ZERSTÖRUNGSFREIE MESS- UND PRÜFTECHNIK

MIT-*DOWEL*-SCAN

Measuring system for the non-destructive and accurate measurement of dowel positions in concrete pavements meets ASTM E3013

THE SMART PRECISION

PRECISION
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GERMANY

ASTM INTERNATIONAL

Measuring device MIT-*DOWEL*-SCAN

MIT-*DOWEL*-**SCAN** is a measuring instrument designed for non-destructive testing of dowel and tie bar positions in concrete pavements. They are determined very accurately right after the test run. Operating on the pulse induction method, the measuring device makes use of the magnetic properties of the installed steel bars.

Areas of application

MIT-*DOWEL*-**SCAN** can be utilized for new construction and maintenance of

✓ Concrete roads
✓ Airfields
✓ Container storage areas and unreinforced concrete pavements

The device is commonly used by construction companies, engineering offices and government agencies who are engaged in quality assessment. Details for the use of the measurement method and requirements are outlined in ASTM E3013 and other national standards.

Benefits

Non-destructive
- Signal recording by simply moving the device over the concrete pavement
- No on-site calibration necessary
- No core extraction required

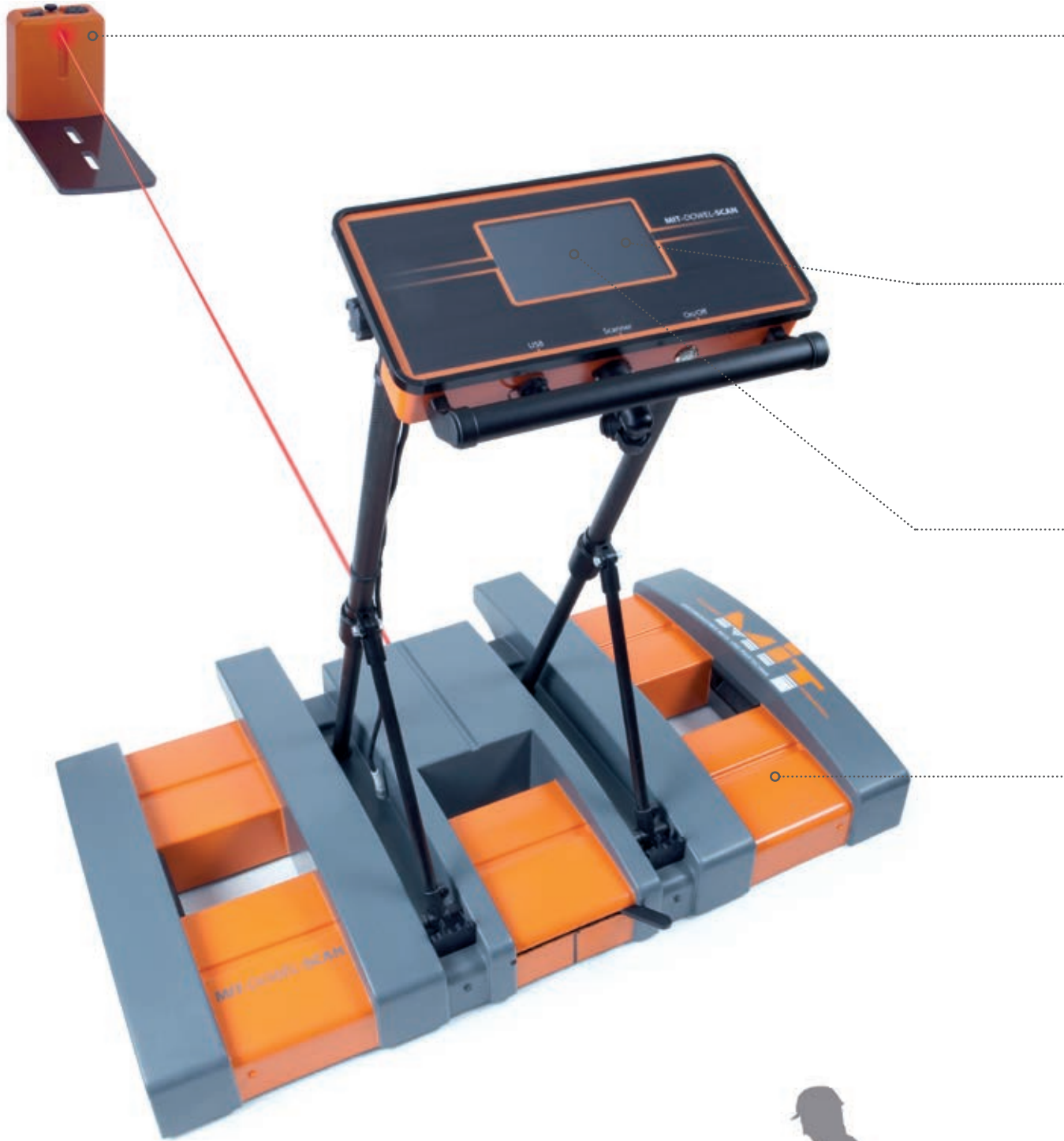
Precise
- Highly accurate measurements of dowel and tie bar positions
- Good reproducibility of the measurement results
- Accurate measurement even on freshly poured and rain-soaked concrete
- Reliable instrument for construction supervision

