

A WIRTGEN GROUP COMPANY



BENNINGHOVEN

DRYER DRUM

1 Intake zone

2 Drying elements

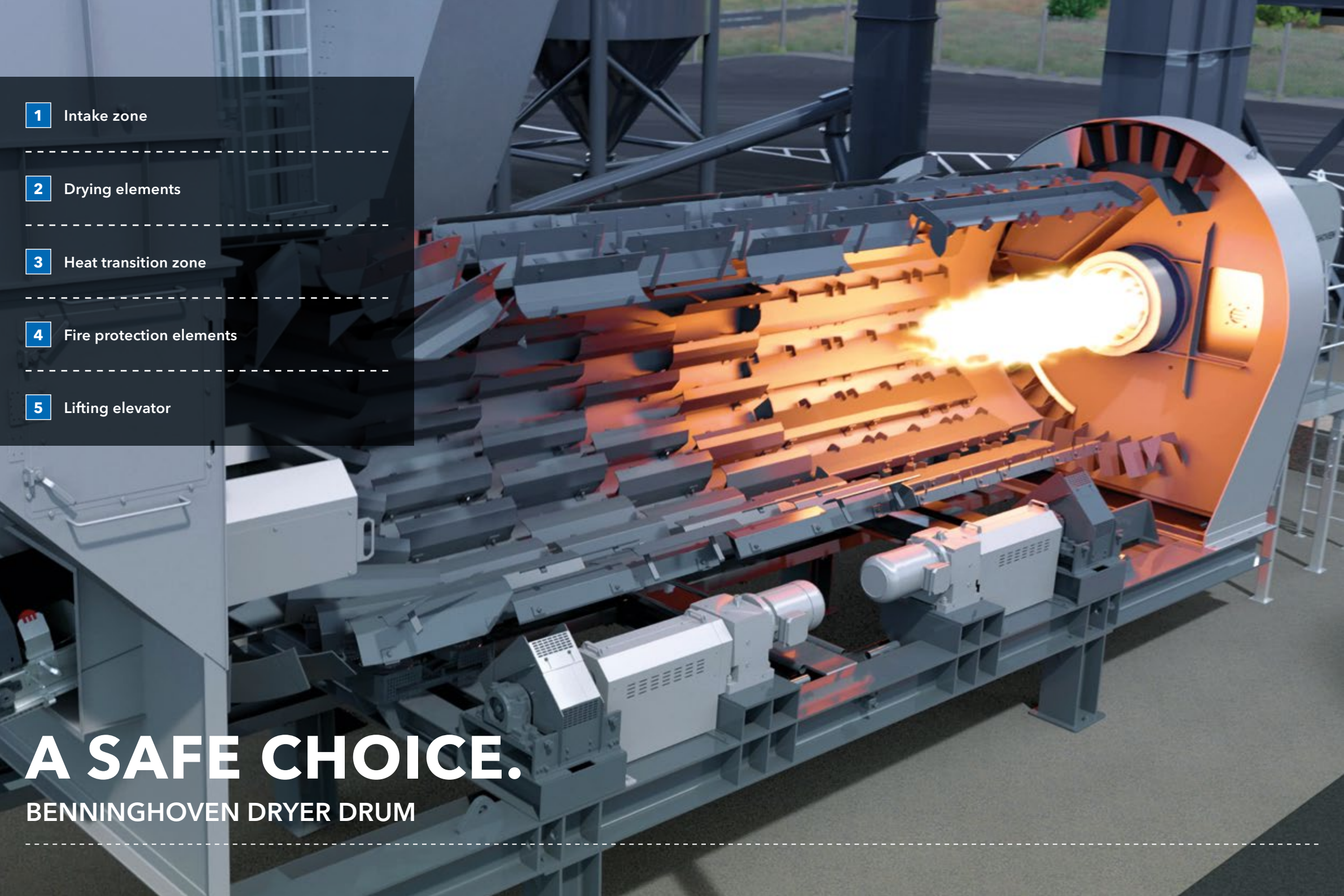
3 Heat transition zone

4 Fire protection elements

5 Lifting elevator

A SAFE CHOICE.

BENNINGHOVEN DRYER DRUM



DRYER DRUM RETROFIT

Economical and efficient

01 Numerous user benefits from drum replacement

The usual service life of an asphalt mixing plant is between twenty and thirty years - sometimes even longer. A number of things change during this period, such as requirements for recipes and the quality of the mixtures, as well as official regulations that owners have to meet in order to maintain their operating license. BENNINGHOVEN supports customers and users with in-house retrofit solutions for all modernisation challenges.

