

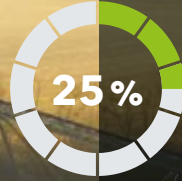
A WIRTGEN GROUP COMPANY

 **BENNINGHOVEN**

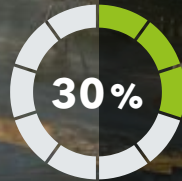
COLD RECYCLING



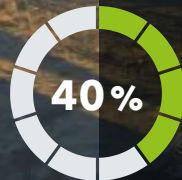
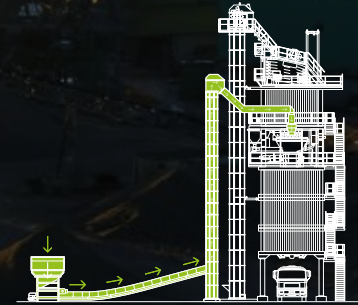
BENNINGHOVEN
SUSTAINABILITY



Middle ring dosing system



Dosing system into the mixer



**Variable dosing system
Multivariable dosing system**



APPLIED GREEN TECHNOLOGY

BENNINGHOVEN COLD RECYCLING SYSTEMS

Economical and environmentally friendly

Producing asphalt in a variety of different recipes while ensuring top quality is one thing. Developing asphalt mixing plants with maximum user friendliness at the same time is a challenge. BENNINGHOVEN plants master all this brilliantly. The option of using recycled materials makes a crucial difference. Not only does recycling save limited resources, it also significantly lowers costs while increasing efficiency. It also underlines a sustainable production concept.

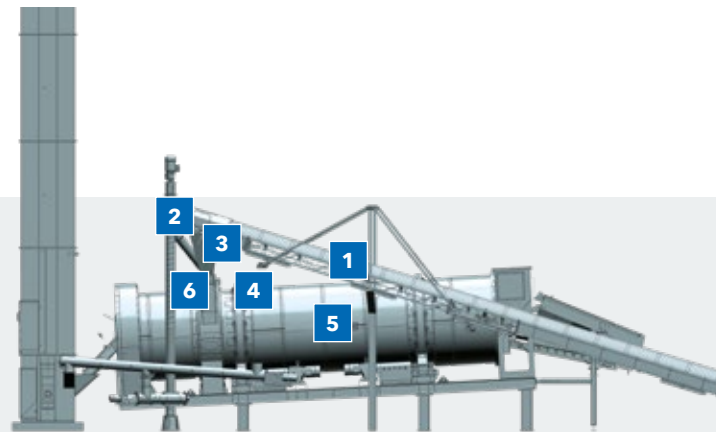
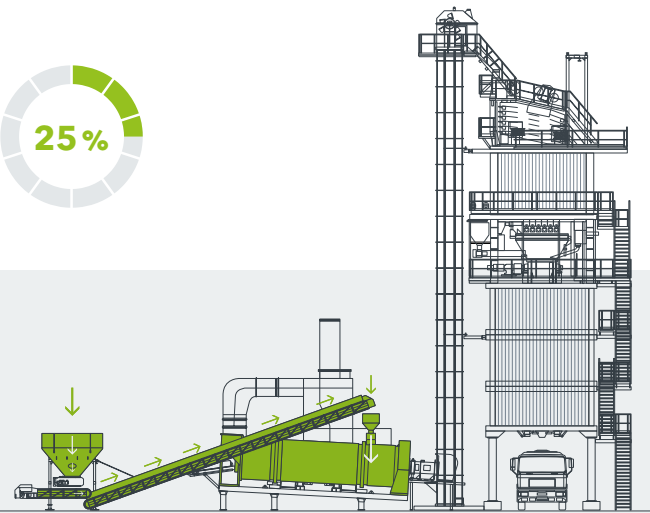
As a competent partner, BENNINGHOVEN offers a wide range of products in the area of recycling feed systems. For cold feed systems, we can already achieve recycling rates of up to 40 % with different technologies, from addition to the dryer drum or dosing system into the mixer to multivariable dosing system - whether on our own plants or on third-party plants, whether for retrofitting or expanding an existing hot feed system to maximise flexibility.



