

The economic and ecological approach.



The use of cold recycling on a road re-construction project

**JOB
REPORT**



Cold recycling on a road re-construction project – the economic and ecological approach.

An innovative method of road repair has been used in the German district of Rotenburg/Wümme, Lower Saxony to bring a district road back up to scratch. On one hand the aim was to keep costs below those required for full depth reconstruction and to achieve better quality than with a short term repair. On the other hand material from the existing pavement was to be recycled. Using a BOMAG MPH 125 recycler with a foamed bitumen system allowed both requirements to be met.

Large areas of the Rotenburg/Wümme district are made up of coastal heathland characterised by sand deposits, with extensive woodlands and moorlands. Although this makes for an attractive landscape, it also means that the roads sometimes run on bases with a low bearing capacity. As a result district and

local roads are particularly prone to major deformation, unevenness, edge damage and cracks. Budgets are often tight, making it impossible to completely overhaul roads. So public roads are usually repaired using new sub-base layers and asphalt surfaces or by carrying out local repairs.



Condition of the district road K 101 before renewal.



However, the Office for Water Management and Road Construction for the Rotenburg/Wümme district decided to use an innovative method of road repair for district road K 101 (Mintenburg – Fahrendorf). In 2005 and 2007 the Office had successfully used the cold recycling method with foamed bitumen for some of its road repair work.

layer became the base for the cold recycled layer with foamed bitumen.

To use the cold recycling method the aggregate distribution and quantity of supplementary material to be added had to be checked, and the dosage for the bitumen, reaction water and mixing water



BOMAG MPH 125 milling recycler mixing foamed bitumen and water.

The existing asphalt pavement was milled to a depth of 30 cm and then profiled with a grader so that areas of settlement on the old road were evened out. After pre-compaction of the approx. 30 cm thick asphalt granulate layer by a 10 t single drum roller, the semi coarse 15 cm top layer was homogenised with a stone crushing milling machine and broken down to a maximum size of approx. 32 mm. This 15 cm thick

specified. Only specialist recyclers with water and bitumen dosing equipment can be used for the base course prior to stabilisation. Consistent mix quality and working depth as well as high bitumen and water dosing accuracy are the keys to quality on the new base course.

Kutter decided again to use a BOMAG MPH 125 recycler. The engine output of nearly 600 PS, working width of up to 2.5 m and working depth of up to 600 mm allows it to work a large scale, flexible area. With its combined articulated and rear axle steering and the permanent all-wheel drive the unit provides high productivity. A rotor drive with automatic power control and variable rotor speed ensures high quality mixing with little rotor wear.

The rotor is equipped with 224 milling cutters rotating against the travel direction. The recycler is equipped with a separate water and bitumen dosing system which sprays water and bitumen into the rotor hood during the mixing process. Both systems are automatically controlled by a dosage computer working in relation to speed. This ensures high mix quality.

Foamed bitumen and water are added to produce the optimum water content in the 15 cm granular layer. For this, the bitumen tanker was connected to

the front of the recycler and a water tanker to the rear. The target parameters, e.g. ratio of bitumen and water were entered into the dosage computer. The added quantities were automatically adjusted by the machine based on the thickness of the layer. The additive quantities were displayed on the operating screen throughout the process.



BOP data terminal to monitor the process.

