

A WIRTGEN GROUP COMPANY



BENNINGHOVEN

BITUMEN SYSTEM



23

ZERO EMISSIONS LOCAL.

BENNINGHOVEN BITUMEN TANKS

A main component of asphalt

01 Key role in asphalt production

Rising operating costs require innovative solutions: Decades of experience, research and development in bitumen storage and supply have resulted in the design of storage tanks and the associated equipment. Maximum operating reliability, low operating costs and minimum energy consumption are the targets achieved by this development.

Bitumen is one the main components of asphalt and therefore irreplaceable. Quality and availability consequently play a key role.

Bitumen tanks with different capacities, electrically heated and insulated, are used for storing the hot bitumen. These are available as single-chamber or multiple-chamber tanks. For storing polymer modified bitumen, the tanks can be equipped with an additional agitator or mixing nozzle.



Future-oriented and efficient setup

02 Benefits of retrofitting bitumen tanks

- > Increasing storage capacities
- > Increased storage capacities for bridging delivery bottlenecks
- > Compensating for price fluctuations of raw materials
- > Ensuring production and delivery schedules for customers
- > Increased recipe variety due to increased variety of bitumen types stored
- > Many different bitumen types have to be stored - requires more storage capacity in different quantities (60/80/100 m³ tank or 2-chamber tank)
- > Special bitumen that must not segregate or have to be kept homogeneous require tanks with an additional agitator or mixing nozzle.



03 BENNINGHOVEN bitumen engineering - for a comprehensive plant concept

The technological leadership of BENNINGHOVEN asphalt mixing plants also includes the complete expertise in the field of bitumen supply and storage. We have decades of experience and extensive specialist knowledge in the bitumen segment.

- > The tanks are developed, designed and manufactured in-house at BENNINGHOVEN.
- > One supplier for tanks + dosing unit
- > High manufacturing quality and optimised design - therefore no thermal bridges
- > Gap-free insulation - metal straps secure the insulation without damaging the material or requiring fastening.
- > High level of flexibility: 60/80/100 m³ bitumen tanks (useful dimension)
- > Great number of variants: 1-chamber or 2-chamber tanks (different size ratios 40/40, 60/40 or 50/50)
- > Energy-efficient: 200 mm or 300 mm insulation (mineral wool, 80 kg/m³)
- > Storing mixtures (PmB): with agitator or mixing nozzle
- > Zero local emissions: electrically heated
- > Load categories I/ II/ III (wind, earthquakes, terrain category)
- > Pre-installed or pre-assembled pipe for uncomplicated tank expansion later on
- > The interface is pre-installed mechanically, electrically and with regard to the control (bitumen piping, electronics, heating, control cabinet preparation, etc.)

Zero local emissions

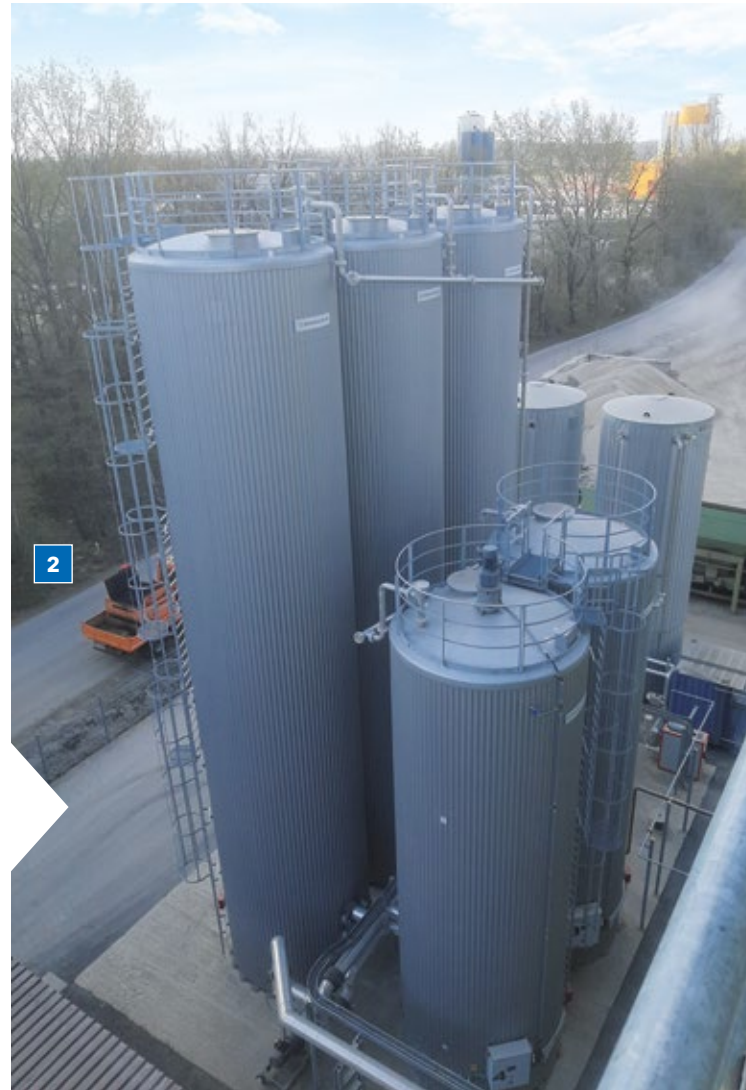
04 Converting from thermal oil to electrically heated bitumen tanks