- > Increased productivity/volume
- > Increased competitiveness
- > Compliance with legal standards
- > Contribution to environmental protection
- > Extended service life of the plant
- > No approval process necessary (no new approval for retrofit components)
- > Use of new, modern materials for a longer service life
- > Higher energy efficiency (cost savings)
- > Increased overall efficiency
- > Improved product quality



02 BENNINGHOVEN dryer drums - for a comprehensive plant concept



The drying plants supplied by BENNINGHOVEN use a drying principle designed for high efficiency. The drum can be used for a variety of different cold feed recipes and ensures economical and efficient temperature increase and drying of the mineral.

- > Different drum sizes from 8 to 12 m length
- > 2 to 3 m diameter in various increments
- > According to the different material moisture levels
- > Compliance with the TA-Luft regulation
- > Option of using more temperature-resistant and wear-resistant internal elements - material/fuel
- > Frequency-converter control (continuous drive)
- > Stainless steel or aluminium cladding
- > Air or mineral wool insulation



Clever concept

03 Dryer shell

- > Different material qualities/materials possible for the dryer shell
- > Wear-resistant material
- > High resistance to heat
- > The trunnion rings are connected to the dryer shell with spring-loaded retaining plates or supported with steel plate packs in a floating arrangement, ensuring smooth running and absence of tension in case of thermal expansion

04 Internal parts

The parts installed in the material feed, heat exchange and burner zones ensure optimum material guiding in the drum, a very good drying result and active drum protection.

There is an option of equipping the dryer drum with internal parts made of high-temperature steel. With a temperature resistance up to 530 °C, this design is recommended for cold RAP systems and mastic asphalt applications. The first row of installed parts transports the supplied mineral mixture to the specially shaped lifter flights like a screw.

The lifter flights are screwed onto the dryer drum wall with a specially developed structure. These elements have the task of spreading the bulk material over the cross section of the dryer drum in a closed material veil. This ensures an efficient temperature exchange between the heating gases and the mineral to be dried and heated. This allows the exhaust gas temperature measured on the dust collection system to be kept in the optimum range.



05 Frequency controller

- > Frequency converter continuously adjustable
- > Customer can adapt the process at any time
- > Recommended for strongly fluctuating material moisture content in the base mineral or for strongly fluctuating recycling content (hot and/or cold)

06 Cladding and insulation

Cladding

- > Cladding protects against external weather influences
- > Option: aluminium plates or stainless steel plates

Insulation

- > The mineral wool, fitted 70 mm all round, reduces heat radiation and minimises noise emissions.
- > Air as an alternative insulating medium

07 Oversize aggregate grid

- > Protects the asphalt mixing plant against mineral > 50 mm
- > Integrated, powerful vibrator ensures optimum cleaning of the oversize aggregate grid

08 Optimised process using the counterflow principle

The counterflow principle requires the material to be transported towards the burner flame. BENNINGHOVEN has established fire protection chambers to avoid contact with the mineral while protecting the dryer shell against thermal impact. The already dried mineral flows into these chambers and is guided around the burner flame.

The mineral acts as a thermal buffer between the radiated heat from the flame and the jacket of the dryer drum cylinder. The temperature of the mineral is also increased further during this phase of the dryer drum.

After these internal parts, the mineral mixture - now at operating temperature - flows into a lifting elevator which transports the material to the elevator in a chute with wear lining. A temperature sensor checks, monitors and controls the mineral temperature. This control works automatically in interaction with the burner control.

This process is highly adapted to the plant and the requirements of the downstream processes for asphalt production. BENNINGHOVEN plants are equipped with a burner for the drying process, specially adapted for each fuel.

Reliable performance

09 Clever system for high performance

The dryer shell is driven by means of the friction wheel principle. Four geared motors drive each trunnion wheel via a cardan shaft. Additional thrust rollers prevent inadvertent displacement of the dryer shell along the longitudinal axis, e.g. due to incorrect settings.

The drive rollers on BENNINGHOVEN dryer drums are very easy to replace, as the rollers only have to be released from the console.

As a service measure, the trunnion rings can be serviced with a special fixture at appropriate intervals, so that even running of the dryer drum can prevent intensive wear.

Easy to maintain and safe

10 High ease of maintenance thanks to optimum access

Maintenance platform at the feed end wall of the dryer drum (optional)

- > Certified maintenance platform for inspection and maintenance work on oversize aggregate grid and inclined conveyor and as an entry point into the dryer drum
- > Comfortable access with 800 mm wide stairs with hand rail on both sides, the access stairs can easily be relocated
- > Integrated service door on the feed end wall
- > Integrated service opening (250 x 500 mm) on the discharge end wall, for passing installation parts or tools into the dryer drum or venting the dryer drum
- > Integrated sight glass in the discharge end wall for burner adjustment

11 Innovative BENNINGHOVEN measuring system

- > Option of even more precise adjustment
- > Drum setup with qualified personnel

