



*Asphalt Recycling
Technologies*

ART Technical Committee for Cold Recycling

Building Consensus: Contributions of the ART Technical Committee on Cold Recycling

3rd International Conference on **Asphalt Recycling Technologies**

21. & 22. September 2026

Feedback on progress to date and the way forward...



ART 2026

Reclaim. Reuse. Rebuild Smart.

Asphalt Recycling in practise: Proven methods, new challenges, real solutions



Asphalt Recycling Technologies

Cold Recycling Status Overview

A Loudon International Perspective

Cold Recycling in Europe

A Loudon International Perspective- Cold recycling is growing across Europe

Germany: A recycling company is adding BSM to its product list, with successful demonstration projects near Kiel (Joern Ziel)

Ireland: Successful in-plant and in-situ projects (Michael Murphy)

Romania: Project and specification development continuing (Dr. Peticila)

Greece: A 600 km BSM project has started on the Egnatia Odos concession (Loudon)

Latvia: The Latvian Road Authority has three projects in design, with tendering planned for early 2027 (Janis Baumanis)

Denmark: Continued strong activity (Alan Bay)

Netherlands: Continued interest (Marcel Sprenger & Jurgen van Beers)

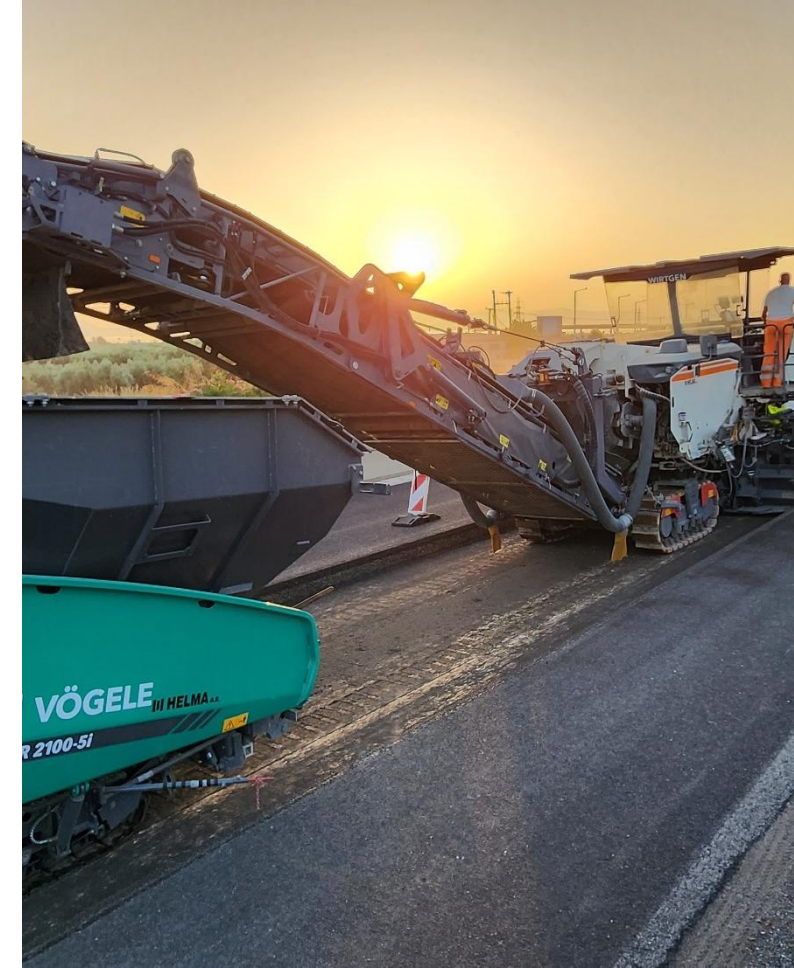
Croatia, Spain and Norway: Investment in cold recycling equipment



