Special device for asphalt pavement shear properties testing

Development status

Phase 3

Technology validation and implementing it in real environment. Testing the technology outside of the laboratory and its adjustment to external conditions.

IP protection status

Czech patent no.306155, EP3329245. Patent applications for USA, Canada, China, South Africa and Saudi Arabia

Partnering strategy

Collaboration, licensing

Challenge

Permanent deformations in asphalt pavements are problematic. To design materials such as hot mix asphalts according to its permanent deformations is crucial aspect. There are basically two different approaches how to measure permanent deformations in asphalt in Europe and in the USA. Laboratory wheel-tracking devices are used to run simulative tests that measure hot-mix asphalt qualities (rutting, fatigue, moisture susceptibility and stripping predictions) by rolling a small loaded wheel device repeatedly across a prepared hot-mix asphalt specimen. These tests are called “pass or fail tests” based on rutting potential (a surface depression in the wheel paths), however these tests cannot be reasonably correlated to field rut performance. Hot-mix asphalt is a high-quality, thoroughly controlled hot mixture of asphalt binder and aggregate that can be compacted into a uniform dense mass.

Description

The researchers from the Czech university in cooperation with other partners have developed and successfully tested an improved device for testing asphalt pavement shear properties. It offers the simple shear properties testing of granular materials. It can be used to design material and to perform quality checks. The test device allows testing built layers of asphalt or specimens prepared in laboratories. Performance of those test specimens or built layers is then correlated to actual in-service pavement performance. The test device aims to be used by producers of asphalt mixtures, companies laying asphalt mixtures, laboratories examining the properties of asphalt mixtures and laboratories to prepare advanced materials that either fulfils same function with lower production price or have better properties during its lifetime (or both at the same time).

Commercial opportunity

The researchers are looking for manufacturing partners (e.g.

manufacturers of testing equipment for asphalt mixtures producers, instrumentation manufacturers or testing device manufacturers) interested in a licensing agreement. The subject of the license agreement will be know-how (measurement device principle, detailed scheme of working etc.) as well as know-how for manufacturing of the device.

Institution

Czech Technical University in Prague