Innovations in Hamm oscillation: Split drums and maintenance-free operation

Further developments relating to oscillation

Almost 40 years ago, Hamm became the first roller manufacturer to offer a drum with oscillation capability. Today, this technology is an integral part of Hamm’s range of products and is being continuously developed. Hamm currently offers a total of 23 models with oscillation for the North American market, including rollers with split oscillation drum.

The oscillation principle

In oscillation drums, two eccentric shafts rotate synchronously, driven by a toothed belt. The unbalanced masses are offset by 180° relative to one another. As a result, the drum performs a rapidly alternating forwards/backwards rotational movement. This causes the drum to direct the compaction force into the substrate tangentially to the front and rear in the form of shear forces. Here – unlike with vibrating roller drums – the compaction force acts continuously on the substrate because the drum is in contact with the ground at all times. This is why oscillation rollers compact dynamically as well as statically with their intrinsic weight the whole time. There are many benefits to oscillation: It not only provides results which are higher in quality, ensuring even surfaces with grip, it is also very easy to operate. Furthermore, the vibration loads produced in the area around the roller by drums with oscillation are very low, and these drums compact without damaging the structure of the material or crushing particles. As compaction with oscillation is also possible at lower temperatures, the potential temperature range for performing compaction is increased, creating significant added value when compacting thin layers or on fast-cooling surfaces such as on bridges.

Oscillation drums for the most exacting requirements

Split drums are in particular demand for the compaction of curves and roundabouts, as well as for the compaction of asphalts which are prone to displacement, such as stone mastic asphalt or polymer-modified mixes. This is because these drums prevent material displacement and cracks. Hamm has now combined this added value with the advantages of oscillation compaction and included a split drum with oscillation in its range of products. An individual, mechanically independent oscillation unit operates in each half of the split oscillation drum. An integrated control mechanism adapts the position of the unbalanced masses quickly and precisely to the position of the two drum halves. This ensures that the two drum halves always vibrate synchronously, despite their different rotation speeds around corners. The two drum halves are synchronised electrohydraulically. It is precisely this that is decisive for the high quality of the compaction because, in this way, shear stresses in the asphalt that is to be compacted are minimised, preventing cracks and the displacement of material. Hamm is offering split oscillation drums on the DV+ 70i VS-OS (operating weight: 18,335 lbs, 8.315 kg) and DV+ 90i VS-OS (operating weight: 22,182 lbs, 10.060 kg) pivot-steered tandem rollers. Both models meet the EPA Tier 4/EU Stage V emissions regulation. In short, with the properties and benefits it offers, the split oscillation drum is a veritable premium solution for challenging tasks.

Wear-resistant and maintenance-free

All Hamm oscillation drums – both non-split and split models – are extremely wear-resistant, as Hamm uses an especially highly wear-resistant fine grain steel with the greatest material strength for the drum shell. Hamm is thus significantly extending the operating life of modern oscillation drums. In addition to this, all Hamm oscillation drums are completely maintenance-free. This has been made possible by using an optimised drive concept and innovative toothed belts. This toothed belt does not need to be changed after 2000 operating hours. Drivers and the surrounding environment also benefit from this solution – the oscillation drums are significantly quieter when in operation thanks to these toothed belts. Furthermore, Hamm oscillation rollers no longer require oil changes – something which is still required for other systems on the market.

Photos:

  
HAMM\_oscillation\_01

Premium solution for challenging compaction tasks: Hamm offers two models with split oscillation drum – DV+ 70i VS-OS and DV+ 90i VS-OS – for the North American market.

  
HAMM\_oscillation\_02

Several models with oscillation are also available in the compact machine segment. The images show the HD 12i VO tandem roller (left) and the compact H 7i VIO compactor. With the H 13i VIO, Hamm offers yet another model with oscillation for earthworks.

  
HAMM\_oscillation\_03

Oscillation involves two eccentric shafts rotating synchronously. Their unbalanced masses are offset by 180° relative to one another. This causes the drum to carry out a rapidly alternating forwards/backwards rotational movement, as a result of which the compaction energy is directed into the substrate tangentially to the front and rear in the form of shear forces.

  
HAMM\_oscillation\_04

All Hamm oscillation drums are now completely maintenance-free. It is no longer necessary to change the toothed belt or change the oil.

*Note: These photographs are only intended as a preview. For printing in publications, please use the photographs in 300 dpi resolution that are available for download from the Wirtgen Group websites.*

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