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Quick and easy evaluation of road surfaces during installation and operation

surface drone

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Texture data in real-time

When building a new road surface, several factors can affect its final quality: the material mix, machinery parameters, weather conditions and binder quality. In modern road construction, the quality assessment should be performed as soon as possible in order to optimize the construction process. Additionally, the road surface texture changes during its operation. By means of regular assessments, these changes can be monitored, too.

surface drone is a portable, light-weight and self-propelled measuring system that delivers texture data in real-time even for long measurement sections.

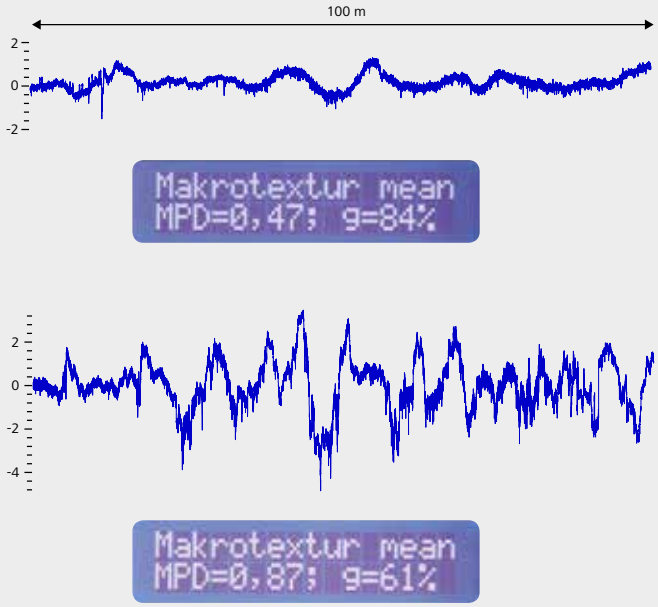
surface drone allows to perform measurements for quality control during the construction of new pavements as well as the monitoring of existing road surfaces under traffic conditions.

surface drone allows practical, simple and efficient measurements of the relevant pavement parameters.

In its basic configuration, surface drone provides all the important GPS georeferenced data on macro- and mega-texture of the road surface:

- the macro texture is relevant for noise reduction, grip and rolling resistance
- the mega texture is an indicator of unevenness characteristics and of longitudinal and transverse inclination of the road surface. The mega texture measurement with surface drone is a value for quick assessment of the surface quality during paving, but it does not replace a measurement in conformity with directives and regulations under current legislation.

Characteristics



Versatile
surface drone can be used immediately after the last roller passage – without the need to enter the newly constructed road for the measurements. So, the road surface quality can be assessed already during the construction process. surface drone can also be used to monitor the quality of existing pavements.

Portable and light weight
surface drone weights only 4kg, it can be stowed and transported completely with accessories in one small case. It can be easily transported in a car or even as hand luggage on an airplane.

Quick and agile
surface drone runs on two low-vibration flat belts. The measuring system scans the surface at a speed of approximately 1 km/h, allowing to walk side by side to the surface drone and to pay attention to the surroundings at the same time.

Easy to use
surface drone is operated by an intuitive remote control which also controls the measurements. surface drone comes with a bright LCD display that shows the measurement results immediately.

The georeferenced measurement data and the raw data are stored internally and are automatically evaluated. Additionally, a standardized measurement report is generated. After completion of the measurements, the data and the pre-defined measurement reports can be saved on a flash-drive. No special software is required.

Optional modules

Optional modules make surface drone a modular system by providing additional information on the measured road surfaces. The available modules are continuously improved to provide state of the art technical information.

