Hamm │ Measure, document and analyze compaction processes using smart compaction

Increase quality while reducing energy consumption

With its smart compaction concept, Hamm combines a range of cutting-edge solutions for measuring, documenting and analyzing compaction processes. Alongside its "Smart Doc" app, Hamm introduces a second compaction assistant in the form of "Smart Compact". In addition to this, the roller manufacturer is already now enabling users to integrate collision prevention systems by means of a PDS interface (proximity detection system).

Smart Compact: The intelligent compaction assistant

Coinciding with the launch of the new tandem rollers from the HX series, Hamm is also bringing the Smart Compact assistant to market. This system actively supports drivers in selecting the right drum and the right type of compaction (vibration, oscillation or static). When operating the roller, the drivers simply specify whether a base-, binder or asphalt surface course is to be compacted. Smart Compact takes care of the rest. The system does this by evaluating different physical properties of the asphalt, such as the temperature or rigidity. It also takes into account the complex cooling behavior of the asphalt. There is also the option of integrating a weather station to provide local weather information. Smart Compact uses all of this information to determine the most suitable compaction settings for each of the two drums. This makes Hamm the first manufacturer in the world to automate the separate setting of the individual drums, increase process reliability, and raise the quality of the compaction to a whole new level.

Fuel savings included

Equipped with these measured values, Smart Compact recognizes when dynamic compaction is no longer advisable – for instance, if the asphalt temperature is too low. The system then automatically cancels the dynamic compaction and puts the roller into ECO mode. This reduces the engine speed by up to 20%. This alone reduces fuel consumption by up to 15%. Because of this, Smart Compact preserves not only the machine but resources too.

Modern operation

From the operator's perspective, one of the best things about the assistant is how easy it is to use. Data input and data output are managed via a dedicated display on the dashboard; and because it turns with the seat, the driver can always view all the relevant information. The user guidance has been developed through a UX design process. As such, it combines the demands of machine operation with the contemporary look and feel, i.e. handling, of smartphones and other digital devices. This allows workers to give their full focus to driving the machine. Furthermore, Smart Compact fulfills the newest requirements of the current generation of drivers and new starters in the road building sector, who demand workstations equipped with cutting-edge technology.

Smart Doc: Process optimization and compaction documentation

With Smart Doc, Hamm presents an Android app for compaction documentation and self-monitoring. The app can be used with the GNSS receiver on the user's smartphone. For day-to-day operations, however, Hamm recommends the Smart Receiver, a GNSS receiver specially designed for construction applications. With the app, users can transparently document the compaction in earthworks and in asphalt construction and share the result with third parties. Smart Doc also meets the requirements of continuous compaction control (CCC). The app generally combines data from the machine control system with the positioning data from the smartphone. During the compaction process, important process parameters and the compacting progress are displayed and recorded on the end device. The "compaction maps" recorded show users at a glance where still needs to be compacted. Consequently, the system has proven itself to be a useful tool for training new drivers. Smart Doc can be used to generate a compaction report at any time. This way, construction companies can provide evidence of high-quality compaction for earthworks with the required basic continuous compaction control. At the same time, the number of passes is optimized, since the occurrence of double passes is reduced by approximately 30%. This in turn reduces the diesel consumption and, ultimately, the CO2 emissions. Currently, Smart Doc can be used and retrofitted in the H CompactLine series, the HC CompactLine series, the H series, the HC series, the HD+ series, and the HX series. Smart Doc can even be used to document double passes on other manufacturer's machines. The app is free and can be installed via the Google Play Store on all Android smartphones and tablets from Android 6.0. It is available in German, English, Spanish and French.

Integrating collision prevention assistance system

Since the start of 2022, a PDS interface (proximity detection system) can also be used to integrate modern collision prevention solutions. The interface provides data that can be used by different systems to autonomously detect people or objects in front of and behind the machine, and to automatically stop the roller when needed. The interface is available for rollers from the HD+ series, the HX series, the HP series, and the HC series.

Photos:

  
HAMM\_Smart Compaction\_01

With its compaction assistant Smart Compact, Hamm becomes the first manufacturer in the world to automate the separate setting of the individual drums, increase process reliability, and raise the quality of the compaction to a whole new level.

  
HAMM\_Smart Compaction\_02

Smart Doc records the speed, the frequency, the amplitude, the proportion of jump operation and the achieved compaction value (HAMM Measurement Value), and can automatically create test reports as reliable and accurate basic proof of continuous compaction control.

*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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| For further information  please contact:  WIRTGEN GROUP  Public Relations  Reinhard-Wirtgen-Strasse 2  53578 Windhagen  Germany  Phone: +49 (0) 2645 131 – 1966  Fax: +49 (0) 2645 131 – 499  E-mail: PR@wirtgen-group.com  www.wirtgen-group.com |  |