A WIRTGEN GROUP COMPANY

BENNINGHOVEN

Asphalt mixing plants

TYPE ECO

IT’S ALL IN THE MIX.

Leading asphalt mixing plant technology.

State of the Art! BENNINGHOVEN has been following this approach for over a century. Through consistent further development, growing from a trade workshop to a globally active company, BENNINGHOVEN is a pacesetter in the field of asphalt mixing plants today. The opening of the world’s most modern factory for asphalt mixing plants in summer 2018 was another milestone in our successful history. This allows us to offer our customers the best possible solutions when it comes to producing the highest quality asphalt in an economical process.

BENNINGHOVEN is part of the expanding, worldwide active WIRTGEN GROUP which has been part of John Deere since late 2017.

BENNINGHOVEN PRODUCT RANGE

- **ECO**
  Asphalt mixing plant
  “The multi-talent”
- **TBA**
  Asphalt mixing plant
  “The specialist”
- **RPP**
  Recycling plant
  “The sustainable one”
- **RETROFIT SOLUTIONS**

BENNINGHOVEN

THE MULTI-TALENT

Transportable asphalt mixing plants

PLUG & WORK
HIGH-TECH PLANT POWER
RECYCLING+
TRANSPORT CONCEPT
OPERATOR BENEFIT
SUSTAINABLE SOLUTIONS

The ECO asphalt mixing plant with capacities from 100 to 320 t/h impressively demonstrates BENNINGHOVEN technologies and the high manufacturing standards.

The modular structure makes it possible to integrate a number of high-tech components which can be retrofitted quickly and easily using the “Plug & Work” principle. This enables plant owners to increase both the economic efficiency and the investment security of the plant.

The plant is characterised by a high level of mobility and therefore optimum flexibility. It is suitable for stationary operation but can also handle fast site changes without any loss of quality, delivering a crucial benefit for large temporary construction sites.

ECO
PERFORMANCE

THE HIGHLIGHTS

Perfectly positioned.

> Plug & work

> Fast installation (assembly and dismantling)
> Modular expansion possible
> Mobile or stationary foundations – rapid relocation
> Pre-configured interfaces

> High-tech plant power

> Wide range of mixing capacities 100 – 320 t/h
> Hot bin section capacity 17 – 87 t
> Mixed material storage silo capacity up to 400 t in 8 bins
> Mixed material storage silo installed in line or parallel

> Recycling+

> Cold recycling up to 40 %
> Hot recycling up to 70 %
> REVOC system as an add-on for complying with emissions regulations
> Retrofitting possible at any time

> Transport concept

> Main components in transport-optimized container dimensions
> Simplified, cost-efficient transport worldwide

