The development of both, BetoScan and OSSCAR, was supported by funds of the BMWi in the frame of the »Förderung von innovativen Netzwerken« programme.

By the way, are you familiar with our industrial-scale accredited services?

- Accredited laboratory in line with DIN EN ISO / IEC 17025, to qualify and validate new non-destructive testing (NDT) processes for industrial applications
- Accelerated time-to-market and opportunity for qualified, norm-compliant deployment in industrial applications as well as for complete new in-house developments or custom adaptation of innovative NDT technologies, even in fields where norms have not been established
- Certification of the corresponding quality management system in accordance with DIN EN ISO 9001
The system OSSCAR (OnSiteSCAnneR) is a scanner for ultrasound, radar and eddy current sensors. Thus, an inspection area of $0.6 \times 1.1 \, \text{m}^2$ can be analysed and a combination of all measurement data in a single graphical representation is possible. The system allows:

- visualization of geometrical elements
- localization, determination of the depth and diameter of multilayered reinforcement
- localization and depth determination of multilayered tendon ducts
- detection of voids and rock pockets

The inspection systems allow the determination of moisture, the detection of voids, rock pockets and cracks, the determination of concrete cover, as well as the determination of corrosion probability of the chloride-induced corrosion. Even though the application ranges of the two systems overlap to some extent, the primary objective of BetoScan, as an autonomous system, is inspection of large and plane surfaces with a major focus on exchangeable sensor systems, while OSSCAR is used for detailed investigations of small or vertical surfaces.

**Situation**

For nondestructive inspection of reinforced and prestressed concrete structures a variety of different nondestructive methods were developed, which, in general, are ready for individual use and independent evaluation. The combination of these methods and the accurate representation of the results of all used methods provide outstanding advantages for condition monitoring and damage diagnostics of concrete constructions.

**Solution**

The inspection robot BetoScan is not only a self-navigating carrier system for different nondestructive testing sensors. It also allows the automated measuring data recording. The results of the used inspection methods are combined and processed as graphical representation for better condition evaluation.

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**Applied NDT methods**

- Microwaves (humidity distribution)
- Ultrasound (voids / cracks)
- Temperature measurement
- Humidity measurement
- Optical analysis
- Potential mapping (corrosion probability)
- Eddy current & radar (reinforcement localization & concrete cover)

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**Project Partner**

**BetoScan**

BAM, ibac, Neobotix, Citec, arXes, Specht Kalleja Partner Ingenieurs, Gi, Sika, ACS, IGF

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1. The merged data from measured sections in the longitudinal and transverse directions are represented, measuring points distance 1 cm (data in mm)