Benninghoven | First in the world: REVOC system reduces emissions during asphalt production

Environmentally friendly technology also offers a route to business continuity for mixing plants

The Benninghoven REVOC system is an advanced technology that gives plant operators the ability to achieve higher recycled material feed rates while complying with stricter limits on emissions. The patented technology supplements existing cold- and hot-feed recycling systems in asphalt mixing plants and reduces total carbon emissions (TC) when feeding recycled material by up to 50 percent. Compliance with prescribed limits is assured: in Germany, for example, emissions are even lower than the level required by clean-air regulations.

Challenge: complying with stricter limits on emissions

Regulators are tightening emissions limits in many parts of the world. Complying with these limits for asphalt production is a particular challenge. At the same time, maximizing the use of a high quantity of recycled material is increasingly being promoted as a pathway to resource-friendly business.

Reclaimed asphalt (RAP) can already be fed into the production process by utilizing established cold or hot recycling technologies. However, this approach results in higher emissions of total carbon (TC) because heating reclaimed asphalt causes part of the total carbon concentration in the bitumen present in the RAP to evaporate. These volatile organic compounds (VOCs) have a more pronounced greenhouse effect than the greenhouse gas CO2 and are also harmful to health at high concentrations.

The aim is therefore to reduce these emissions as far as possible, to ensure existing asphalt mixing plants can stay in business and keep their operating permits. Operators of existing plants can achieve both goals with the innovation REVOC, which Benninghoven will premiere at Bauma 2022.

Solution: REVOC reduces TC emissions by up to 50 percent

The REVOC system is a solution for cutting emissions during asphalt production that ensures existing mixing plants can work more efficiently while reducing their environmental footprint. By offering the chance of using a high proportion of recycled material (up to 60 percent), emissions can be reduced to meet legal limits. These high proportions of recycled material also boost operating efficiency at existing plants.

The first step in the REVOC process is to capture the waste gases directly at their source. First from the mixer in the asphalt mixing plant: where heated aggregates, recycled material, and bitumen come together and are mixed into fresh asphalt. The vapors created at this stage have high concentrations of TC and are therefore routed into the REVOC system for thermal post-process treatment. The energy generated for drying and heating the virgin mineral is also used for this step, which makes the process extremely energy efficient. Thanks to this advanced technology, TC emissions can be reduced by no less than 50 percent.

REVOC system – an all-rounder solution for plant operators

Benninghoven’s innovation handles the increasingly demanding requirements from customers as well as stricter regulations from many national authorities. In Germany, these regulations are set out by the “Technical Instructions on Air Quality Control” (“TA-Luft”). With the REVOC system, however, operators can reliably stay below the strict limits specified by TA-Luft of <50 mg/m3.

Katharina Kratz, Development Engineer, Research and Process Technology: “Several REVOC systems are already in operation, which means our development engineers now have solid data to draw on. This lets us provide detailed support to our customers and their mixing supervisors and ensure that they can operate their REVOC system and overall plant as efficiently as possible.”

Thanks to increased plant performance, higher feed rates for recycled material, and reduced emissions, plant operators are well-positioned for the future. As national authorities continue to tighten emissions regulations, REVOC is the innovative solution for the environmentally friendly and cost-effective operation of asphalt mixing plants.

Benninghoven leads the way in sustainable asphalt production

Along with its hot-gas generator technology and fuels from renewable sources, the REVOC system is another key element in Benninghoven’s overall strategy of promoting the ideas of sustainability and efficiency within the asphalt production industry.

Photos:

Ein Bild, das Ebene, drinnen, Decke, geparkt enthält.

Automatisch generierte Beschreibung

BENNINGHOVEN\_world\_premiere REVOC-system\_01  
A new Benninghoven patent: the REVOC system. This efficient technology combines the drying and heating of virgin mineral with reductions in emissions. The energy created by the process is also fully utilized.

  
BENNINGHOVEN\_world\_premiere REVOC-system\_02

Most of the total carbon compounds are reduced by the Benninghoven REVOC system.

  
BENNINGHOVEN\_world\_premiere REVOC-system\_03\_Finalist Innovation Award\_EN

The REVOC system from BENNINGHOVEN is among the finalists contending for the Bauma Innovation Award 2022 in the category “Climate Protection”.

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