Cold Recycling Across the Globe

A Loudon International Perspective

USA: Ben Bowers and Dave Jones
Brazil: Renewed interest from concessions (Loudon)
South Africa: Various projects (Dave Collings)
Thailand: Chulalongkorn University, Bangkok, BSM specification for Thailand (Loudon)
Uruguay: Ongoing implementation (CVC)
Ecuador: Demonstration projects completed (Diteca)
Morocco: Projects and specifications by Autoroutes du Maroc (2026)
Saudi Arabia - Aramco: Trial projects (COLAS Arabia L.L.C.)
Suriname: In-plant projects implemented (Loudon)
Georgia: Airport application of BSM interest (Black Sea Construction)
Australia: Ongoing FSB projects (Warren Smith)





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ART Technical Committee for Cold Recycling Feedback

Progress to date

ART Technical Committee on Cold Recycling

Task 1	Prepare a database of existing project specifications to address the procurement, construction and the acceptance criteria for in situ and in plant mixes	90%
Task 2	Develop a clear and acceptable BSM material definition and classification	100%
Task 3	How to develop a Guideline on European Level (or series of guidelines) covering: technical specifications of the material and mix (mix components, mix design steps, acceptance criteria), different tests' specifications and pavement design	75%
Task 4	Develop an implementation road map, including the steps for the full implementation, tests or monitoring program in each step and their acceptance criteria	50%
Task 5	Identify research gaps in BSM Technology	90%

TASK 1

☐	Name ▲		Size	Modified
☐	 Australia	...	24.6 MB	July 6
☐	 Belgium	...	47.7 MB	July 6
☐	 Brazil	...	1.3 MB	July 6
☐	 Canada	...	205 KB	July 6
☐	 France	...	113.2 MB	July 6

TASK 1

☐		Germany	...	1.7 MB	July 6
☐		Greece	...	578 KB	July 6
☐		Italy	...	27.6 MB	July 6
☐		Netherlands	...	1.9 MB	July 6
☐		Poland	...	1.7 MB	July 6

TASK 1

☐		South African	...	3.9 MB	July 7
☐		Spain	...	2.1 MB	July 6
☐		Switzerland	...	152 KB	July 6
☐		UK	...	32.5 MB	July 13
☐		USA	...	2.1 MB	July 6

TASK 2 -BITUMEN STABILISED MATERIAL (BSM) DEFINITION

Bitumen Stabilised Materials (BSM) are cold-mixed materials in which a granular aggregate matrix is stabilised by adding a small amount of bitumen binder to impart cohesion, stiffness and moisture resistance through non-continuous bound behaviour. This non-continuous bound behaviour (not unbound not hydraulic nor asphaltic) is achieved by keeping coarse particles uncoated by bitumen, but “spot-welded” by droplets of bitumen dispersed among fines and active filler. This results in a failure mechanism due to shear deformation (rutting) rather than classic asphalt fatigue cracking.

The granular aggregate can be virgin aggregates, reclaimed asphalt pavement (RAP), other secondary aggregates or a blend of those, but must have a suitable continuous grading with sufficient fines and must comply with (local) environmental requirements.

The bitumen binder used to stabilise the aggregate is unmodified penetration grade bitumen (either foamed or in an emulsion) in the net range of typically 1,8 – 2,5 (m/m)% (bitumen emulsion application rate needs to be higher to achieve net bitumen content in this range). Higher application rates may be required with aggregate of more natural origin (higher fines content) as long as the non-continuous bound behaviour is not corrupted.

TASK 2- BITUMEN STABILISED MATERIAL (BSM) DEFINITION

- Active filler (such as cement or hydrated lime) is added to reduce moisture susceptibility and should generally not exceed 1,0 (m/m)%.
- Water is added to achieve optimum moisture content for compaction which is essential for compressing mortar droplets between aggregate particles to obtain spot-welds.
- BSM can be applied as base or subbase layers, but also as binder layers making it more sustainable and economically feasible as it will only require one surface layer (asphalt or chipseal).