- > Reduction of the CO2 footprint = zero local emissions (electrical heating with no local emissions)
- > No environmental regulations in the event of a conversion (thermal oil is in the category of substances hazardous to water and therefore subject to testing (TÜV))
- > Thermal oil ages and has to be replaced after a certain time
- > Thermal oil pipes can leak
- > Low operating and maintenance costs
- > Low energy consumption
- > No additional equipment required upon purchase

1. Bitumen tanks heated with thermal oil
2. Electrically heated bitumen tanks



BENNINGHOVEN SUSTAINABILITY



COMPONENTS OF THE BITUMEN SYSTEM

Optimum combination

05 Excellent functional reliability ensures top product quality

- > Temperature monitoring, product and periphery protection
- > Fill level monitoring (pressure measurement probe)
- > Overfill protection (monitoring of the filling process with pump switch-off function)
- > Bursting disc as a mechanical indicator for visual indication when pressure limits are exceeded (overpressure/underpressure)
- > Emergency stop button - processes in bitumen tank and heating are shut down
- > Transport eyes
- > **Temperature switch-off**
 - Heaters are shut off or throttled if the fill level falls below the limit
 - The max. temperature is limited to be gentle on the material
 - No damage to the bitumen or volatilization of emissions

06 Comfortable control

- > Centrally from the control container (control unit) and decentralised on the tank
- > Complete control of the bitumen tank system (filling, circulation, transfer, mixing, draining)
- > Temperature control for the trace heating and bitumen tanks
- > Display of temperature and content
- > Integrated, freely programmable timer for all heating units
- > Monitoring of the bitumen delivery and logging of the temperature

07 High level of safety for bitumen deliveries

Safe filling of the tanks

- > Central unloading point of tank trucks for filling the bitumen tanks with fresh bitumen
- > Components of the fill level:
 - + Tank truck coupling (TYP VK 80 TW501)
 - + Temperature monitoring
 - + Flap with spring return as double safety for eliminating the risk of medium flowback
 - + Electrically heated
 - + Optionally installed in a heated receiving cabinet

