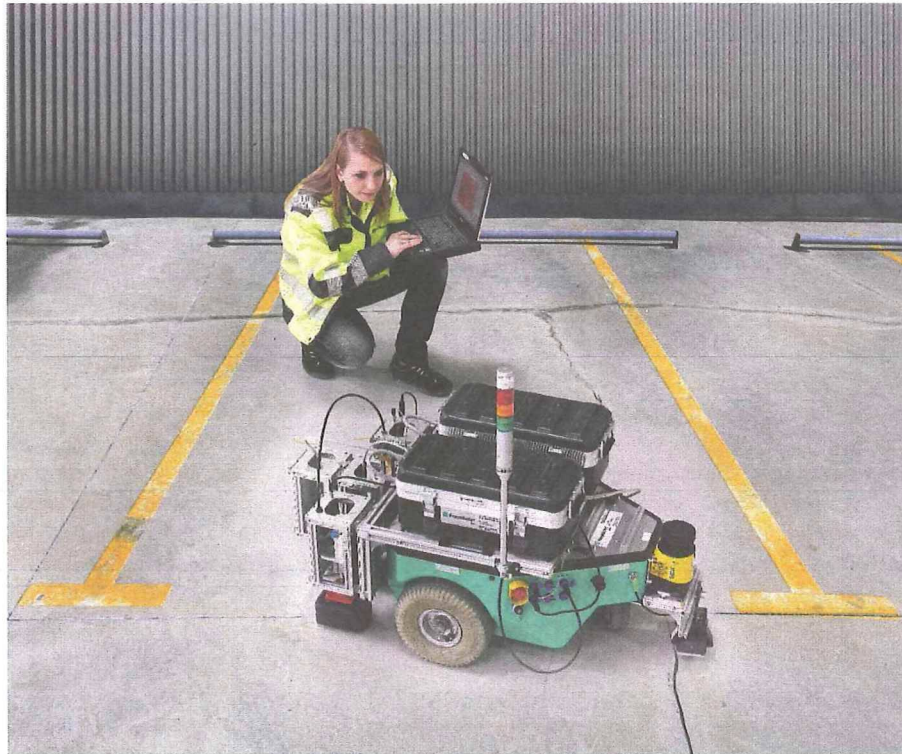


Robot inspects concrete garage floors

New system find damages in parking garages and bridge roadways

Because they are regularly subjected to heavy vehicle traffic, emissions, moisture and salt, above and underground parking garages, as well as bridges, frequently experience large areas of corrosion. Most inspection systems to date have only been capable of inspecting smaller surface areas.

Engineers from the Fraunhofer Institute for Nondestructive Testing (IZFP) have developed BetoScan, a robot capable of inspecting concrete surfaces as large as several hundred square meters on its own. Only one person is required to operate and monitor the system. Employees from the Fraunhofer Institute for Nondestructive Testing, together with the German Federal Institute for Materials Research and Testing (BAM) and industry experts, have joined forces to develop a robot platform that can independently scan and



A robot that can inspect concrete floors for damage in parking garages

Photo: Uwe Bellhäuser

inspect large areas of concrete for damage without impacting the surface. Referred to as BetoScan, the system was designed as a self-propelled, self-navigating robot

platform for nondestructive inspection sensors. "Our robot can easily inspect parking garage surfaces as large as several hundred square meters in one day and requires

only one person to operate and monitor the system," explains Ralf Moryson, an engineer at Fraunhofer IZFP. The robot can independently scan obstacle-free concrete

surfaces using a preselected grid while simultaneously recording the data acquired by the various inspection processes. The cascading mounting system for the inspection sensors permits the utilization and quick replacement of commercially-available sensors. When selecting the sensors for the system, the developers focused on automated logging of the measurement results, as well as on the use of well-established inspection methods. This provides an extensive inspection capability that ensures the timely identification of surface corrosion. While scanning the surface, the system also creates a survey of the structure being inspected. "A major advantage of our robot system is the integrated combination of different nondestructive testing processes. The sensors analyze factors such as moisture content and the thickness of the concrete, as well as the depth and condition of the reinforcement."