

# FREKOMOS

ČLAN GRUPE



## COLD STATE RECYCLING ON SITE

Cold state recycling on site technology is based on the secondary use of materials already built into the construction of the road surface without heating. Process involves milling and granulating damaged asphalt layers which are then rebound, placed again and compacted.

Frekomos d.o.o. (Ltd.) is a specialized construction company for civil engineering works and it is member of the Danish Pankas Group, which operates in Denmark, Germany, Poland, the Czech Republic, Slovakia, Hungary, Romania and Ukraine.

The company was founded in Croatia in 2018 in order to upgrade its offer and the possibility of performing roadworks with its specialized technologies. The technologies offered by Frekomos contribute to reducing the amount of waste and limiting the extraction of natural non-renewable resources.

The mission of Frekomos d.o.o. is to monitor the newest standards and application of modern technologies for the construction, reconstruction and repair of road infrastructure with the emphasis on recycling and reusing old asphalt layers of roadway cover according to the highest environmental standards.

## FOR YOUR BETTER ROADS

[frekomos.hr](http://frekomos.hr)



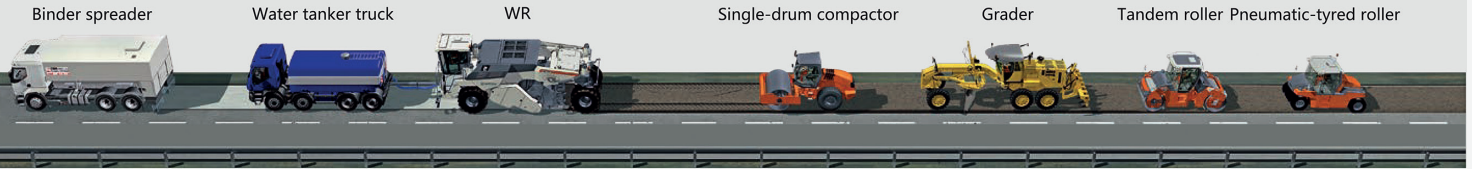
## COLD STATE RECYCLING ON SITE

Technology is used where the load capacity of the road is exhausted and the road surface is so damaged that the reconstruction of a number of layers is essentially required. A sign of such damage is the appearance of multiple cracks, frequently accompanied by numerous potholes and surface deformations, particularly in the vehicle tracks or at the road edges.

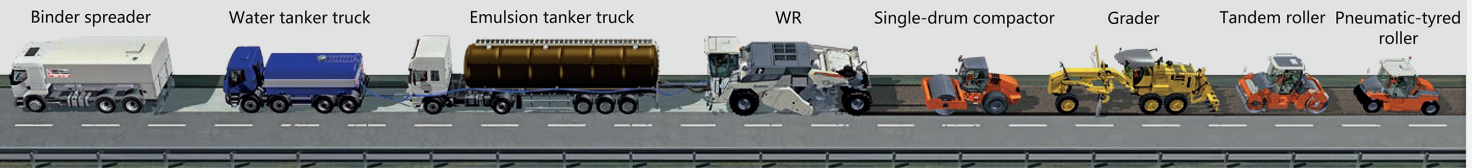
Cold state recycling technology on site enables the improvement of the quality of the base and/or subgrade construction of the layer in a thickness of 12 – 25 cm through the addition of hydraulic and asphalt binding agents or by filling with gravel according to the proposed formulation.

### Recycling technology

#### RECYCLING WITH PRE-SPREAD CEMENT



#### RECYCLING WITH PRE-SPREAD CEMENT AND BITUMEN EMULSION



#### Advantages of cold state recycling on site

- Low economic and time demand factor of repair (low material consumption and reduction of heavy construction technology)
- Extension of the life span of roadway construction
- Environmental effect (saving natural resources, energy savings)
- Increased driving comfort and safety for drivers

#### Binding agents used

- Hydraulic binding agent – cement and other hydraulic road binding agents
- Asphalt binding agent – asphalt emulsion or asphalt foam (asphalt foam is generated directly in the recycler by mixing asphalt and water in a foaming machine)
- Combined binding agent (mixture of cement and asphalt emulsion or cement and asphalt foam)

#### Filling with gravel

If the gradation curve of the original layer is unsuitable, filling with a suitable grading of gravel directly onto the surface of the layer is performed before the recycler.

#### Milling and granulation of existing layer

This is performed by traverse with the recycler on the original layer by the activity of the milling (mixing) drum to the prescribed depth.

#### Pre-milling and re-profiling (used upon adjustment of transverse and lengthwise shape of road surface, height adjustment of profile grade or for homogenisation of layers)

The grain fineness is homogenised to the prescribed thickness by pre-milling of the existing layer(s). At the same time gravel spread before is mixed into the pre-milled compound, thus adjusting the gradation curve according to the proposed formula. This is used to advantage in adjustment of a number of layers with varying grain fineness, when the entire complex of layers is homogenised by pre-milling and re-profiling, and shaped to the prescribed transverse and lengthwise incline. This phase may be omitted in the technology on the precondition that it is not necessary to adjust the layer in terms of height and that homogenisation is not required.

#### Actual recycling

In this phase the original compound is degraded and mixed with further components (binding agents, water, gravel)

#### Dosing of binding agent, mixing of compound

Each binding agent is dosed separately in the type and quantity stipulated by the laboratory. Cement or other hydraulic binding agent is spread directly onto the recycled surface of the roadway by a dosing device. The process of dosing the asphalt binding agent (asphalt emulsion, asphalt foam) and water is automatically regulated by an electronic pump, depending on the traversing speed and the width of adjustment in such a manner as to ensure that the prescribed quantity is always dosed.

#### Spreading and compacting of compound

The homogenised compound is spread using a grader to the required height and lateral incline. Compacting is performed according to the rolling scheme by a steamroller equipped with vibration, either by a towing vehicle or tandem roller.

### Machine fleet

#### Wirtgen WR 240i

Cold recycler and soil stabilizer Wirtgen WR 240i is the all-rounder for highest levels of flexibility. With a working width of 2.40 m and a maximum working depth of 510 mm, the recycler is highly flexible when it comes to operations in soil stabilising and cold recycling. Thanks to its high performance levels in milling and mixing and its variable mixing chamber, consistent and homogeneous mixing results can be achieved. For cold recycling, the ideal performance range is between 500 and 1,000 square metres per hour and 15 to 20 cm of asphalt thickness.

Working with: 2 400 mm, Working depth: 0 – 510 mm, Engine power: 619 HP, Minimum working radius: 3,15 m, Operating weight: 29.400 kg

#### Wirtgen WR 250

Cold recycler and soil stabilizer Wirtgen WR 250 is a high-performance machine designed to cater to the particularly demanding applications. Its tremendous milling and mixing performance enables the WR 250 to tackle even the toughest jobs in soil stabilization and pulverize hard asphalt layers. For cold recycling, the ideal performance range is between 700 and 1,200 square metres per hour and 20 to 25 cm of asphalt thickness.

Working width: 2 400 mm, Working depth: 0 – 560 mm, Engine power: 777 HP, Minimum working radius: 3,15 m, Operating weight: 31.000 kg

#### Wirtgen SW 16 MC

Wirtgen SW 16 MC is high-precision, highly efficient binder discharge.

Container capacity: 16 m<sup>3</sup>, Working width: max 2,46 m, Spreading rate at 2 km/h: 1-60 l/m<sup>2</sup>, Weight: 4.500 kg