Sample extraction

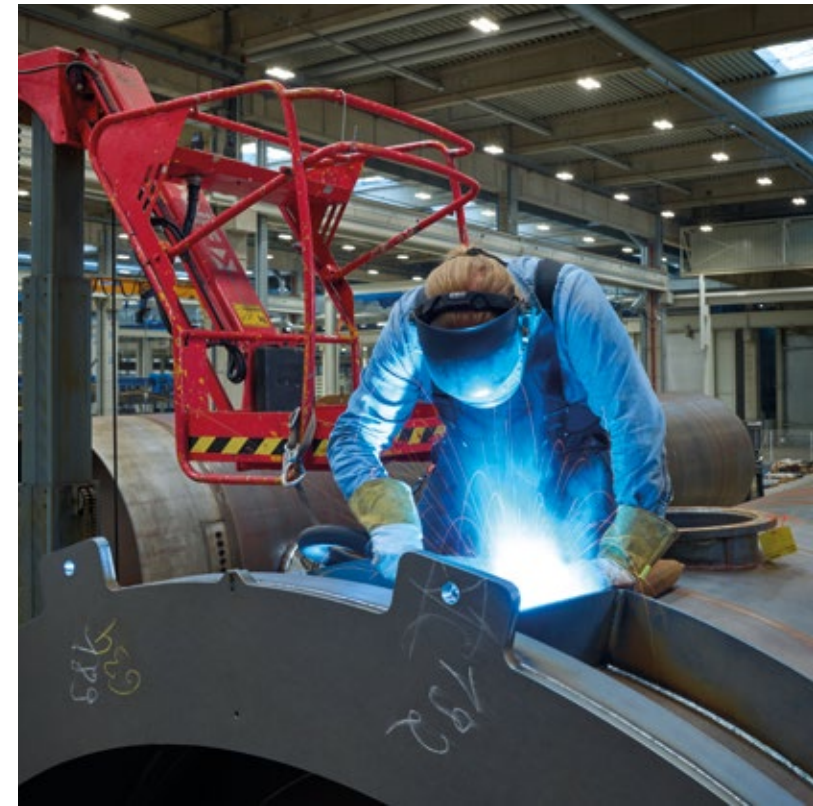
- > Option for sample extraction of fresh bitumen at delivery
- > The sample extraction fitting is designed as per DIN EN 536, section 5.11, so that the tanks cannot run dry through the basic piping, even in event of incorrect operation.

Gas balancing

- > Return or pressure compensation for the bitumen vapours displaced during filling of the bitumen tanks into the tanker vehicle through the gas balance line
- > Alternative: upstream filtration with an additional surge tank (durable version made of stainless steel V4A) and transfer into the tank truck

08 Increased flexibility

- > **Primary dosing line expanded with a second supply line (secondary)**
- > **Secondary dosing line** for, e.g., special bitumen (clear bitumen) - including separate dosing pump with or without tank truck extraction
- > Blending in the bitumen weigh hopper possible
- > Frequency converter on the dosing unit possible as additional equipment This improves the accuracy of the pump through fine adjustment. This means that dosing accuracy is possible at all times, even with strongly fluctuating bitumen demand. Recommended for plants with frequently changing recycling ratios and recipes



STORAGE

For optimum conditions



09 Agitator

- > Maintains homogeneity during storage of mixtures, dispersions and emulsions which have a tendency to separate
- > For foaming media, e.g. emulsions
- > Storage of PmB bitumen, rubber bitumen and emulsions
- > Internal agitator for even more gentle processing and improved life of the bitumen
- > Gentle on the material, energy-saving
- > Recommended for permanent storage of mixtures (e.g. PmB bitumen)

10 Mixer nozzle

- > Maintains the homogeneity of mixtures
- > Especially for PmB bitumen applications
- > The mixing nozzle is attached at the side, at the level of the filler ports on the tank
- > Fast and easier retrofitting
- > Recommended for sporadic use of PmB bitumen and for non-regular use of the mixing function
- > No wear

SERVICE

Very maintenance-friendly

11 Ladder

- > For service and maintenance purposes, the bitumen tank can be accessed via a ladder with back protection - design as per DIN EN ISO 14122
- > Bitumen tanks with 2 chambers - permanently installed maintenance platform for visual checks, maintenance work and good accessibility of the control and monitoring periphery in the lower section of the tank chamber. The maintenance platform can be accessed with a ladder with back protection.

12 Walking platforms and guard rails

- > For service and maintenance purposes, additional bitumen tanks of the same size can be accessed with a walking platform
- > These bitumen tank are equipped with an additional circular platform. Vertical access is provided on a defined tank which has to be equipped with a ladder.

13 Manholes

- > Manhole DN 600 for service and maintenance purposes
- > Tanks with agitator are designed with an additional manhole on the roof of the bitumen tank.





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