WIRTGEN SOUTH AFRICA

Job Report

WMA trials
Construction site : Leicester Road - Durban 1 km divided into 3 sections
overlay of ~ 5 cm wearing course
Client : ETHEKWINI - Durban Municipality
Equipment used : HAMM Tandem Roller HD O 90 V
Technique : Oscillation, Vibration , Density measurements

The task was, to achieve required compaction and best possible ride ability.
For all three sections a continuous graded mix with max 13 mm stone size and 10 % reclaimed asphalt included in the mix.
In the first section 2% of the bitumen content was an additive called REDISET and the second section there was instead 1.5 % SASOBIT as an additive.
Both additives caused a the mixing-temperature of ~130° C and a laying temperature of ~ 120° C.
The third section was the same mix with 10 % reclaimed asphalt but without any additive and the mixing temperature was ~ 150° C.

The wearing course layers as Warm Asphalt with a lower mixing / laying temperature, required compacting the asphalt in a lower temperature window than asphalt mixed with normal temperature as the third section.
In order to achieve compaction with 1 tandem roller at a paving speed of ~ 5m/min, both systems, Oscillation and Vibration were utilized in low amplitude settings.

The pattern to achieve the required densities were obtained with 6 passes. Finally a Pneumatic roller was used for another 2 passes to get the wanted surface appearance.

The Oscillation technique proved to be much more silent than a Vibrating roller. Due to the favorable ambient temperatures at the tests, there was no significant difference to the compaction results of a Vibrating only roller. Detailed Laboratory results on the drilled cores were not available yet, which would show eventually differences between the 2 technologies

The roller used for this compaction job :
HAMM Tandem Roller HD O 90 V with little options.
Some of the spec's for this roller are:

Operating weight: 9180 kg
Compaction front / rear: circular vibration / oscillation

Vibration frequency front I / II	42 / 50	Hz
Amplitude, front / rear	0,65 / 0,36	mm
Centrifugal force front I / II	75 / 59	kN
Oscillation frequency rear:I / II	33 / 39	Hz
Tangential amplitude, rear	1,37	mm
Oscillation force rear I / II	103 / 144	kN