MIDDLE RING DOSING SYSTEM

The middle ring dosing system allows up to 25 % recycling material to be added. Retrofitting on existing systems from all manufacturers is possible without problems. With the middle ring dosing system, large quantities of recycling material are used. The material is introduced into the dryer drum via a belt and a ring elevator, mixed with the virgin mineral and heated gently.

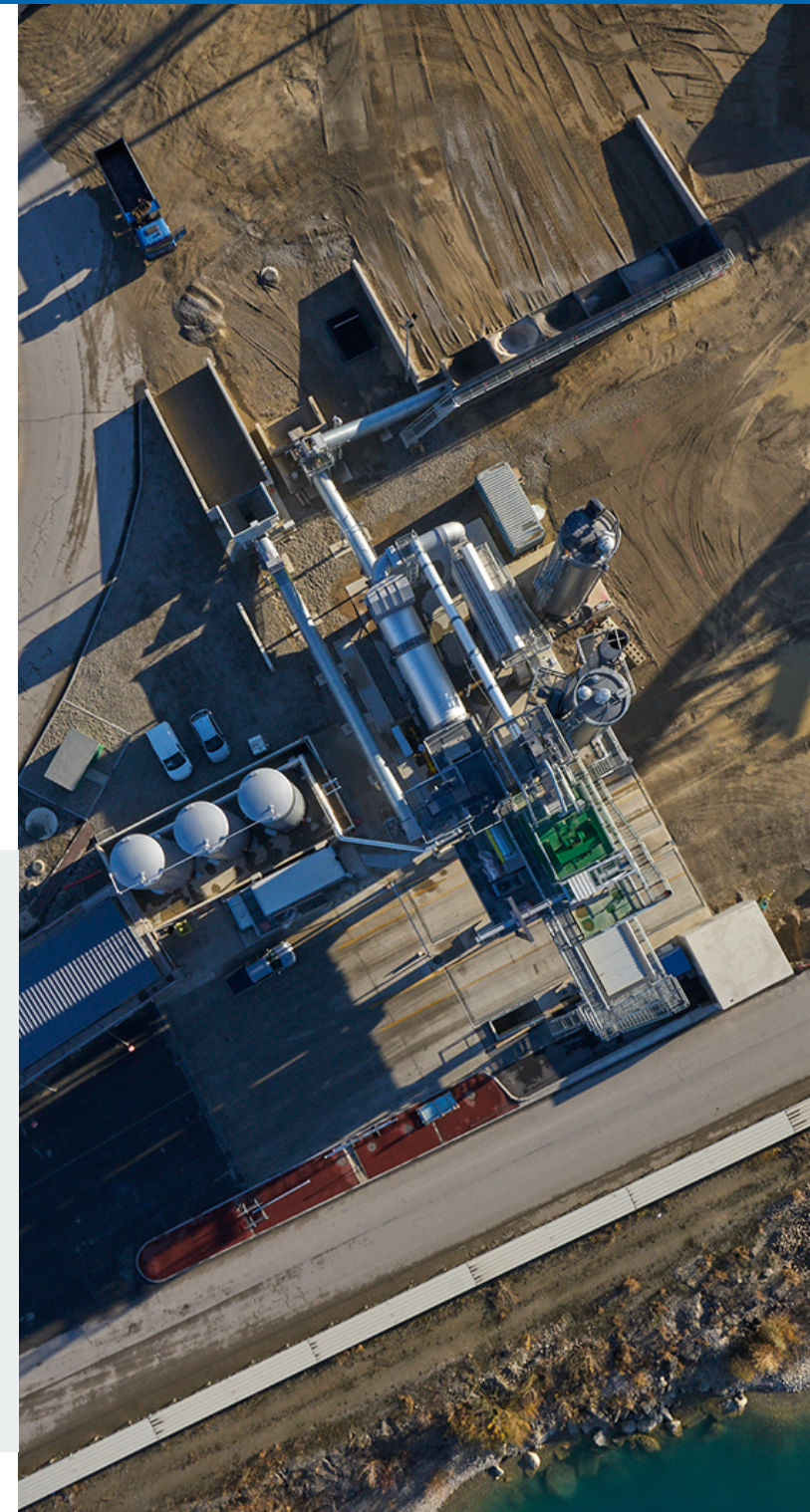
BENNINGHOVEN has designed a special solution to avoid caking in the drum and the chutes. The generated rough filler from the dust extraction system is used to coat the RAP material to improve the transport characteristics of the heated recycling material through the asphalt mixing plant (reduces adhesions).