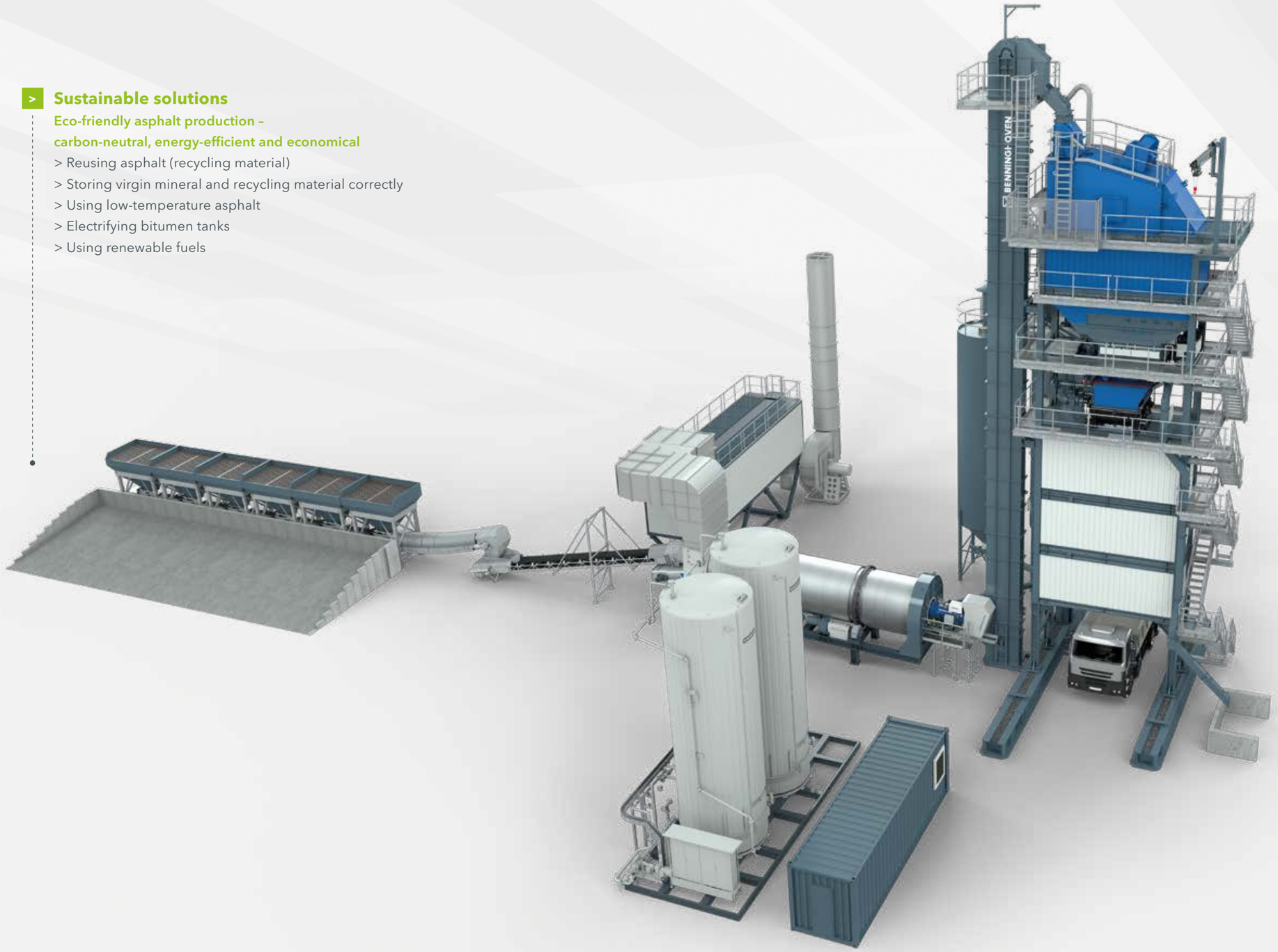
> Operator benefit

> Ergonomics concept
> Health and safety
> Maintenance concept

> Sustainable solutions

Eco-friendly asphalt production – carbon-neutral, energy-efficient and economical

> Reusing asphalt (recycling material)
> Storing virgin mineral and recycling material correctly
> Using low-temperature asphalt
> Electrifying bitumen tanks
> Using renewable fuels



BENNINGHOVEN
SUSTAINABILITY

BENNINGHOVEN SUSTAINABILITY describes innovative technologies and solutions which are consistent with the sustainability objectives of the WIRTGEN GROUP.

INTELLIGENT MODULAR SYSTEM

Quickly to work.

PLUG & WORK

Modular expansion possible
with pre-configured interfaces

Fast installation
Assembly / disassembly and relocation

Cost-efficient and flexible
thanks to mobile steel foundations

Thanks to the intelligent modular system, the ECO asphalt mixing plant features easy assembly and fast readiness for operation.

All sections of this compact plant are already pre-wired at the factory, greatly facilitating handling on site. This allows fast and effective installation. The connections can also be dismantled within a short period of time, transported and re-assembled at a new location. This added value becomes particularly evident at mobile construction sites and large temporary construction sites.

The plant can be installed either on mobile steel foundations or permanent concrete foundations.

PRE-CONFIGURED INTERFACES

Added value right from the start.

With their intelligent design, BENNINGHOVEN plants can be adapted in a modular structure at any time to offer added value right from the start.

