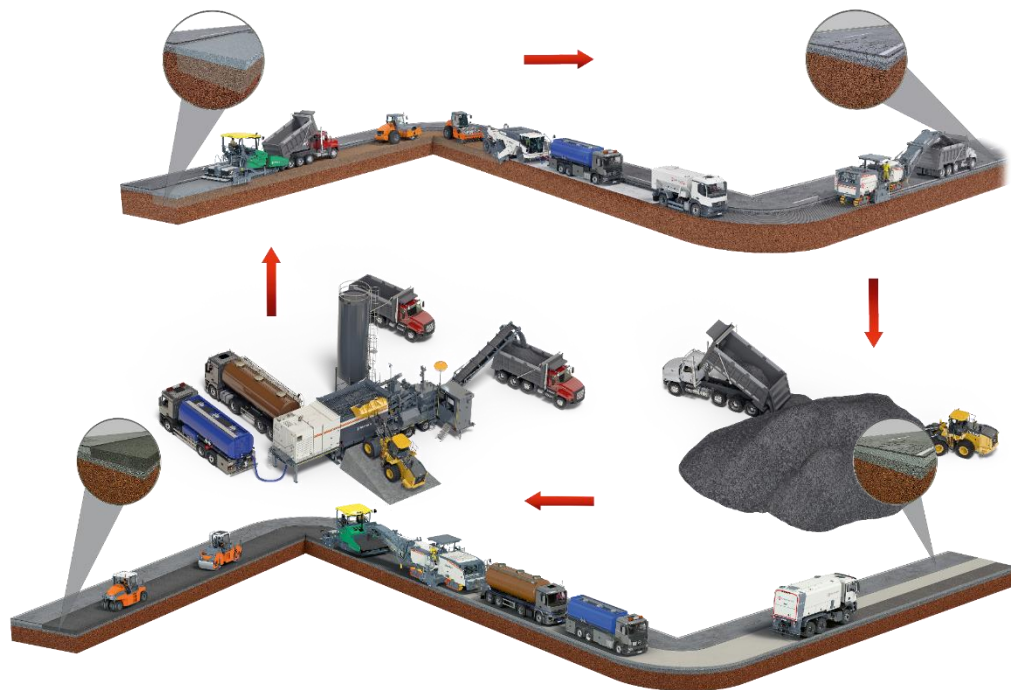
Width: 7,50m
Length: 1000m
Thickness: 22cm



Variety of applications

The process can be carried out directly on the construction site or in a mobile mixing plant for:

- Structural rehabilitation
- Maintenance
- Upgrading Roads
- Widening





Sustainability and resource conservation

- **Reuse of existing materials:**

Existing road surface (e.g. asphalt milled material) is prepared and 100% reused directly on site.

- **Fewer primary raw materials:**

The use of recycled material reduces the need for fresh aggregates materials.



Resources



Advantages of the cold recycling process with BSM



Public
WIRTGEN

Reducing transport volumes

- Protects the existing infrastructure.
- This achieves the concentrated traffic calming effect required due to the construction site.

25km

Total 13.000km

Up to 90% less transport.
Saving truck loads:
260 loaded Trucks
(25ton)





Advantages of the cold recycling process with BSM



Cost-effectiveness and cost savings

- Reuse and fast cold processing
 - Less transport
 - Less Bitumen
- significantly reduce construction costs.





Time saving

- The renovation is carried out in a single operation – milling, mixing, paving – which significantly shortens the construction time

In-plant: up to 240 ton/h

In-situ: up to 600 ton/h





Technical advantages

- **High load-bearing capacity and flexibility**
The provision of a stable yet flexible foundation for asphalt pavement is facilitated by BSM layers.
- **Equivalent construction quality**
The quality of the construction is comparable to that of conventional construction methods, with similar costs over the entire service life.





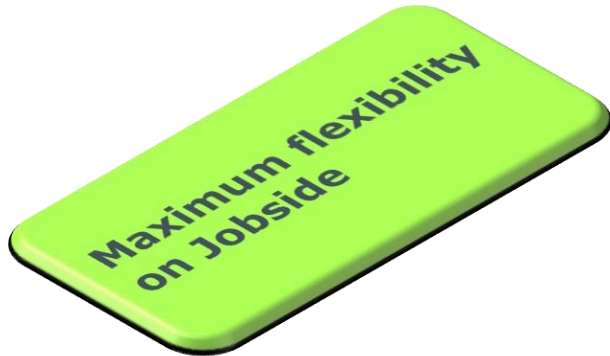
Flexibility in use

- **Processing time**

The BSM material can also be stored temporarily and installed later, which facilitates construction site logistics

- **Immediate opening to traffic**

After compaction, the road can be used.





Environmental friendliness

- **Reduced energy consumption**

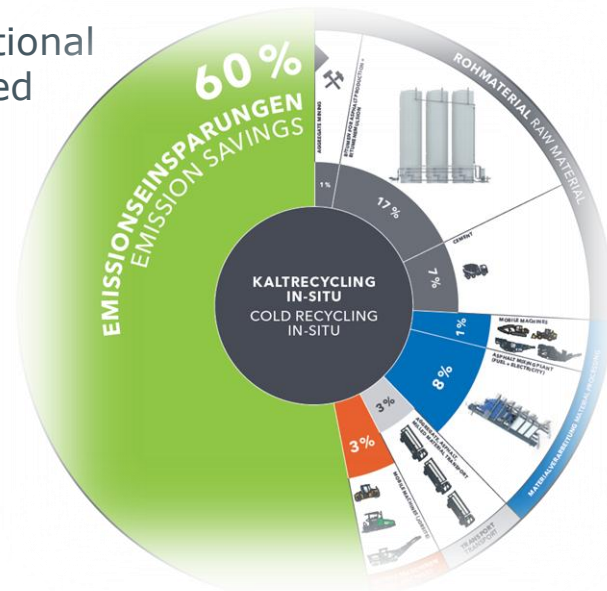
Since no heating of the entire material is necessary, significantly less energy is consumed

- **Lower emissions**

The CO₂ balance is significantly better compared to conventional processes Since the material does not have to be transported away and new material does not have to be delivered



=~100 Family Homes/year





*Why should I
do that ?*

Age of preservation and rehabilitation

2025



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Let's not reinvent the wheel



Technical Guideline: Bitumen Stabilised Materials

A Guideline for the Design and Construction of Bitumen Emulsion and Foamed Bitumen Stabilised Materials

TG2 Third Edition June 2020



*If I had asked
people what they
wanted, they
would have said
faster horses.*

Herry
Ford





Thank you