

STRUCTUR SHORT REPORT

Title

Practical assessment of the wear behavior of drivable surface protection systems - Practical test vs. standard test

Initial situation

The determination of the wear resistance of surface protection systems (SP systems) is currently carried out with different test methods, which are borrowed from other areas like the determination of the wear resistance with the BCA method. Both sample construction and mechanical exposure are not in accordance with the actual practical application. With the Parking Abrasion Test (PAT) wear can be simulated much more realistically. By comparing the BCA method (normative) and the PAT method, a correlation is to be established. In addition, further impacts on the evaluation result, e. g. the type of car tire, will be tested.

Subject of the research project

The starting point for this research project was the previous research project "Proof of the wear resistance of parking garage coating systems under realistic test conditions" (SF-10.08.18.7-11.26), which was funded by the research initiative Zukunft BAU. In this project, various surface protection systems (SP 8, SP 10, SP 11 and SP 13) were examined with regard to wear behavior using the newly developed PAT test bench. It was found that the wear of surface protection systems can be determined more realistically using the Parking Abrasion Test. The wear patterns corresponded to those of practice and usable results in the area of parking garage coatings were achieved. Further development and modification of the test procedure and the evaluation resulted in a non-destructive documentation of the abrasion and wear with a laser. These results of the wear properties of surface protection systems served as the basis for the new investigations.

The research project was subdivided into five work packages. In the first work package the test bench of the Parking Abrasion Test was extended by the BCA method. Furthermore, concrete based bodies were produced, which were then coated by the product manufacturers with their SP systems. Subsequently, the wear tests on both test benches were carried out in parallel. The wear was determined by both destructive (cores) and non-destructive (visual, coating thickness measurement, laser scanning) evaluation methods. These results were compared and evaluated. A comparison of the two test methods with regard to the generation of the wear was carried out in work package two. In work package three, the influence of different car tires on wear behavior was investigated. Different profiles and tire sizes were taken into account. Essentially, the tests were carried out on a steel plate and on a SP 11a system. The aim of work package four was to establish a correlation between the normative BCA method and the realistic Parking Abrasion Test. Work package five included the preparation of the final report and the compilation of publications and presentations in connection with this research project.

Conclusion

The aim of the research project was to establish a correlation between the normative BCA method and the realistic Parking Abrasion Test. The research project was supposed to help to establish the Parking Abrasion Test by further specifying test parameters in practice.

With the research project "Practical Assessment of the Wear Behavior of drivable Surface Protection Systems - Practical Test vs. Standard test", it became clear once again that the Parking Abrasion Test is an effective instrument for evaluating surface protection systems and should be included in the regulations.

Basic data

Short title:
OS-Systeme praxisnah bewerten

Project management:
Prof. Dr.-Ing. Wolfgang Breit (Technische Universität Kaiserslautern)
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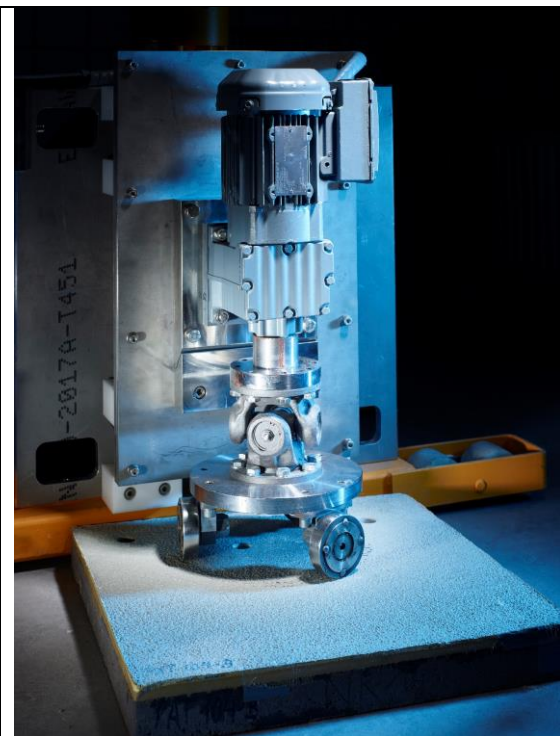
The research report was funded by the “Forschungsinitiative Zukunft Bau des Bundesinstitutes für Bau-, Stadt- und Raumforschung”.
(Aktenzeichen: SWD – 10.08.18.7-16.42)

Total costs: 217.594,23 €

Part of the federal funding: 115.415,11 €

Project duration: 01.10.2016 – 21.12.2018 (26 months)

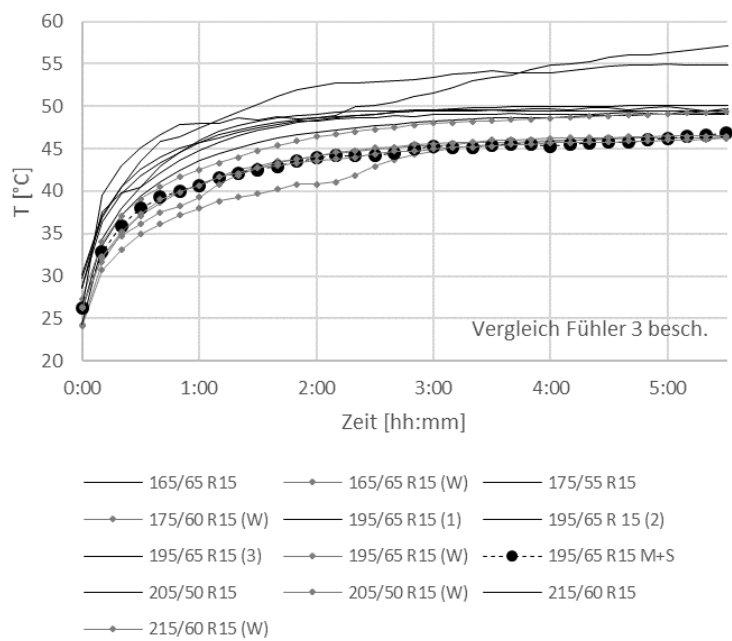
PICTURES:



Picture 1: BCA method



Picture 2: PAT method



Picture 3: Temperatures depending on the tire type on the SP 11a system