Cost-effective
- Rugged measurement device with long service life
- Quality assurance in the context of self-inspection
- Comprehensive inspection of bar positions without harming the road surface
- Low-maintenance device

Fast & efficient
- Quickly ready to operate
- Only one person required for operation
- Simple and intuitive measurement process
- Calculation of bar positions immediately after the measurement
- Measurement of a large number of joints per working day
- Automated evaluation of large data sets with desktop software MagnoProof

Proven and tested
- More than 15 years successfully used and approved by well-known agencies, contractors and consultants worldwide
- Meets ASTM E3013

Set-up and Operation



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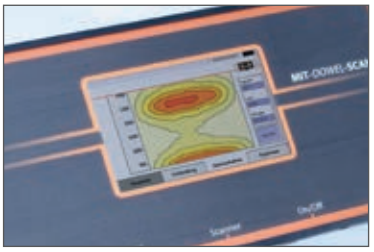
Automatic direction control

The measuring device is rail free and guided automatically by a **laser** along the joint.

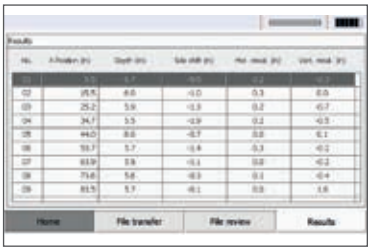
Real-time monitoring

The graphical representation of the signal is a scrolling color map, which shows the dowel bars during the test.



Measurement results on site

After the test run, bar positions are immediately determined and displayed in table form in the display of the **control unit.**

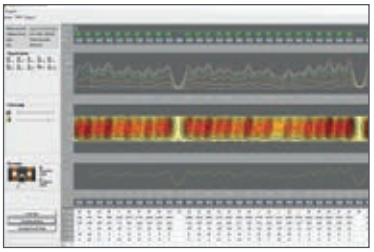


Intuitive and easy operation

The **measuring trolley** is pushed along the joint. Two sensor arrays continuously record measuring data during the test run.

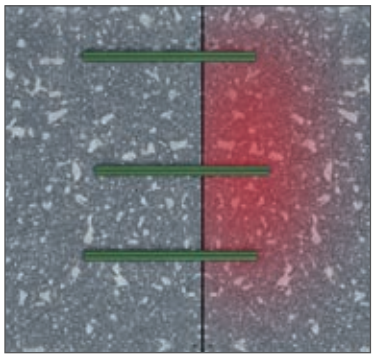
Evaluation reports

The desktop software **MagnoProof** affords the automatic evaluation and easy creation of reports for entire series of measurements.

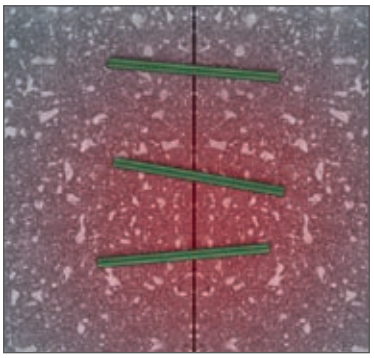


Why measure?

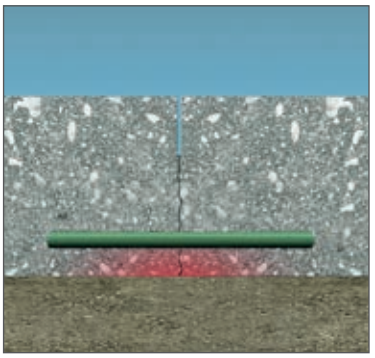
Concrete slabs contract and expand due to temperature fluctuations. Contraction joints serve to absorb these movements. Dowel bars are embedded in concrete pavements to transfer the load across the joints. The proper alignment of dowel bars is critical to ensure the long-term performance of the joint. Misaligned bars can lock up the joints and prevent them from opening and closing freely. If bars are not centred adequately under the joint saw cut, they may not be effective in providing load transfer, which can cause uncontrolled crack formation and may reduce the life time of concrete pavement significantly.



