Benninghoven │ REVOC system proven in practice

Retrofitting of an existing asphalt mixing plant reduces Ctot emissions by 50%

The REVOC Retrofit solution has been installed at an existing asphalt mixing plant in Nentershausen/Hesse. The ‘catalytic converter for asphalt mixing plants’ is one of the innovative technologies developed by Benninghoven to enable more sustainable asphalt production.

High-quality asphalt mixes for motorways, roads and infrastructure projects

The TBA plant from Benninghoven, built in 2007, is located on the site of a basalt quarry and produces 80,000 to 100,000 t of high-quality asphalt mixes per year for motorways, roads, and infrastructure projects To enable even more sustainable asphalt production in the future, the plant operator decided to retrofit the existing plant with the catalytic converter for asphalt mixing plants.

‘We chose the REVOC system because it enables us to reliably comply with total carbon (Ctot) emission standards, even with the addition of a high proportion of reclaimed asphalt pavement’, explains Peter Bach, CEO of WWA Westerwald Asphalt.

A critical role in safeguarding the future of the plant

Thanks to the patented, pioneering technology, the plant operator is now in the position to increase the maximum feed rate of reclaimed asphalt pavement (RAP) from the previous 30–40% to 50% and simultaneously reduce Ctot emissions by more than 50%. Initial practical experiences with the retrofitted plant are extremely positive. Another important factor for the asphalt producer was that the use of this system safeguards the long-term viability of the plant.

Sustainability in asphalt production is determined by two key factors: on the one hand, the ability to increase the RAP feed rate with the goal of conserving valuable resources and re-using reclaimed material in a constructive way. Because, the higher the RAP feed rate, the less fresh bitumen is needed, which in turn leads to a correspondingly smaller carbon footprint. On the other hand, it is essential that the strict Ctot threshold values of <50 mg/m³ stipulated in Germany’s official regulations on air quality, ‘TA-Luft’, are fulfilled.

Higher RAP feed rates and simultaneously lower emission values

Although reclaimed asphalt pavement (RAP) can already be reliably fed into the production process by utilising established cold or hot recycling technologies, the total carbon emissions are higher. When reclaimed asphalt is heated, part of the Ctot concentration evaporates out of the bitumen contained in the recycling material. Ctot possesses a higher greenhouse gas potential than CO₂, and is a hazard to health in higher concentrations.

In the past, the resolution of the conflict between high RAP feed rates and nevertheless assuring sustainability in the production process was effectively impossible. Thanks to the efficient and effective REVOC system, these two aspects can now be reconciled: reducing Ctot emissions by up to 50% and realising higher RAP feed rates of up to 60%.

REVOC – an ecologically and economically viable solution

The system works like a catalytic converter. The fumes generated in the mixer of the asphalt mixing plant are extracted at source and passed to the REVOC system for thermal processing. Thanks to the reduction of emissions, the plant operator can now add a larger proportion of RAP to the mixing process without exceeding the stipulated threshold values. The method not only conserves primary resources, but also cuts production costs.

Measured emissions confirm the results

The entire project was closely monitored from the start – on-site, by telephone, or by telemaintenance. This included, above all, regular measurement of the emission values and fine tuning of the plant on the basis of the results. The results significantly exceeded all expectations with respect to emission reduction and were repeatedly corroborated by independent measurements.

A positive outlook for operators of old plants

Improved plant performance, high RAP feed rates and reduced emissions: existing plants with the REVOC system installed as a Retrofit solution can also be made fit to face future challenges. The design concept also allows operators of existing plants from other manufacturers to take advantage of the system.

**Photos:**

  
Benninghoven\_Nentershausen\_01  
The REVOC system from Benninghoven was installed in the existing asphalt mixing plant in Nentershausen. The Retrofit solution enables the reduction of Ctot emissions by more than 50%.

  
Benninghoven\_Nentershausen\_02

The REVOC system was custom-tailored to meet the needs of the Benninghoven TBA plant. It produces 80,000 to 100,000 t of high-quality asphalt mixes for motorways, roads and infrastructure projects.

  
Benninghoven\_Nentershausen\_03

Thanks to the catalytic converter for asphalt mixing plants, the emissions are extracted from the process at source.

  
Benninghoven\_Nentershausen\_04

Higher RAP feed rates and lower Ctot emissions increase the sustainability of the asphalt production process.

Please note: the photographs shown here are only previews. If you wish to publish them in other media, please download the higher resolution (300 dpi) versions from the link provided here.

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