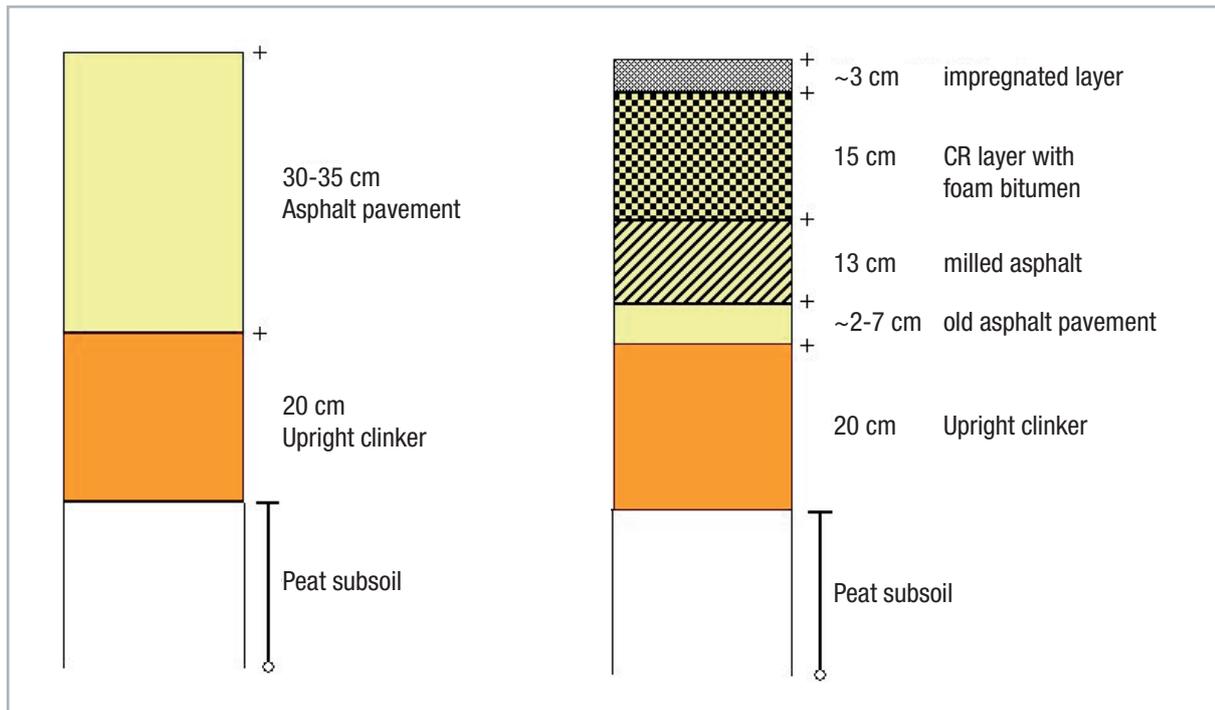


Completed cold recycled layer.



Application of the CR layer was continuously monitored after which a 10 t single drum roller was used for pre-compaction followed by grading and

another 10 t rolling application. Finally an asphalt surface was applied together with two chipping coats.



Old road surface.

New road surface.

Specifications as per the tender:

Binder	foam bitumen 70 / 100	Tolerance	1,0 cm / 4 m
Binder content	3,0 %	True-to-profile layer	~ 1 cm
Compaction	97 % Proctor		

Kutter and the Office for Water Management and Road Construction for the Rotenburg/Wümme district were satisfied with the result on conclusion of work. Both sections of the K 101 district road (totalling approx. 7,000 m² of road to be renewed) were completed in four working days. “We were highly impressed by the MPH 125’s performance and manoeuvrability. The excellent mix quality and precise dosage by the electronic controller

were also exemplary,” says Kutter’s Construction Manager in charge, Franz-Heinrich Rienhoff (Grad. Engineer), summarising the job.

The road construction authority was also satisfied with the outcome of the project. Costs were comparable to the installation of a sub-base layer and a new top layer, but the quality achieved was far superior. And the job not only hit the mark



Crushing large stones on the top layer.



Constructing the CR layer followed by grading.



Spraying hot bitumen for the surface layer.



Surface layer prior to second application of chippings.



Second chipping application.



Rolling the second chipping coat with a BW 151 AC-2.



with regard to financial targets: material from the existing pavement was completely recycled meaning no costly transportation of material to and from the site and less impact on the environment. Now

the road construction authority sees other potential in future given these important economic and ecological benefits.



K 101 finished with a surface layer.

The company:

BOMAG is the global market leader in compaction technology. The company, which is situated in Boppard and has been part of the FAYAT Group since 2005, produces machines for soil, asphalt and refuse compaction as well as stabilizers/recyclers, milling machines and pavers. The company has six branches in Germany and twelve independent subsidiaries.

More than 500 dealers in over 120 countries offer global distribution of BOMAG products and services.

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