# Wirtgen W 380 CRi: World’s Most State-Of-The-Art and Highest-Performance Cold Recycler

Due to the rapid increase in heavy-duty transport, the global road network is showing visible signs of aging in many places. In order to ensure that the road infrastructure remains functional over the long term, roads are increasingly requiring structural rehabilitation. Wirtgen developed the high-performance W 380 CRi cold recycler specifically to meet these requirements.

The Challenge: **Completing** Structural Road Rehabilitation More **Quickly**

Road rehabilitation projects all have to meet the same requirements, regardless of where they are being carried out: they must be cost-effective, eco-friendly, and above all, finished quickly – because time is of the essence. Patchwork repairs are neither sustainable nor do they address the root cause.

The Solution: Wirtgen Cold Recycling Technology

The cold recycling process – which at a minimum recycles the surface and base course material – is already popular today, and demand for this solution will continue to grow in the future. In the in-place cold recycling process, for example, the asphalt surface is removed either in full or in layers, depending on the level of damage, by a recycling train operating across the entire width of the pavement in a single pass, mixed with binding agents on site, and then paved again immediately.

W 380 CRi Sets the Pace of the Recycling Process

At the heart of this recycling train are tracked cold recyclers such as the new W 380 CRi from Wirtgen. With available working widths of 3,200, 3,500 and 3,800 mm, the recycler mills the road between 100 and 300 mm deep in most applications. At the same time, it granulates the material and transforms it into a new, homogeneous material mixture by adding binding agents such as cement, bitumen emulsion, or foamed bitumen. With a mixing capacity of up to 800 t/h, the cold recycler can feed enormous quantities of recycled material to a Vögele paver via its swivel-mounted and height-adjustable discharge conveyor at the rear. This makes it possible to complete extremely long stretches of road in a single day of work. Final compaction is carried out by Hamm tandem and tyre rollers.

Wirtgen’s tracked recyclers use the down-cut process when recycling. The cold recycling pioneer developed this process, in which the milling and mixing rotor rotates in sync, years ago. This method has become an essential part of day-to-day recycling operations, as it makes it possible to selectively vary the particle size of the material being processed – especially in the case of fragile, thin, old asphalt roads.

Extremely Durable Foamed Bitumen Mixture

Roads rehabilitated using the cold recycling process also have to meet the same durability requirements as roads designed and built using conventional methods. With the development of its own laboratory equipment, Wirtgen has created solutions which guarantee that the rehabilitation measures will be cost-effective and sustainable even before they are carried out. As a result, the recycler not only makes it possible to define the ideal composition of the RAP, but also to directly analyze its quality and properties using samples in triaxial and splitting tensile strength tests. The quality of the foamed bitumen can also be precisely defined in the materials laboratory before starting the rehabilitation project.

Cold recycling, particularly with foamed bitumen, is becoming increasingly popular with road authorities and construction companies. In this process, the foamed bitumen is processed in-place with the existing building material. The newly produced bituminous mix is known as BSM (bitumen-stabilized material). After final compaction, it shows a long-term and extremely high load-bearing capacity. Viewed from a long-term perspective, BSM has another advantage: the foamed bitumen mixed in leads to selective adhesion within the cold recycling layer and thus prevents cracking. The permanent layers prepared in this way form the perfect foundation for the final asphalt layer with considerably reduced thickness.

**Cost-Effective Design with Low Life Cycle Costs**

Another advantage of the cold recycling process that cannot be understated is the significant potential for energy savings during material processing. The raw materials do not have to be dried or heated, which means that 10-12 liters of fuel can be saved per ton compared to conventional rehabilitation methods. By almost completely reusing the surface course, the need to transport building materials can be reduced by up to 90%. At the same time, companies can cut resource consumption by 90% and completely eliminate the need to dispose of materials. This results in significantly reduced fuel consumption and lower CO2 emissions. Most importantly, the cold recycling design makes it possible to reduce the use of binders by up to 50% – the area with the greatest potential savings, since binders are still the biggest cost factor in road rehabilitation. Thanks to the special properties of BSM, cold recycling technology results in very low costs over the entire life of the roads.

*Rehabilitation That Keeps Traffic Flowing*

Since the RAP is immediately recycled and the associated logistics are extremely lean, in-place cold recycling means that projects can be completed much quicker than with conventional rehabilitation methods.

The entire series of machines required for the rehabilitation process can fit in the width of just one lane. On two-lane roads, this means the recycling process is carried out across the width of a single lane, while traffic can be routed along the other side of the roadway past the construction site in one lane. Outside normal working hours, the entire road width is usually available, as the freshly recycled pavement can also temporarily be used immediately after compaction has been completed.

**New Generation of Wirtgen Recyclers Also in Use as High-Performance Milling Machines**

In addition to the W 380 CRi (775 kW; EU Stage 5 / US Tier 4f) and W 380 CR (708 kW; EU not regulated / US Tier 2) models, the new generation of Wirtgen recyclers also includes the W 240 CRi (775 KW; EU Stage 5 / US Tier 4f) and W 240 CR (708 KW; EU not regulated / US Tier 2).

The W 240 CRi and W 240 CR recyclers can also be equipped with integrated Vögele AB 375 T variable screeds and have a maximum working width of 2,350 mm.

The four cold recyclers can also be used as efficient, high-performance milling machines employing the traditional up-cut process. Thanks to powerful engines and an impressive conveyor belt capacity, they achieve high removal rates at a maximum milling depth of up to 350 mm – for instance when removing complete asphalt packages or for large-scale rehabilitation measures such as on motorways or airport runways.

Photos:

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|  | W\_photo\_W380CRi\_00029\_HI In San Jose, California, the Wirtgen W 380 CRi with rear loading recycled two lanes 10 cm deep with the addition of 2.5% foamed bitumen and 3% water. |

Photos:

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|  | W\_photo\_W380CR\_00070\_HI The W240CRi cold recycler with paving screed was used for the high-performance recycling of a highway construction site near Prague to ensure that the new pavement was paved in the correct profile and position. |

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|  | W\_photo\_W380CRi\_00037\_HI Thanks to intuitive and flexible operation, reliable information systems, excellent visibility, and perfect ergonomics, operators of Wirtgen cold recyclers always have full control over the machine and the results of their work |

*Note: These photos are for preview purposes only. Please use the photos in 300 dpi resolution, which can be downloaded from the Wirtgen GmbH /Wirtgen Group website, for printing in publications.*

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