Task 3

Part	title	DESCRIPTION
0	Guideline base	Overview of BSM and cold recycling
01	Glossary	Terminology and definitions
10	Application of BSM	Behaviour, advantages, limitations, performance
20	Materials in BSM	Aggregate, binder, water requirements
30	Pavement investigation	Sampling and assessment procedures
40	Mix design	Laboratory and design testing
50	Structural design	Layer design and load-bearing capacity
60	Application and compaction	Construction methodology
70	Process and quality control	QA/QC procedures
80	Maintenance and recycling	Lifecycle management and sustainability

BSM Knowledge Centre

Bitumen Stabilised Materials Shared + Create notebook Copy Analytics Share Settings PRO A

Sources

- 15-r1.pdf ✓
- 21-R22.pdf ✓
- 113-UK Serfass.PDF ✓
- 144-UK Khwier.PDF ✓
- 233-UK Poirier.PDF ✓
- 402 088 Wendling.pdf ✓
- 402 088 Wendling2.pdf ✓
- 403 008 Eckmann.pdf ✓
- 403 014 Tebaldi.pdf ✓
- 405 002 JP Serfass.pdf ✓
- 405 004 Guier.pdf ✓
- 405 517 Goursaud.pdf ✓
- 405 545 Wendling.pdf ✓
- 405 546 Gaudefroy.pdf ✓
- 469FDRPDR GuideStg6ADA.... ✓
- 469FDRPDR GuideStg6ADA.... ✓
- 2009_UCD-ITS-RR-09-69.pdf ✓
- 2009_UCD-ITS-RR-09-69.pdf ✓
- 16173724Skrinsie Nel Kotze ✓

Chat

Saturday, September 19

I am struggling to achieve good densities on my BSM. What can the problem be ?

Thoughts ▾

Struggling to achieve target densities on a Bitumen Stabilised Material (BSM) layer is a common field challenge. Because BSMs behave like high-quality granular materials rather than hot mix asphalt ¹ ², density development depends heavily on fluid lubrication, particle packing, and roller effort. The primary factors that cause low or inconsistent field densities include:

1. Incorrect Compaction Moisture (Fluid Content)

- **Material is too dry (<60%–75% of OMC):** Water acts as a lubricant during compaction ³. If the material drops below its target compaction moisture, internal friction between aggregate particles remains too high, causing the material to resist packing and densifying only near the surface ³ ⁴.
- **Material is too wet (>100% of OMC / over-saturated):** Excess fluids create hydraulic pore-water pressure under heavy rollers ⁴ ⁵. This

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The Cold Pavement Paradigm
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186d ago

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Shakedown Theory and Materi...



Asphalt Recycling Technologies

2026 and Beyond

The next Chapter

2026 and beyond – The next Chapter

Thank you to our volunteers

Your contributions have carried ART a long way

As volunteer commitments grew, ART increasingly took second place

Cold recycling deserves a dedicated platform of its own, not spare-time attention

Thank you to the Institute of Highway Engineering

For three years, Prof. Alvaro and the Institute of Highway Engineering have hosted ART

That arrangement had real benefits, but also limitations that we have now outgrown

The way forward in 2027

Establish the Asphalt Recycling Technology Association as a registered association

Open to all supporters of asphalt recycling who want to support the cause

Build dedicated resources to deliver what a volunteer model could not

Pool available resources and funding to promote cold recycling across Europe

2026 and beyond – The next Chapter

Leading the way forward

I am pleased to announce that Nadine Kahil will lead us through the process of establishing the Association

From 1 October 2026, she will dedicate 8 hours a week to ART

Depending on progress and interest in the Association, the aim is to make this a full-time position

Join the Association

Companies and individuals are welcome to join as founding or ordinary members

For details, please contact Nadine Kahil, André Greyling or Martin Diekmann

The way forward for 2027

Establish the Asphalt Recycling Technology Association

Continue with the completion of the identified tasks with the aim to complete the first 5 tasks no later than 1 March 2027

Continue developing and promoting asphalt recycling where possible!



Asphalt Recycling Technologies

**QUESTIONS AND/OR COMMENTS
WE LOOK FORWARD TO YOUR CONTINUED SUPPORT !**