MIT-*DOWEL*-SCAN
ADVANTAGES AT A GLANCE

Accurate and efficient measurement	Specialized system for measuring dowel bar and tie bar positions
	Comprehensive and accurate measurement of dowel positions: • Bar depth tolerance of ± 4 mm • Bar misalignments tolerance of ± 4 mm • Bar side shift tolerance of ± 8 mm
	High production field inspection of joints per day on long road sections (up to 500 joints per day with a single operator)
Versatile in use	Nondestructive data acquisition, no reference core required
	Measurement independent of the degree of concrete hardening, also on rain-wet road surface
	Scanning of cut and un-cut joints (can be used to locate the saw joint)
User-friendly operation	Simple and intuitive handling: Rail-Free due to automated course correction of measuring device
	Fast and easy transportation from joint to joint to increase productivity
	Easy to transport - Compact, collapsible measuring device
	Testing can be done easily with a single operator
	Comprehensive analysis with evaluation software MIT-MagnoProof 5

MIT-*DOWEL*-SCAN

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

MIT Mess- und Prüftechnik GmbH
Gostritzer Straße 63 · D-01217 Dresden
Germany

Phone +49 (0) 351 871 81 25
Fax +49 (0) 351 871 81 27

www.mit-dresden.de
info@mit-dresden.de

ZERSTÖRUNGSFREIE MESS- UND PRÜFTECHNIK

MIT-*DOWEL*-SCAN

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

Joints in concrete pavements of highways, airport runways and container areas are exposed to stresses and strains due to traffic and temperature variation. Steel dowel bars and tie bars are built into joints, to transfer the loads and maintain equal elevation of adjacent slabs at the joints. The type and the number of dowels and tie bars, as well as their accurate placement and the permitted geometric tolerances, are critical to ensure the long-term intactness of the joints zone.

MEASURING METHOD

The MIT-*DOWEL*-SCAN operates on the eddy current principle (pulse induction method). By means of briefly generated magnetic fields, it induces eddy currents in dowel bars and tie bars. The resulting electromagnetic response fields are measured at a fast sampling rate by an array of sensors. Based on precise distance determination during a test, data is collected with very high accuracy.

BENEFIT

The MIT measuring system is an internationally recognized method. Key customers around the world have been using the MIT dowel bar testing devices since 2002. In Germany, as well as in the USA and Canada, testing of dowel bar and tie bar positions is now mandatory for the quality control when dowel bar inserter (DBI) machines are used.
The measuring system is designed for nondestructive, comprehensive and accurate determination of the position of dowel bars and tie bars placed at joints. The three-dimensional position is determined accurately for each dowel bar. This data is provided in a construction site-relevant format that allows the contractor to adjust the dowel bar inserter machine settings. Since the MIT-*DOWEL*-SCAN can also be used on walkable moist concrete, the results can accurately locate the center line of the dowel bars for joint cutting.

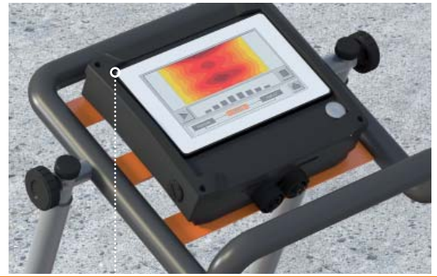
MEASURING SYSTEM

The MIT-*DOWEL*-SCAN measuring system integrates the proven MIT measuring method into a novel operating concept. Unlike the existing devices in the MIT-SCAN-2 series, this system works without rails. This is possible due to the measuring device's automatic direction control system which orients itself in joint direction along a laser line. A single person can operate the measuring system by pushing the measurement device along the joint.

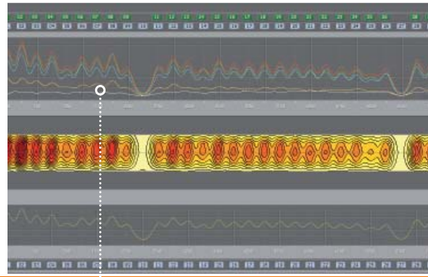
The dowels measured during one pass are shown in a color chart which changes in real time on the integrated control computer screen during the test run. The MIT-*DOWEL*-SCAN has more sensors, thus providing a better resolution. A camera records the course of the joint cutting.

Operation of the measuring system is easy and convenient. The measuring device can be rolled to the next joint by lowering the retractable transportation wheels. A hinged push handle allows the device to be folded to a compact size for transport.

Laser unit
Automatic direction control of the measurement device



Operating unit
Integrated computer with user-friendly control software



MagnoProof 5
Numerical and graphical presentation of results

MEASURING PROCEDURE

A small laser unit is positioned at the end of the measurement path on the joint to be tested. The measurement device is set up at the starting point of the test - usually the outer edge of the road - and adjusted by means of the laser.

A person then rolls the measurement device along the joint at walking pace. During the run, electromagnetic fields are generated around the dowels or tie bars and measured in intervals of 20 milliseconds. The scanning of a joint requires less than one minute.
Dowel and tie bar positions are calculated instantaneously. The measurement result shows as the following bar position parameters: bar location along the joint, bar depth, bar side shift, bar misalignment.

In addition to the immediate on-site evaluation, measurement data can also be post-processed on a PC with the software program MagnoProof 5. The software allows rapid analysis of large quantities of data, automatically detects any interfering influences and saves the user time on complex analysis. The MagnoProof 5 results include a three-dimensional presentation of the dowel bar positions, color charts and tables which can be summarized for standardized reporting to clients. By means of a statistical evaluation of a larger number of joints the software allows systematic placement errors to be detected and corrected.