01 The middle ring dosing system at a glance

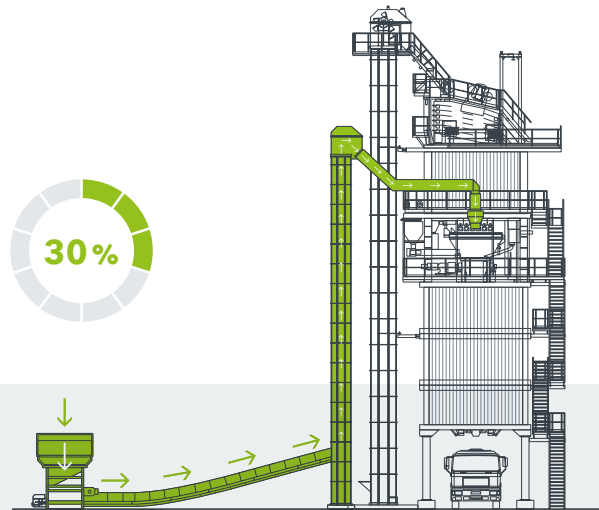
- > Dosing of up to 25 % RAP material possible
- > Easy retrofitting of existing plants, regardless of the brand
- > Gentle heating of the material in the dryer drum

1. RAP collecting/inclined conveyor
2. Transfer unit (hopper)
3. Conveyor belt
4. Knife valve
5. Dryer drum
6. Filler blower



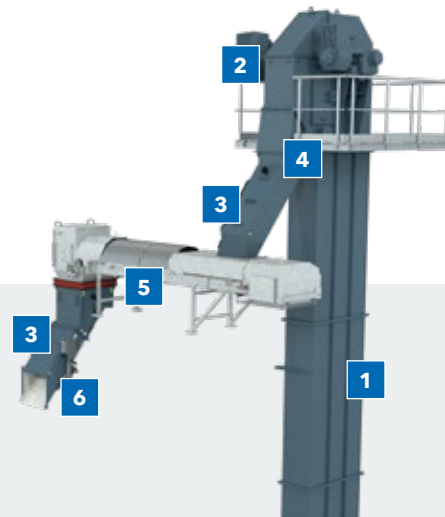
DOSING SYSTEM INTO THE MIXER

With the dosing system into the mixer, up to 30 % recycling material can be added depending on composition, quality and moisture of the recycling material. Retrofitting on existing systems from all manufacturers is possible without problems. For the dosing system into the mixer, large quantities of recycling material are implemented. The recycling material is conveyed directly from the feed hopper to mixer level with an inclined conveyor or alternatively with a space-saving elevator. Dosing is carried out with belt scales so that a precisely defined recycling volume is fed to the mixer through a chute.