12 Customer support - for smooth operation

- > Service: dressing the drive rollers
- > Grinding the support rollers

13 Maximum safety at work

- > Emergency stop button on the side of the base frame
- > Contact protection on critical components
- > Contact protection on the complete powertrain
- > Key transfer system (maintenance door)
- > Optical and acoustic start-up warning for the plant (flashing light / horn)
- > Design and implementation of the health and safety measures in compliance with the standards (Machinery Directive 2006/42/EC, DIN EN 536 Road construction machines - Mixing plants for road construction materials, etc.)
- > Encapsulated material transfer areas (conveyor transfer)

Example: drives

- > Optimum access for service and maintenance work
- > Easy, time-optimised replacement






BENNINGHOVEN SUSTAINABILITY

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

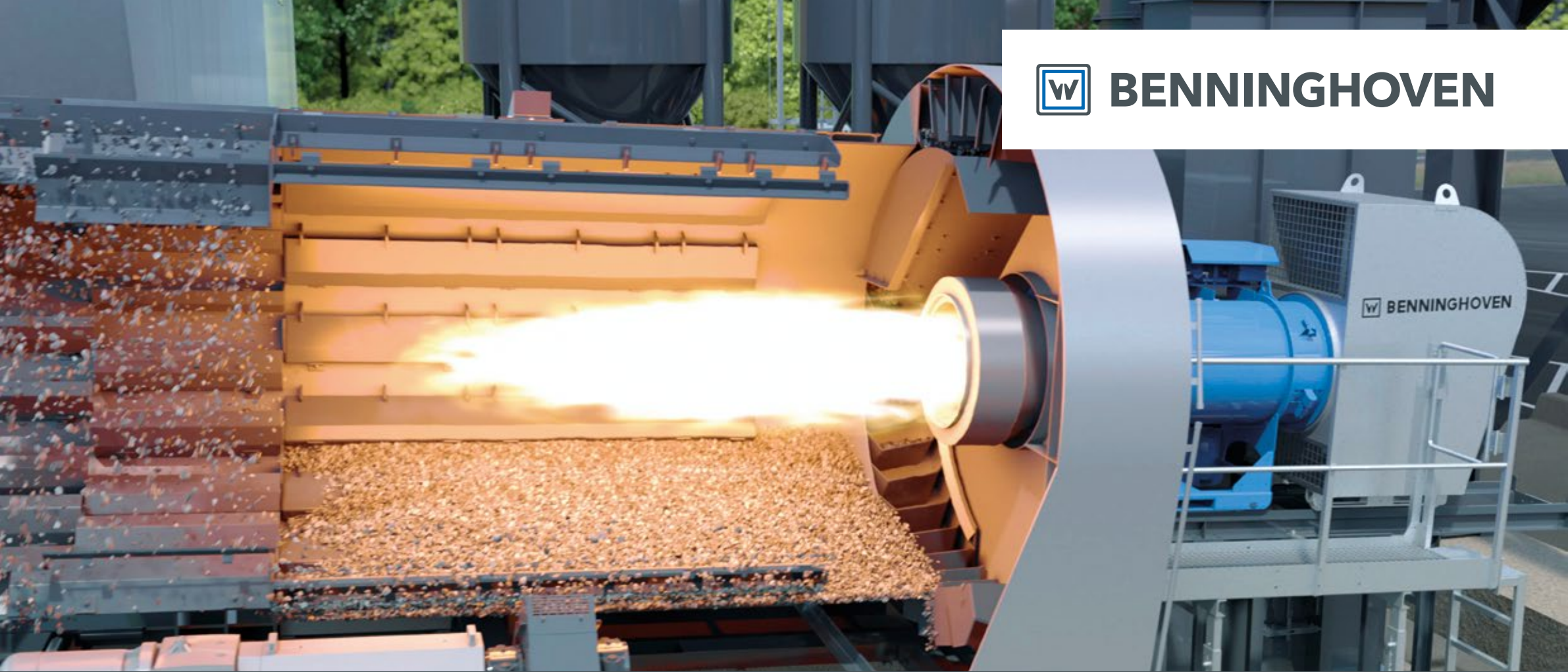
- > Conserving natural resources (mineral/bitumen)
- > Highest possible reuse based on the recycling concept
- > Reducing CO₂ emissions in the entire process chain: Use of RAP material from the environment of the plant, short travel distances, production of mineral (quarrying/breaking) and bitumen (refinery)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



RAP feed box - recycling feed into the dryer drum



BENNINGHOVEN



BENNINGHOVEN
Branch of Wirtgen Mineral
Technologies GmbH

Benninghovenstraße 1
54516 Wittlich
Germany

T: +49 6571 6978 0
M: info@benninghoven.com

 www.benninghoven.com