Benninghoven | a world’s first:   
100 % green hydrogen system   
for road construction

New burner generation allows for even more sustainable asphalt production

With the world’s first burner that can be run with 100 % green hydrogen, Benninghoven offers a pioneering solution for more sustainability in road construction. The first customer has already used it to produce several thousand tons of asphalt with virtually no emissions.

Asphalt production is the biggest factor on the path to making future road construction more sustainable. Low-temperature asphalt, recycling content of up to 100 % reclaimed asphalt and now hydrogen as the most eco-friendly energy source are sustainable, future-proof and economical solutions for substantially reducing emissions.

Burner operation with up to four fuels

Asphalt production requires a thermal process. Industrial burners heat and remove the moisture from the starting material – mineral and/or reclaimed asphalt – before mixing it with bitumen. To make this process as efficient as possible, Benninghoven has developed a new burner generation that comprises the burner as well as the control system and the drying system. Up to four different fuels can be used at the same time with this system. This flexible use increases the economic efficiency as the plant owner can always use the optimum available energy source at any given time.

Burner and control system as a complete system

The hydrogen burner from Benninghoven is supplied with an intelligent control system, as the coordinated hardware and software solution ensures an efficient asphalt production process. This includes, among other things, controlling the feed systems including the pressure regulating section and the drying section with burner and the burner control. Fuels or fuel combinations can be changed on the fly, i. e. without a shutdown, without downtime and with minimised temperature fluctuations in the process. The emissions, especially the nitrogen oxides (NOX) produced during firing with hydrogen, are very low.

Lower power consumption and lower noise emissions

In addition to the climate-friendly and flexible use of different fuels, the manufacturer has succeeded in lowering the electrical power consumption by 20 % with the same feed capacity. The efficiency of the heat transfer was increased significantly through optimum use of the combustion chamber and a burner control and design that ensure an optimum flame with any energy source.

Another significant advantage for plant owners, especially at urban sites, is the 5-dB reduction in noise emissions.

Hydrogen – 100 % emissions-free

Green hydrogen is currently the most sustainable fuel available. It generates no greenhouse gases and its high energy density makes it ideal for the thermal process. Plant owners looking to use hydrogen as an energy source are often confronted with infrastructure limitations. Asphalt mixing plant specialist Benninghoven can help customers to overcome these challenges with its network.

New plant or Retrofit solution

The burner technologies from Benninghoven can be used in new plants as well as in existing asphalt mixing plants. Retrofit solutions can also be added to plants from other manufacturers. This gives all plant owners the opportunity to change to the latest technologies at any time – a key aspect for economical, sustainable asphalt production and for securing the site in the long term.

Photos:

  
BE\_photo\_Wasserstoffbrenner\_001\_PR

Successful commissioning of the Benninghoven burner at the customer site. Several thousand tons of asphalt have already been produced with hydrogen as the energy source, without emissions.

  
BE\_photo\_Wasserstoffbrenner\_002\_PR

Prototype test on the burner test rig at the Benninghoven factory. Each burner that leaves the factory is tested on the test rig and preconfigured to the customer parameters.

  
BE\_photo\_Wasserstoff\_003\_PR

The new Benninghoven burner generation enables the use of up to four fuels at the same time, in three physical states.

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