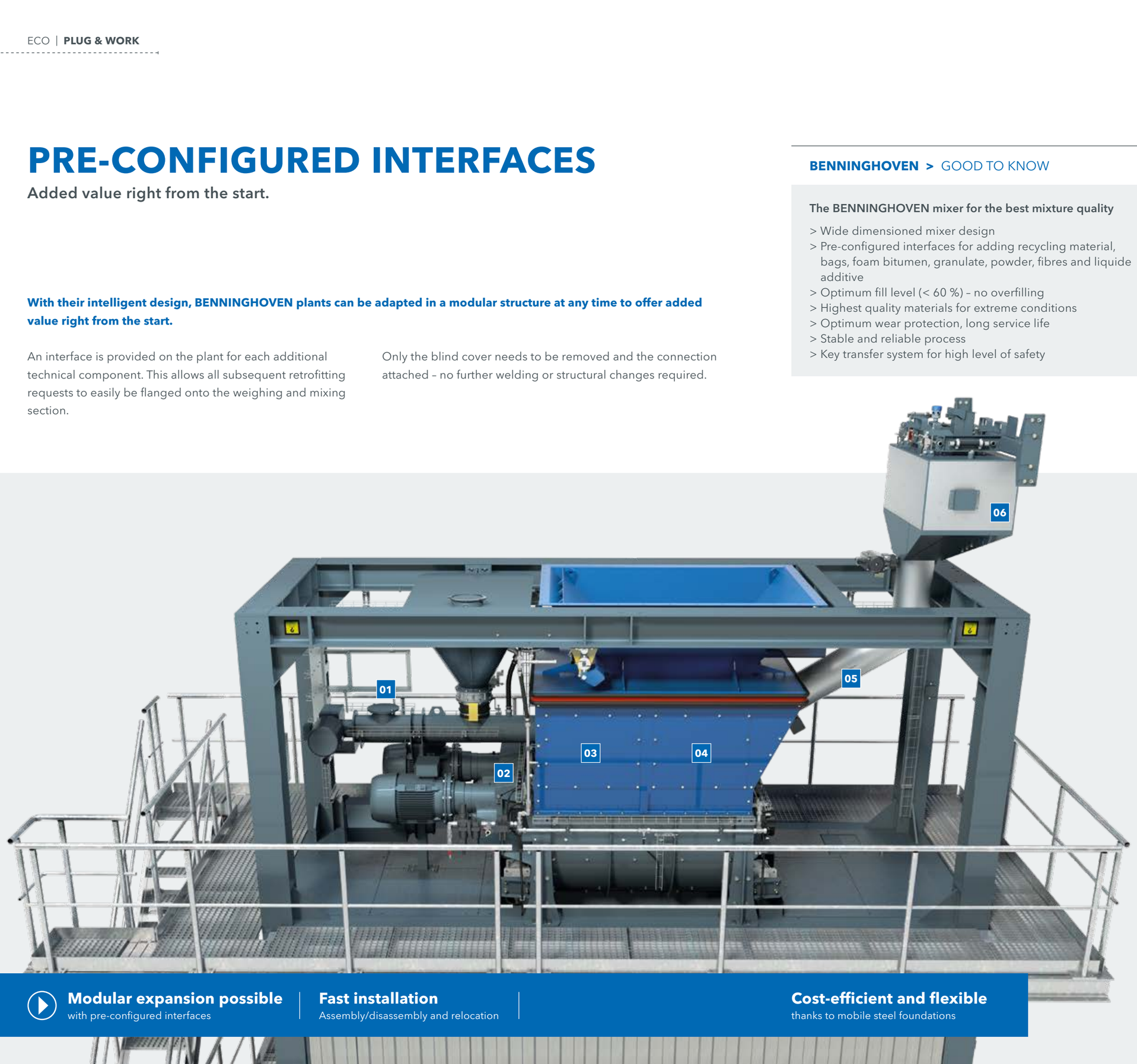
An interface is provided on the plant for each additional technical component. This allows all subsequent retrofitting requests to easily be flanged onto the weighing and mixing section.

Only the blind cover needs to be removed and the connection attached – no further welding or structural changes required.

BENNINGHOVEN > GOOD TO KNOW

The BENNINGHOVEN mixer for the best mixture quality

> Wide dimensioned mixer design
> Pre-configured interfaces for adding recycling material, bags, foam bitumen, granulate, powder, fibres and liquide additive
> Optimum fill level (< 60 %) – no overfilling
> Highest quality materials for extreme conditions
> Optimum wear protection, long service life
> Stable and reliable process
> Key transfer system for high level of safety



Modular expansion possible
with pre-configured interfaces

Fast installation
Assembly/disassembly and relocation

Cost-efficient and flexible
thanks to mobile steel foundations

PLUG & WORK

01 Granulate dosing system and powder dosing system

02 Recycling extraction

03 Cold recycling dosing system

04 Hot recycling dosing system / bag dosing unit

05 Foam bitumen

06 Liquide additive system

OPTIMUM RELOCATIONS WITH TOP QUALITY

Just carry on.

ECO plants master fast relocations without quality loss, providing a crucial advantage for large temporary construction sites.

Due to the high quality of the components, the plants can be assembled and dismantled as often as required without restrictions.

Despite frequent component movements, this does not cause any warping of the steel supports. This is achieved with a high-quality powder coating and clever designs based on the load classes (earthquake, wind loads, snow loads).

The ECO plants also stand for a high level of reliability and a strong performance without downtimes, which is especially important for prestige projects and large construction sites with very tight schedules.

01 Assembly of an ECO plant **02** Disassembly of an ECO plant

HIGH-TECH PLANT POWER

Pure passion.

