**Benninghoven** | **RECYCLING AT THE HIGHEST LEVEL: RAP IN COUNTERFLOW – THE SOLUTION FOR THE FUTURE!**

**The asphalt industry is continuously looking for better solutions to optimize the processes within asphalt mixing plants. One key approach is to increase the volume of reclaimed asphalt added to all formulations.**

Parallel flow recycling drums are used today around the world for all sizes and capacities. This technology has proven to be a successful solution over many decades and has been continuously improved by plant manufacturers. Yet any concept, no matter how good, eventually reaches its limits. This is also the case for the heating of reclaimed asphalt using a parallel flow process where the material flows in the same direction as the heat generation. The exhaust emissions from this process limit the outflow temperatures to 130 °C.

The physical properties of parallel flow drying and the corresponding negative properties, such as a higher exhaust gas temperature compared to the product temperature as well as the resulting high emission values and the increased energy consumption, have prompted us to take a completely new approach.

**Heating recycling material in counterflow**

The recycling material is now heated in counterflow, which means that the material flows in the opposite direction to the heat source in the drum. This allows higher material temperatures to be achieved while lowering the exhaust gas temperature at the same time. The outflow temperature of 160 °C is the same as the further application temperature, while the exhaust temperature is above the dew point at about 100 °C.

A positive effect for the white material is that it no longer has to be run overheated, which significantly reduces the energy consumption. The entire process is only made possible with the use of a hot-gas generator because direct firing would burn the RAP material and thus make it unusable. The burner, hot-gas generator, dryer drum, separator cover and circulating air system are precisely synchronized with one another.

The burner automatically moves forwards and backwards on its chassis, depending on the operating state. Afterwards, a partitioning element moves in or out. This procedure was developed specially to prevent any damage to the components inside the burner after shutting off the firing process. Without this partitioning process, the burner would not be protected from the chimney effect and the resulting hot air rising from the recycling drum. When the burner is restarted, the partition moves out and the entire unit moves back into operating position.

The burner supplies the heat energy required for drying and heating the recycling material. It burns in the hot-gas generator where the flame is intensively mixed with the circulating air, also in counterflow. The RAP material is thus only heated indirectly via the hot air, while the emission values lie below the standard range.

In the drum, the RAP material is heated gently in counterflow across the length of the drum which in turn cools the gases. The material that has been heated to its final temperature is transported directly into one of the two storage silos. There it is conveyed across a weighing station and fed into the mixer. The exhaust hood cross-section is dimensioned to ensure that the exhaust gases rise up very slowly and therefore carry the smallest possible number of fine particles. The separated particles drop into a collecting trough and are fed into the drum discharge from there. This maintains the grain composition of the raw material. This process is necessary to ensure that the plant can also safely meet stricter emission values in the future.

Photos:

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|  | **BE\_N\_RC\_Heissgaserzeuger\_1**  *Counterflow recycling drum with hot-gas generator* |

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|  | BE\_N\_RC\_Heissgaserzeuger\_2Counterflow recycling drum with hot-gas generator |

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|  | **BE\_N\_RC\_Heissgaserzeuger\_3**  Counterflow recycling drum with hot-gas generator |

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|  | **BE\_N\_RC\_Heissgaserzeuger\_4**  Benninghoven already meets tomorrow's standards with this innovative technology. |

*Notice: These photos serve merely to provide a preview. For reproduction in printed articles, please use the photos at 300 dpi resolution: these photos are provided as downloads on the Wirtgen Group website.*

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