Wirtgen │ Base layer rehabilitation with the CR series: in situ cold recycling in Bavaria

The cost-efficient alternative to traditional road rehabilitation methods cuts construction time and costs

In Markt Indersdorf, around 50 km north of Munich, cutting-edge technology meets long-term infrastructure planning considerations Here, a cold recycler from the CR series took just three days to produce a new base layer – and not only cut the construction time by 6 to 8 weeks, but also significantly reduced the burden on local taxpayers.

Cold recycling as a remedy for the backlog in road rehabilitation

Germany’s road systems are plagued by an enormous backlog of planned or pending rehabilitation projects – especially in the case of communal infrastructure. The main causes of this are high traffic density, adverse weather conditions and long construction times. Traditional road rehabilitation methods are often pushed to the limit when it comes to cost-efficient project fulfilment. Material and transportation costs are high, construction times are long, and the environmental footprint is frequently less than ideal. With in-situ cold recycling, Wirtgen offers a pioneering alternative that is cost-efficient, resource-friendly and quickly achieveable – an ideal solution that also fulfils the road construction requirements of regional, local and communal authorities.

Fast, simple and resource-friendly

For the rehabilitation of the ST 2045, lead contractor Seizmeir from Scheyern relied on a CR series cold recycler with foamed bitumen technology. Here, hot bitumen is foamed by the addition of precise amounts of air and water and added to the mixing process together with small quantities of a pre-spread cement binder. As a rule, the surface layers, made up of asphalt or granular material, are taken up and mixed with binding agents in a single pass. In the mixing chamber of the W 240 CRi, the foamed bitumen forms fine micro-bonds within the material. These bonds are decisive for ensuring the long-term elasticity of the BSM (Bitumen Stabilised Material) used as a new base layer.

The material was transferred directly from the cold recycler to the material hopper of the Vögele paver and laid down as the train advanced. Here in Markt Indersdorf, the machines achieved an impressive production rate of 360 tonnes an hour. There was no need for removal of material in trucks, intermediate stockpiling or new base layer material.

Impressive results

The materials were tested in the construction materials laboratory before the start of the project to find the ideal formula for the new base layer. In the course of this, it was determined that the existing 50 – 80 mm asphalt surface layer would not be sufficient for the desired end result. In view of this, additional reclaimed asphalt pavement (RAP) from nearby construction sites was mixed in during the cold recycling process to produce the desired 160 mm BSM base layer. The 100 mm layer of RAP augmented the existing asphalt surface layer and, together with the cement binder and foamed bitumen, became a further ingredient of the mix for the new base layer of the road. The result: a homogeneous, bitumen stabilised base layer.

The Wirtgen Group production system in action

In the first phase of the project, a John Deere 672 GP Grader and a Hamm HD+ 140i tandem roller prepared the construction site by grading and compacting the additionally placed RAP.

The cold recycling process began with the spreading of precisely dosed quantities of cement by a Streumaster SW 16 MC binding agent spreader. The existing roadway was pre-milled by W 150 CFi and W 130 Fi compact milling machines from Wirtgen to achieve a wider working width. All the milled material was then processed by the addition of foamed bitumen in the Wirtgen cold recycler W 240 CRi. The paving of the BSM layer true to grade and slope by the Vögele paver Super 2100-5i was followed by compaction with the Hamm HD+ 140i tandem roller and final compaction by the HP 280i pneumatic-tyre roller.

The surface layer was also paved by the Vögele Super 2100-5i, which was fed with asphalt mix by a Vögele MT 3000-2i mobile feeder.

Successful completion of a particularly challenging job

The existing base layer consisted of the round gravel typically used in this region – a material that was assessed as unsuitable for inclusion in the cold recycling process. The cold recycler and the milling machines milled down precisely to the upper boundary of the gravel layer. This meant that the road bed remained untouched and the new 160 mm base layer was augmented. The now thicker layer structure increased the load-bearing capacity of the road. In the final step, a 40 mm thick surface layer of new asphalt was paved over the top of the BSM base layer. ‘We are now rehabilitating the road with the cold recycling method with a complete recycling train of Wirtgen Group machines’, says Stefan Hausmann, Senior Site Engineer at SSP Seizmeir Strassen- und Pflasterbau GmbH. ‘We are paving a new and stronger base layer with additional milled material from another construction site. The big advantage: It’s a lot faster than complete removal.’

Minimal traffic disruption

The entire cold recycling train worked as a rolling construction site along the road, which meant that the sections in front of and behind it could be used as normal, even by heavy agricultural machinery.

**Photos:**

  
W\_pic\_JS\_Stangenried\_W240CRi\_1024\_0002  
The W 240 CRi, the mainstay of the cold recycling train, is one of the world’s most powerful and efficient cold recyclers.

  
W\_pic\_JS\_Stangenried\_W240CRi\_1024\_0050

In situ cold recycling is particularly resource-friendly and cost-efficient and enables the achievement of projects without long construction times.

  
W\_pic\_JS\_Stangenried\_W240CRi\_1024\_0052

The working width of the cold recycling train was extended to an overall width of 5 m by pre-milling with a W 150 CFi and a W 130 Fi.

  
W\_pic\_JS\_Stangenried\_W240CRi\_1024\_Asphalt\_0094

The SUPER 2100-5i took over the paving of both the BSM layer and the surface layer.

  
W\_pic\_JS\_Stangenried\_W240CRi\_1024\_0085

Final compaction was carried out by a HP 280i from Hamm.

Please note: The photographs shown here are only previews. If you wish to publish them in other media, please download the higher resolution (300 dpi) versions from the link provided here.

**Videos:**



[Click here to view the video.](https://youtu.be/EQwNG-NVDg8)

**[You can find more videos on the Wirtgen Group](https://www.youtube.com/@WirtgenGroup) YouTube Channel.**

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