ECO PERFORMANCE

01 Cold feed system
> Individual hopper, each 12 m³/16 m³/20 m³
> Precise pre-classification
> Flexible installation (I, L or T shape)

02 Bitumen system
> Optimal storage
> Efficient heat insulation concept
> Efficient heating
> Expanded options with intelligent BENNINGHOVEN technologies

03 Dust collection system
> Efficient filter function / dedusting
> Maximum use of space

04 Dryer drum with burner
> Optimal drying and heating of the mineral
> Different versions of the drum depending on the requirements
> Control with frequency converter possible

05 Control cabin
> Plant control
> Control of the mixing process
> Recipe management

06 Foundations
> Stationary concrete foundations
> Mobile steel foundations

07 Filler silo
> Storage of reclaimed filler
> Optional reclaimed filler loading (loading hose, loading fittings, filler water mixer)
> Optional storage of imported filler

08 Mixed material storage silo
> Direct loading or storage
> Flexible positioning
> Various expansions (in line or parallel expansion)
> No mixed material storage silo possible
> Direct loading up to the storage capacity of 400 t (1 – 7 chambers)

09 Asphalt transfer
> Direct transfer (up to 53 t mixed material storage silo)
> Skip track (60 – 400 t mixed material storage silo)
> Diverter chute (60 – 109 t mixed material storage silo)

10 Weighing and mixing section
> Fast and precise weighing and dosing
> Good accessibility
> 2 t mixer
> 3 t mixer
> 4 t mixer

11 Hot bin section
> 17 – 87 t
> In 5 or 6 bins
> Stocking of the prepared mineral according to size
> Sand / bypass separate or combined
> Oversize aggregate discharged to outside or into the last bin

12 Screen unit
> 4-fold / 5-fold / 6-fold screening
> High performance and compact design

13 Mixing tower
> Optimum wear protection, long service life
> Trouble-free process

14 Slewing crane
> Lifting capacity 500 kg

Highest manufacturing standards
Innovative technologies

320 t/h
Nominal mixing capacity

400 t
Mixed material storage silo capacity with extension

THE ECO VARIETY OF OPTIONS

Thought further.

A clever modular system – composed of modules and adaptable at any time.

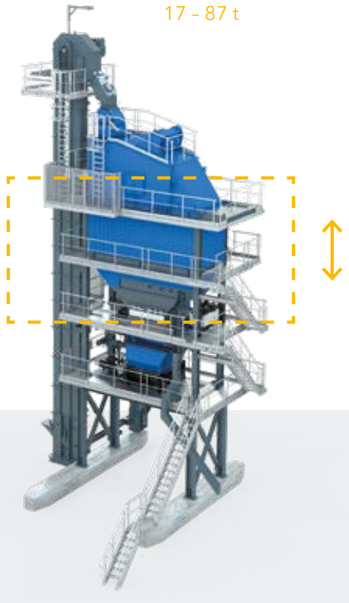
The modular BENNINGHOVEN design also enables the integration of a large number of high-tech components which can be quickly and easily adapted to the specific needs of the plant owner, even at a later stage. BENNINGHOVEN ensures this with its pre-configured interfaces (plug & work) which can be activated at any time. Individual configuration of the hot bin section or the expansion options for the loading silo – installed in line or parallel – are other examples for this. Space constraints that require a highly compact plant, a large variety of recipes that necessitate a large number of storage chambers or the requirement for only one weighing bridge – customer requirements are always individual. With the BENNINGHOVEN modular system, these can be achieved at any time, for future-proof plants that are a reliable investment.

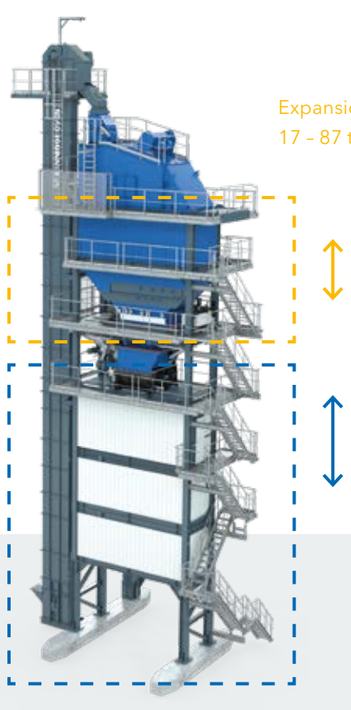
BENNINGHOVEN > GOOD TO KNOW

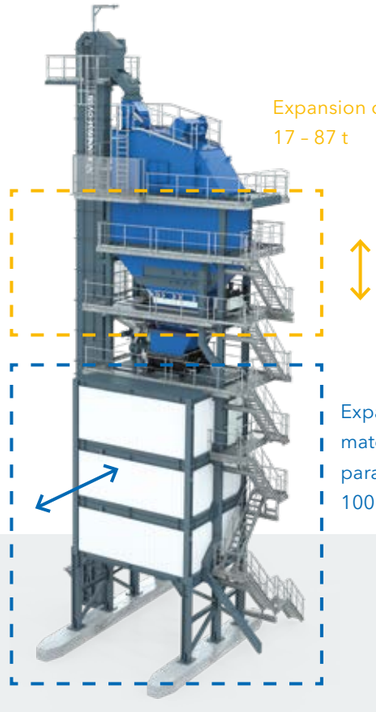
Asphalt optimisation with feed systems – plug & work