02 The dosing system into the mixer at a glance

- > Dosing of up to 30 % RAP material possible
- > Easy retrofitting of existing plants, regardless of the brand
- > Dosing with belt scales
- > RAP material is added directly into the mixer with an inclined conveyor or a RAP elevator
- > The RAP elevator is a space-saving alternative to the inclined conveyor



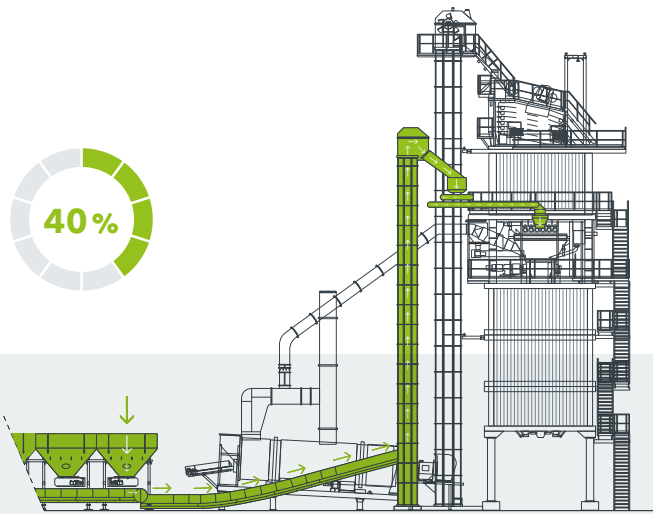
1. Bucket conveyor
2. Drive with service mode
3. Chute with wear lining and service cover
4. Overfill protection
5. Conveyor belt with belt scales and belt cover
6. Pneumatically actuated flap



MULTIVARIABLE DOSING SYSTEM AND VARIABLE DOSING SYSTEM

The multivariable dosing system allows the addition of 40 % RAP material - the highest possible ratio for cold recycling.

The recycling material is conveyed directly from the feed hopper to mixer level with an inclined conveyor or alternatively with an elevator. A recycling quantity defined by the mixing recipe is added to the mixer in portions. Highly precise weighing technology allows for very exact dosing. Gentle, cyclic addition prevents strong hydraulic shocks during water expansion, which is gentle on material and components.



03 The multivariable dosing system at a glance

- > Dosing of 40 % RAP material possible
- > Smooth, sequential loading of the mixer prevents hydraulic shock during steam expansion
- > Exact dosing with high precision weighing equipment
- > Gentle on material and components
- > Highest possible dosing capacity in the cold RAP
- > Dosing option for all non-adherent bulk materials, e.g. Trinidad asphalt, rubber granulate



04 Multivariable dosing system and variable dosing system compared

Compared to the variable dosing system, the multivariable dosing system can be used not only for adding recycling material, but also for adding bulk materials or additives. The additional weigh belt allows for exact dosing of these substances. In addition to the powder and granulate feed systems, this offers another option of introducing additional substances into the mixing process.

Multivariable dosing system



1. Bucket conveyor / 2. Drive with service mode / 3. Chute with wear lining and service cover / 4. Overfill protection / 5. Buffer tank (3 t, 4 t*) incl. fill level sensor / 6. Frequency-controlled feeder belt / 7. Frequency-controlled weighing belt and belt cover / 8. Chute with wear lining and service cover / 9. Pneumatically actuated flap

* In combination with hot recycling system

Variable dosing system



1. Bucket conveyor / 2. Drive with service mode / 3. Chute with wear lining / 4. Maintenance cover / 5. Overfill protection / 6. Buffer tank (5 t, 6 t*) incl. fill level sensor / 7. Buffer tank, lower section / 8. Frequency controlled conveyor belt with belt scales and belt cover / 9. Chute with wear lining and service cover / 10. Pneumatically actuated flap

* In combination with hot recycling system

Use of recycling material

The processing of recycled asphalt is a high priority when it comes to conserving natural resources. This fundamental drive for reusing materials is only one of many. Country-specific requirements, the reduction of emissions and increased economic efficiency are points in favour of recycling and environmentally friendly asphalt production, because green asphalt is possible only with the use of recycling material.

Advantages of using recycling material

- > Conserving natural resources (mineral/bitumen)
- > Highest possible reuse based on the recycling concept
- > Reducing CO₂ emissions in the entire process chain: Use of RAP material from the environment of the plant, short travel distances, production of mineral (quarrying/breaking) and bitumen (refinery) are no longer required.
- > Proactive reaction to bitumen availability
- > Increased economic efficiency



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