Side shift:
Inadequate load transfer



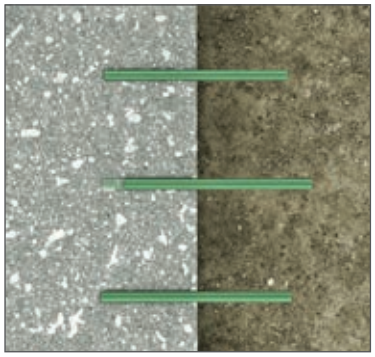
Misalignment:
Cracks in concrete



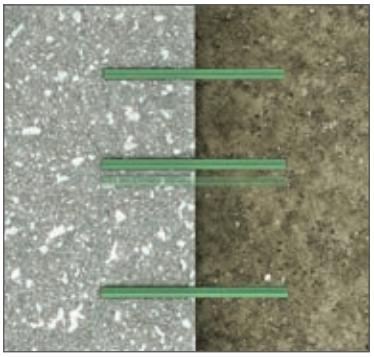
Vertical translation:
Inadequate load transfer, cracks and corrosion

What is measured?

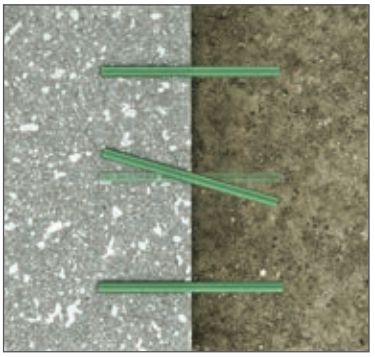
MIT-*DOWEL*-**SCAN** determines the discrepancy between the real bar position and the ideal position of dowel bars. A design placed bar lies in the vertical center of the slab, perpendicular to the joint cut and with its center in the joint. Deviations from such a prescribed position are described by the side shift, horizontal translation, horizontal misalignment, vertical translation and vertical misalignment:



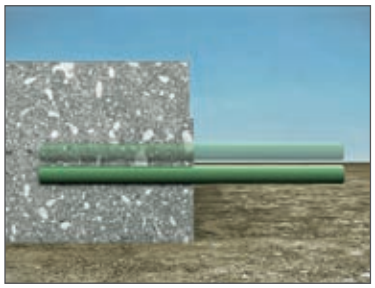
Side shift



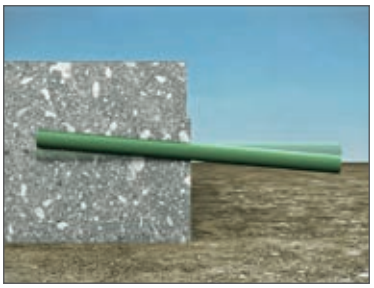
Horizontal translation



Horizontal misalignment



Vertical translation



Vertical misalignment

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Technical Data MIT-*DOWEL*-SCAN

Device	
Dimensions	116 cm x 74 cm x 17 cm / 45 x 29 x 7 in
Power supply	Li-Ion battery 14.8 V / 6.8 Ah / 100 Wh
Battery life	8 hours
Recharge time	4 hours
Dimension transport box	138 cm x 90 cm x 32 cm / 54 x 35 x 13 in
Scope of delivery	Measuring device **MIT**-*DOWEL*-**SCAN** with operating unit, controlling software (pre-installed), laser unit, charger, battery, software package **MagnoProof**, operating manual, transport case
Tolerances	
Path measurement	± (3 mm + 0.3 % of the distance) / ± (0.15 in + 0.3 % of the distance)
Depth	± 4 mm / ± 0.2 in
Side shift	± 8 mm / ± 0.3 in
Horizontal misalignment	± 4 mm / ± 0.2 in
Vertical misalignment	± 4 mm / ± 0.2 in
Scope of validity	
Side shift	maximum 80 mm / 3.2 in
Horizontal misalignment	maximum 40 mm / 1.6 in
Vertical misalignment	maximum 40 mm / 1.6 in
Environment	
Operating temperature	-5° C . . . 50° C / 23° F . . . 122° F
Storage temperature	-10° C . . . 50° C / 14° F . . . 122° F
Concrete condition	Operates on wet surface and on walkable green concrete

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