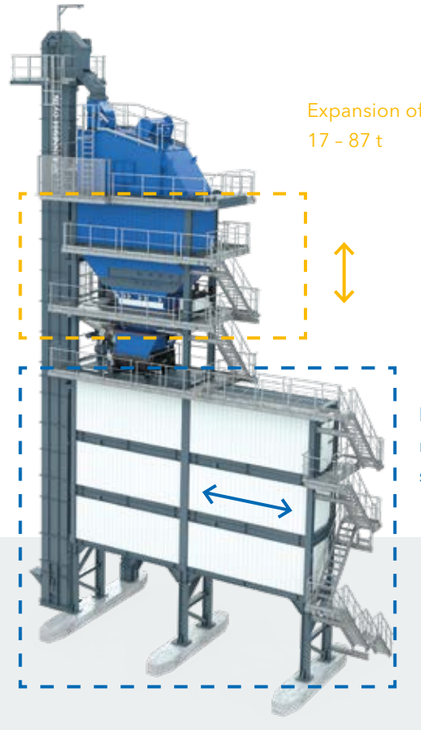
Additives can be introduced into the mixture to optimise the properties of the asphalt. BENNINGHOVEN offers various feed systems for this.

Feed options:
> Granulate dosing system
> Powder / granulate dosing system
> Bag dosing unit
> Liquide additive system
> Additional customer requests









Flexible configuration
Hot bin section

Flexible expansion
Mixed material storage silo

Individual adaptation
depending on requirements

Time-optimised loading
of a variety of recipes

ASPHALT TRANSFER IN THE PLANT

The choice is yours.

Worldwide functional reliability
and very maintenance-friendly

Purely mechanical structure
particularly resistant to malfunctions

Cost-effective
alternative to the skip track

BENNINGHOVEN have always relied on loading skip systems as the link between the mixer and the loading silo. The skip volume corresponds to the volume of the mixer. The mixer drains the asphalt vertically downwards into the skip, the skip then positions itself precisely above the selected loading silo pocket and releases the stored mixture vertically downwards. This is proven technology for excluding segregations in the mixture.

For the ECO series, BENNINGHOVEN offers a cost-effective alternative to the skip track. The patented diverter chute unit is a purely mechanical system and therefore less prone to malfunctions. Active cross-mixing during material transfer minimises separation effects in the end product.

The diverter chute unit is installed in a steel container designed with standard container dimensions to ensure optimised transport. The unit is clad with profiled sheeting on the outside for weather protection and to prevent thermal losses. Very good access to all areas because the system is so easy to operate and service.

The clever design ensures worldwide process and functional reliability thanks to the purely mechanical design that is resistant to malfunctions. The new diverter chute unit is therefore a cost-effective and convincing alternative to the skip track in the main tower.

01

> Direct loading

> Filling of left silo chamber

> Filling of right silo chamber

02

01 Skip track **02** Diverter chute

BENNINGHOVEN > GOOD TO KNOW

Available plant configurations for use of a diverter chute

ECO plants with mixed material storage silo capacities of 60 t

ECO plants with mixed material storage silo capacities of 109 t

SUSTAINABLE BURNER TECHNOLOGY

Still burning in the future.

BENNINGHOVEN
SUSTAINABILITY

When it comes to the highest possible level of eco-friendly and sustainable operation of asphalt mixing plants, the innovative BENNINGHOVEN burners are the first choice for safe and reliable use of renewable and future-proof energy sources.

Many markets are now preparing to exit from coal, while systems running on oil or gas are also increasingly subject to tighter regulations and restrictions. With burner technology from BENNINGHOVEN, plant owners can modernize their plants and safeguard the continued operation of their business.

EVO JET multi-fuel burners, which can use renewable fuels such as biomass to liquid (BtL) and wood dust, contribute to this. Both fuels are carbon-neutral and are also attractive when it comes to their availability, as fossil fuels are not only limited, but are becoming increasingly more difficult to obtain.

Innovative multi-fuel burner
up to four fuels

Modular structure
Easy retrofitting and expansions

Strong performance
Highly efficient consumption

Fuel change at the press of a button

This turns the burner into a combination burner, which means that different variants of oil, natural gas, liquid gas and all gaseous substances (DME, etc.) available on the market, coal dust, BtL and wood dust can be combined as fuels. This eliminates plant downtime due to lack of raw material or delivery problems. In the event of price fluctuations for any particular fuel, the cheapest fuel can always be selected.

