

# SUSTAINABLE SOLUTIONS

FOR ECO-FRIENDLY ASPHALT PRODUCTION



> Reuse of asphalt

> Storing correctly

> Low-temperature asphalt

> Electrifying bitumen tanks

> Using renewable fuels



**BENNINGHOVEN**  
SUSTAINABILITY

## SUSTAINABILITY IN ASPHALT PRODUCTION

### Reducing the carbon footprint in asphalt production

Working more efficiently with sustainable and economical technologies is the challenge of today and tomorrow. Solutions from BENNINGHOVEN lower emissions and secure the future of asphalt mixing plant sites. BENNINGHOVEN offers a variety of innovative solutions for increasing sustainability in asphalt production. Considering the entire road construction process from material acquisition and asphalt production to building the roads, companies can save up to 60 % CO<sub>2</sub> with these technologies. (Annual production of 100,000 t of asphalt, 60% RAP input rate, carbon-neutral fuel)

### Energy-efficient working while protecting resources

Sustainable operations and reduced climate-damaging emissions are the current challenges for counteracting climate change. The 2015 Paris Climate Accords, for example, require greenhouse emissions to be halved by 2030 and eliminated completely by 2050. The asphalt sector, a comparatively small branch of industry, can also make an important contribution to this, because asphalt production offers great potential for savings when it comes to emissions such as CO<sub>2</sub> and VOC (Volatile Organic Compounds).

One of the control instruments for owners of mixing plants is the taxation of emitted CO<sub>2</sub> and emissions trading, the costs of which will increase worldwide in the years to come. The less greenhouse gases are emitted by asphalt mixing plants, the more costs can be saved. BENNINGHOVEN supports plant operators with a variety of solutions.



## GREEN TECHNOLOGY FROM A GREEN FACTORY.

### Sustainability starts at the factory.

The state-of-the-art production facility in Wittlich manufactures long-lasting asphalt mixing plants and systems for maximising the volume of asphalt fed back into recycling process. The production of all plant components is designed to be as sustainable as possible.

BENNINGHOVEN is also state-of-the-art in all areas where "being green" matters - from the economical use of resources to an overall environmentally friendly production process. Sustainability is a core value for BENNINGHOVEN and follows the basic principles defined by the WIRTGEN GROUP.



### Sustainable production

- > Top priority: Keeping soil, water and air clean
  - > Efficient handling of the renewable energies used
  - > State-of-the-art building insulation
  - > Demand-based interior lighting with motion detectors, economical LED technology and automated blinds
  - > Designed in accordance with the German Energy Conservation Act (EnEV)
  - > Ventilation systems with heat recovery
  - > Most of the electricity comes from wind power
  - > Zero liquid discharge (no process water)
  - > Zero emissions from forklift trucks - electric drives
- > Powder instead of paint (in 90 % of cases)
  - > High-tech helps in the fight against coronavirus - direct extraction ventilation system, growth protection

Afterwards, sustainability has great significance for users. Just as important as the heart of the sustainability objective: sustainability in asphalt production. To drive this development in the long term, BENNINGHOVEN also focuses on sustainability during development. Always following the maxim: smart, sustainable, safe.



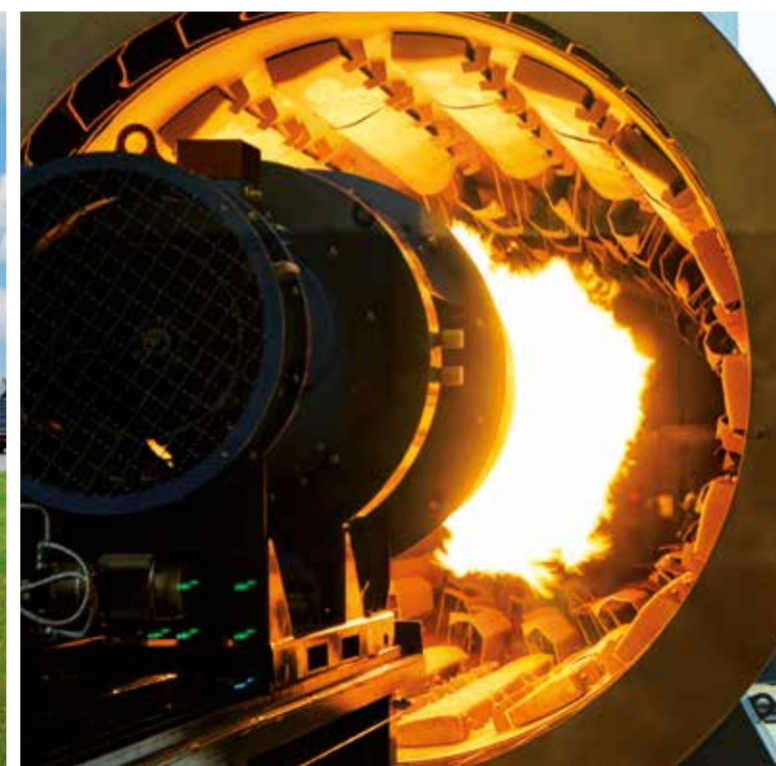
## BENNINGHOVEN SOLUTIONS



### 01 Reuse of asphalt

BENNINGHOVEN has decades of experience with recycling reclaimed asphalt. But reusing the material is not only sustainable: The material removed by milling the asphalt during road resurfacing is also significantly cheaper than virgin mineral from a quarry.