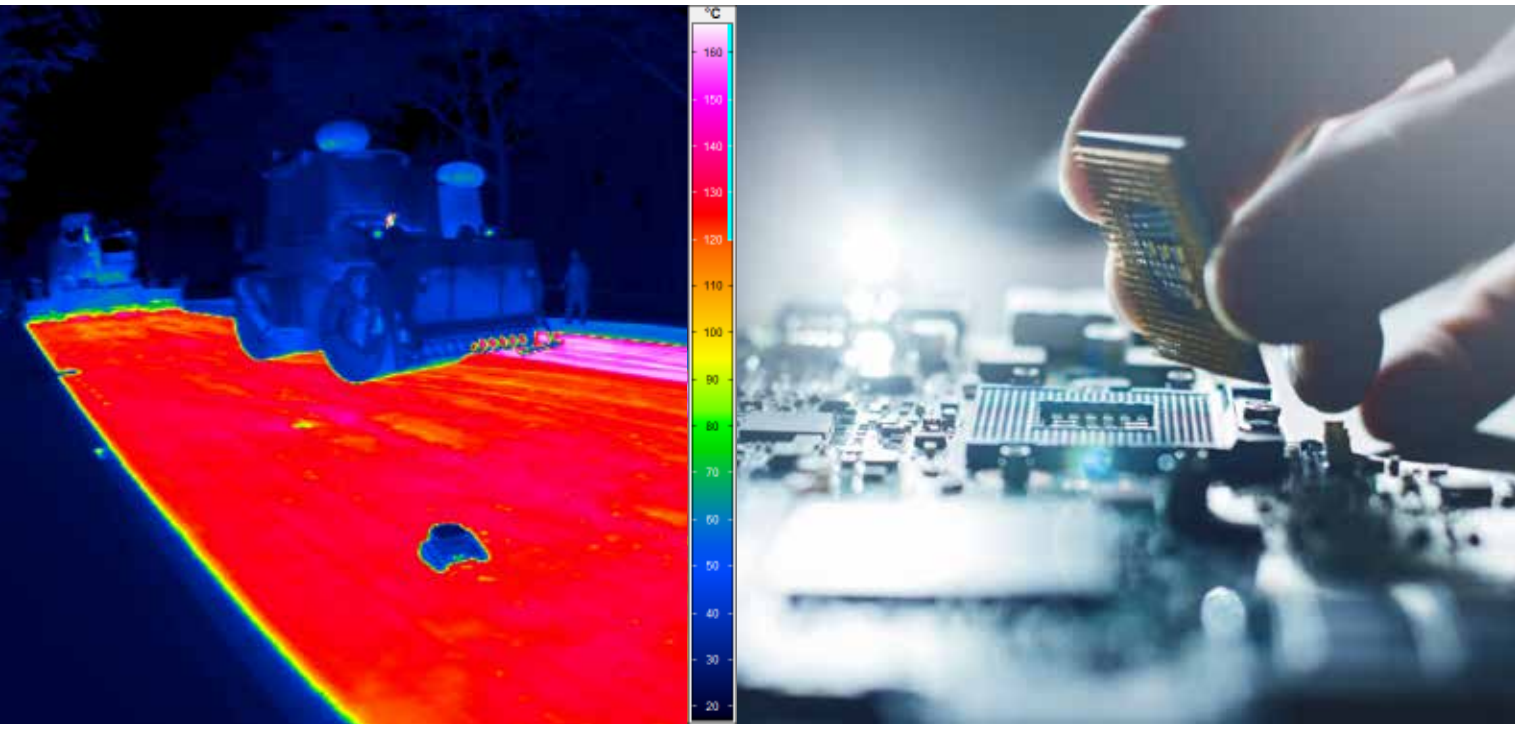
Noise emission module
There is a statistical correlation between surface texture and tyre/road noise – at least for dense, non-absorbing road surfaces. With surface drone's noise emission module, the tyre/road noise can be estimated as a function of the surface texture. This module is available for thin layer pavements with 5 mm maximum grain size or for asphalt concrete with 8 mm maximum grain size (pavement for ISO noise measurement tracks).

On-board-camera
surface drone can be equipped with an on-board camera. The pictures are automatically generated during the measurement, from a ground perspective. They can be used as an additional characterization parameter (e.g. of inhomogeneities) or as a visual geographical reference.

Rolling resistance module
There is an empirical and mathematical correlation between the surface texture and the rolling resistance of road surfaces. The rolling resistance is an important parameter for the reduction of fuel consumption and air pollution.
surface drone calculates the rolling resistance coefficient of the road surface as a function of the surface texture.

Sealed mode
With the sealed-mode option the measurement data can be recorded in a special safe mode. The data is protected against manipulation, by visible and invisible methods, and stored encrypted together with time and location of the measurement. Thus, the validity of the collected measurement data can be guaranteed to third parties.

Options



picture credit: shutterstock

Thermo drone

A thermal shielding is also available to allow measurements on hot surfaces (e.g. during asphalt paving). With the thermal shielding road surfaces with temperatures up to 140 °C can be entered for a short time to collect measurement data. The drive belts optimize the weight distribution, so that the just laid surface will not be damaged.

Expandable and always up-to-date

In the basic configuration surface drone measures both macro and mega texture and unevenness. Additional sensors can be added to the internal analogue inputs, expanding surface drone's features for the complete characterization of the road surface and/or of environmental conditions.

surface drone is subject to continuous further development and adaptation to the state-of-the-art. With an optional maintenance contract, your surface drone will receive updates for new or modified measurement and evaluation standards and guidelines as well as for improvement of the prediction models.

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Müller-BBM GmbH is a subsidiary of Müller-BBM Holding AG, with headquarters in Planegg near Munich. Since 1962 Müller-BBM has been advising clients nationally and internationally and is now one of the world's leading engineering firms. More than 400 highly qualified employees form an interdisciplinary team of architects, scientists and engineers in the most diverse specialist fields. The company currently has twelve offices in Germany as well as a branch office in Austria.

Notifications

Müller-BBM is notified as an expert authority in accordance with § 29 b of the German Federal Pollution Control Act (BImSchG). The notification comprises

- determining emissions and immissions of air pollutants, noise and vibration
- verifying the correct installation and function in addition to the calibration of continuous emission measurement systems (CEMS)
- checking combustion conditions

As a test laboratory, Müller-BBM is authorized to render the services of an independent third-party provider for assessing and examining performance reliability in accordance with EU regulation no. 305/2011 (Construction Products Regulation).

Accreditations

Our testing and calibration laboratories are accredited according to ISO/IEC 17025:

- Test laboratory for sound and vibration, electromagnetic fields and light, air pollution control, measurement of hazardous sustances
- Acoustic testing laboratory
- Calibration laboratory for acceleration and acoustical quantities

Müller-BBM has a significant number of employees with competency certificates that were awarded to them on an individual basis. They include publicly appointed and sworn experts, state-recognised experts and otherwise appointed and notified experts.

Detailed information on the scope of our accreditation, its international validity and the corresponding certificates can be found on http://www.muellerbbm.com/quality/.

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