Best service for smooth operation

The world's largest and most modern factory for asphalt mixing plants offers optimum conditions for production at the highest level. As the manufacturer of the plants, BENNINGHOVEN can offer best possible customer service that is perfectly tailored to the respective asphalt mixing plants. Our specialists have extensive process know-how and are familiar with every little detail of the plants.

Before delivery from the factory, all burners are tested thoroughly and all basic settings are made. The optimum settings for energy-efficient and effective operation are made on site – to save CO_2 and comply with emission limits.

BENNINGHOVEN
70 YEARS
COMBUSTION TECHNOLOGY

Retrofitting solid fuel burner (wood)

ECO RECYCLING SYSTEMS

Economical and eco-friendly.

The processing of recycled asphalt is a high priority when it comes to conserving natural resources. This fundamental drive for re-using materials is only one of many.

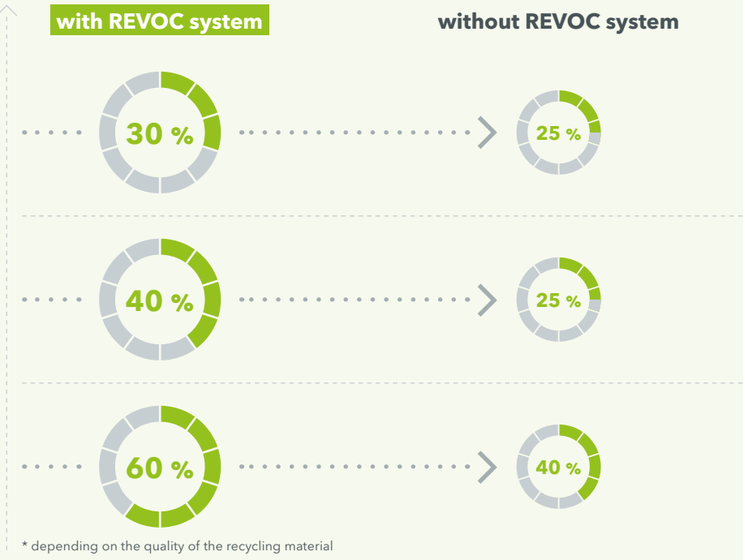
Country-specific requirements, the reduction of emissions and increased economic efficiency are important points in favour of recycling and environmentally friendly asphalt production, because green asphalt is possible only with the use of recycling materials.

BENNINGHOVEN offers a wide range of products and services in the field of recycling feed systems. The main advantage of these technologies is how they work to combine sustainability and efficiency in a profitable way.

Advantages of using recycling materials

> Saving natural resources (mineral / bitumen)
> Highest possible re-use based on recycling concept
> Reducing CO_2 emissions in the entire process: Use of RAP material from the environment of the plant, short travel distances, processing of mineral (quarrying / breaking) and bitumen (refinery) are required less.
> Flexible reaction to bitumen availability
> Increased economic efficiency

Feed rates compliant with the emission limits VOC < 50 mg/m³ *



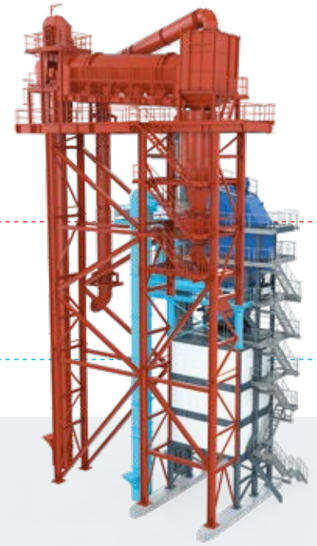
* depending on the quality of the recycling material

Without mixed material storage silo

> Optional lateral mixed material storage silo
> With multi-variable dosing system
> With parallel drum

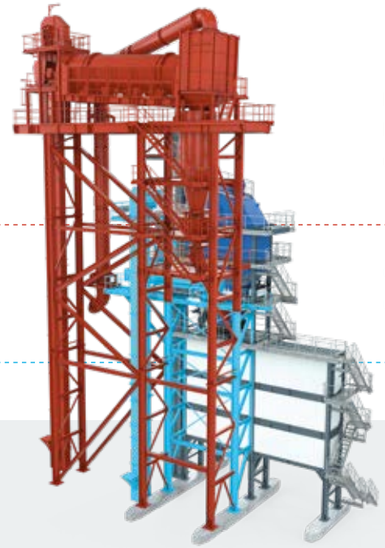
With mixed material storage silo

> Single mixing tower
> With multi-variable dosing system



With mixed material storage silo – parallel installation

> With multi-variable dosing system
> With parallel drum



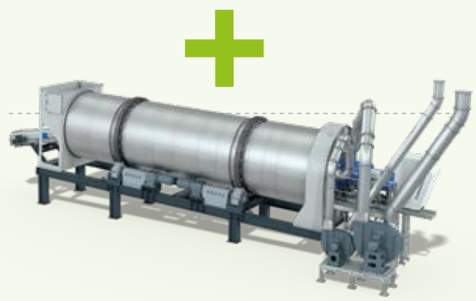
With mixed material storage silo – installation in line