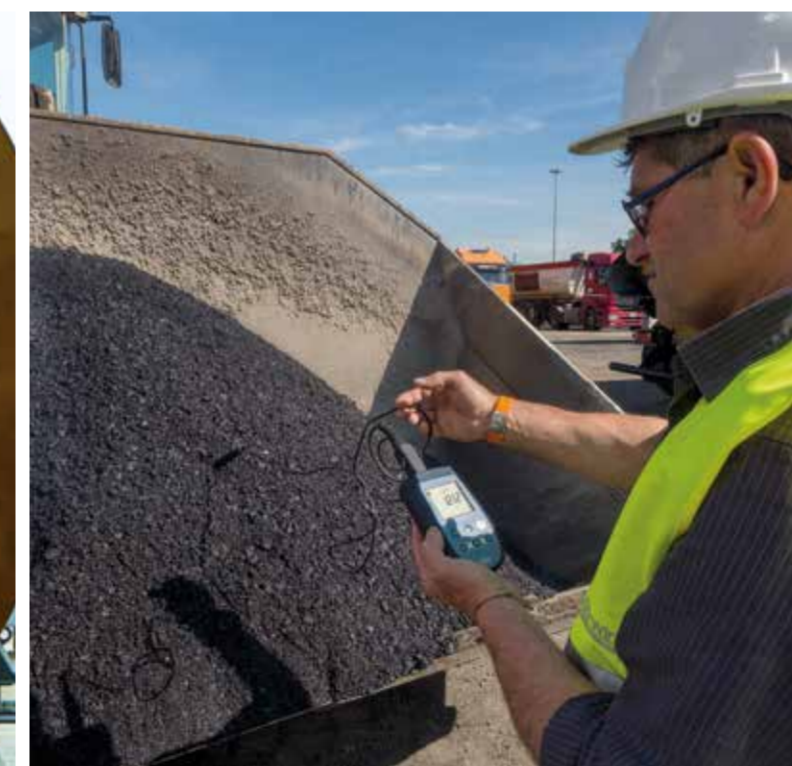
In addition to this, reclaimed asphalt already contains bitumen, which is also reused and therefore saves on the most expensive ingredient in asphalt production. BENNINGHOVEN offers different feed systems for cold recycling and hot recycling.



### 02 Use of renewable energies

More sustainability in asphalt production means moving away from fossil fuels such as coal and oil. BENNINGHOVEN already offers EVO JET burners that use the fuels of the future. These fuels are made from renewable raw materials and have a neutral CO<sub>2</sub> balance. They include biomass to liquid fuels (BL) and wood dust.

BENNINGHOVEN equipment can also be used for modern fossil, gaseous fuels such as liquid gas or natural gas. Changing from coal dust to natural gas or liquid gas already halves CO<sub>2</sub> emissions. In addition to this, BENNINGHOVEN development engineers continue to work on the sustainable and economical use of other fuel types.



### 03 Low-temperature asphalt

The drying and heating processes for virgin mineral and recycling material are particularly energy-intensive in asphalt production. Fuel and emissions can be saved if authorities and owners use reduced-temperature asphalt types. BENNINGHOVEN asphalt mixing plants can produce these in a reliable process.

One important technology for this is a foam bitumen module, which BENNINGHOVEN also offers as a Retrofit solution (plug & work).

### 04 Storing correctly

Ensuring the driest possible storage of virgin mineral and recycled material is one of the factors for an energy-efficient mixing process and therefore low emissions such as CO<sub>2</sub>. The following applies here: 1 % more moisture in the starting material corresponds to a litre of additional heating oil or an energy equivalent for each ton of asphaltic mixture. This is one reason why covered storage is now required in Germany by the Technical Instructions on Air Quality Control (TA-Luft).



### 05 Electrifying bitumen tanks

For storing the hot bitumen - one of the most important asphalt ingredients - Benninghoven offers bitumen tanks with different capacities. The electrification results in zero local emissions - in contrast to tanks heated with thermal oil. This ensures carbon-neutral bitumen storage in the overall balance. In addition to this, electrically heated tanks are not regulated by environmental authorities and there are no environmental restrictions.



### 06 Digitalisation

The latest technology and control systems have optimised features for optimum operation of the plant and reduced emissions.