> With multi-variable dosing system
> With parallel drum

Hot recycling
Parallel drum 180 t/h,
up to 70 % RAP addition rate

Cold recycling
up to 40 % RAP addition rate

BENNINGHOVEN SUSTAINABILITY



> REVOC system as an add-on for complying with emissions regulations
> Supplements existing cold and hot recycling systems

Eco-friendly production
Saving resources

Improved economic efficiency
thanks to easy retrofitting

Broad range of products
Cold and hot recycling systems

Innovative REVOC system
for high RAP rates and low VOC emissions

EASY TRANSPORT WORLDWIDE

Saves time and money.

A crucial advantage of the ECO plants is the design of the main components in transport-optimised container dimensions allowing easy transport by road, sea or rail.

The transport-optimised container system allows easy and fast loading, transport, storage and unloading of goods. The transport-optimised shape and size allow for standardised worldwide transport of goods with readily available transport means and therefore fast turnaround times. The uncomplicated handling allows the plant to be installed worldwide with maximum efficiency.

Container dimensions
for the main components

Intelligent logistics
easy, cost-effective and worldwide

Substantial time savings
with uncomplicated loading

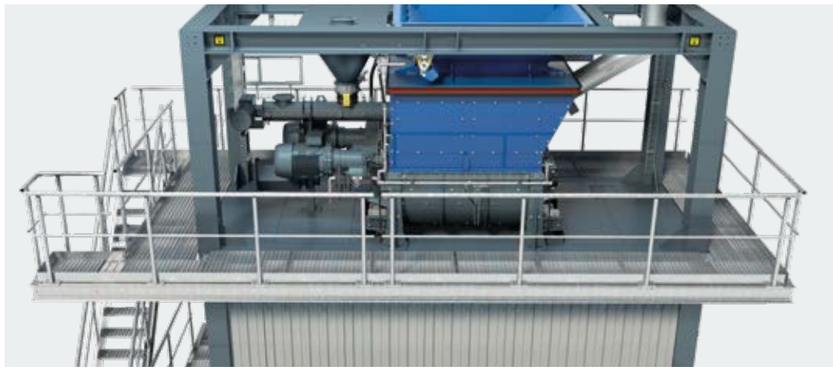
COMPETITIVE ADVANTAGE THANKS TO INTELLIGENT LOGISTICS

TRANSPORT CONCEPT

WORLDWIDE

ERGONOMICS, MAINTENANCE, AND HEALTH & SAFETY CONCEPT

Always right in the middle.



Very good accessibility to all areas with 800 mm wide surrounding access / working platform

The development and design of the BENNINGHOVEN asphalt mixing plants are based on a high level of functionality while prioritising reliable operation and functioning as well as optimum accessibility.

Very good accessibility
for safe maintenance

Ergonomics and maintenance concept

> At BENNINGHOVEN, maintenance access openings always have a size of at least 600 x 600 mm

> Large expansion space above the mixer allows upright working during service tasks

> Clever layout of components – easy maintenance, ensured escape routes, health & safety, large installation space

> Option of forced ventilation (entry into tight spaces) – mixer box, dryer drum

> Anchor points for PPE

> Wear parts are mostly bolted on – for good accessibility

> Most lubrication points are in a central, ergonomic position, with colour coding

> Power and compressed air connection for tools and maintenance work

> Central compressed air maintenance unit for oiler and separator, plus filters

> Platform loads are designed so that even accordingly large spare parts (drive motors above 500 kg) can be stored temporarily

> Central location of control cabinets in the control cabinet container – air conditioned, high system stability, weather protection, no negative influence from hot components

01 Large service openings ensure ergonomic access to the mixer for service and maintenance work

02 Intuitive lubrication plan thanks to colour coding of the maintenance intervals (daily – weekly – monthly)

03 In most cases, additional inspection covers on large covers for a high level of flexibility

Health and safety concept

> 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)

> Emergency stop button

> Contact protection on the complete drivetrain of the mixer and on all pneumatic cylinders

> Encapsulated material transfer areas

> Optimum illumination of the work and maintenance areas with LED technology

> Safe access to all service and maintenance points (guard rails, ventilation openings, etc.)

> Key transfer system for increased safety

> Cable guiding in compliance with standards

> Fall protection

> Anti-slip surfaces (R12)

> Escape routes ensured – headroom and sufficient width

> Automatic venting of the pneumatic units for maintenance

> Elevators with creep drive according to CE regulations

> Extraction of bituminous vapours during loading (option)

BENNINGHOVEN > GOOD TO KNOW

Key transfer system for increased safety

> Key-operated mechanical system

> Based on the premise that a key cannot be in two places at the same time

> The key can only be removed in the safe state if there are no hazards present

> Safety concept with highly intuitive operation

> Purely mechanical interlocking device – robust and not prone to malfunctions

> No manipulations possible

HIGHEST PRODUCT QUALITY

Sustainability ex works.

BENNINGHOVEN has the objective of continuously making improvements across divisions and plants – from design engineering and final assembly to commissioning at the customer site.

Mechanical and electric test run at the factory

Test run at the factory

All core components undergo a test run at the factory. This means that all components are started up "dry" and the mechanical and electrical systems are tested thoroughly. Even for the screen, the factory has a dedicated, decoupled area.

The high level of competence of the specialists at the factory is a crucial factor in preventing faults – before assembly and commissioning in the field.

Surface quality

All components of a BENNINGHOVEN asphalt mixing plant are subject to a defined coating standard with at least corrosion protection class C3M or C4M for steel parts and containers.

Use of renowned suppliers

Design and manufacturing of BENNINGHOVEN asphalt mixing plants and components are carried out at the factory in Wittlich. Only high-quality components and parts (drive systems, sensor systems, electrics, etc.) from renowned, established and reliable suppliers are used to ensure continuous quality assurance.

MAXIMUM CUSTOMER FOCUS

The best recipe: more than 100 years of experience.

Our service does not start only when the order is signed or end with commissioning. The comprehensive customer support at BENNINGHOVEN already starts much earlier on during the preparation phase of a project.

Most importantly, this includes complete and competent support to help you find the best possible plant solution. We believe it is important to take into account technical as well as location-related requirements and to develop an appropriate logistics concept.

Technical support
> Fault diagnosis / troubleshooting
> Application consulting
> Training
> Operator days
> Spare parts
> Prevention and inspection
> Retrofit
> Energy optimisation

Logistics concept
> Logistics paths / infrastructure on the plant and mixing station
> Ship and HGV loading
> Transport planning
> Links between transport and installation
> Approval process

Plant engineering
> Technical plant and operating descriptions
> Installation and layout plans
> Emissions measurement
> Safety devices
> Structural calculations
> Advice on current standards

Environmental requirements
> Topography
> Industrial area / nature reserve
> Municipal restrictions
> Colours / housing

SUSTAINABLE SOLUTIONS

Green technology for a golden future.

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 at our state-of-the-art main factory.

Working more efficiently with sustainable and economical technologies is the challenge of today and tomorrow. BENNINGHOVEN offers a variety of innovative solutions for reducing emissions and securing the future of asphalt mixing plant sites. State-of-the-art technologies ensure that stringent legal requirements are met or even overfulfilled.

Considering the entire road construction process from material acquisition and asphalt production to building the roads, companies can save up to 60 % CO_2 with these technologies (60 % recycling input rate, carbon-neutral fuel).

BENNINGHOVEN
SUSTAINABILITY

YOUR WIRTGEN GROUP CUSTOMER SUPPORT

Service you can always rely on.

Place your trust in our reliable and fast support during the complete life cycle of your machine. Our wide service offer includes suitable solutions to meet all of your challenges.

Service
We keep our service promises – with fast and uncomplicated assistance both on the building site and in our professional workshops. Our Service team has received expert training. Thanks to special tools, repair, care and maintenance work is completed quickly. Upon request, we can support you with tailored service agreements.
> www.wirtgen-group.com/service

Spare parts
Original parts and accessories from WIRTGEN GROUP can ensure the high reliability and availability of your machines in the long term. Our experts will be glad to advise you on application-optimised wear part solutions. Our parts are available worldwide, at any time and are easy to order.
> parts.wirtgen-group.com

Training
Staff responsible for the WIRTGEN GROUP's product brands are specialists in their areas and have decades of application experience. Our customers also greatly benefit from these experts. In our WIRTGEN GROUP training courses, we gladly pass on our knowledge to operators and service personnel.
> www.wirtgen-group.com/training

Telematics solutions
Construction machines with leading technology and perfected telematics solutions work hand-in-hand in the WIRTGEN GROUP. Intelligent monitoring systems such as WITOS or JD Link* not only facilitate the maintenance planning of your machines but also increase productivity and economy.
> www.wirtgen-group.com/telematics

* WITOS and JD Link are not currently available in all countries. Please consult your responsible branch or dealer if you have any questions in this area.

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