

Project Title: Development of a large-format, thin-walled and light-weight concrete floor slab in textile concrete construction (Lightweight Pavement – LiPa)

Partner: Basamentwerke Böcke GmbH

Project duration: 11/2018 – 10/2020

Funding body: Central Innovation Program for Small and Medium-Sized Enterprises (ZIM) of the Federal Ministry for Economic Affairs and Energy (BMWi)

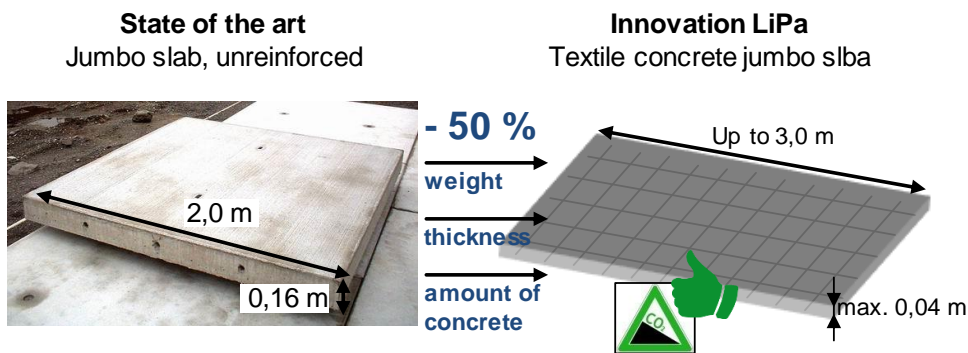
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Mission Statement

The size of concrete floor slabs currently available on the market is limited to an edge length of 2.5 m due to a lack of bending strength and the resulting transport damages. Larger panels allow for a faster installation, a more homogeneous appearance and an easier sealing against the penetration of chemicals. In order to take advantage of these benefits, the LiPa project is developing a textile-reinforced concrete floor slab that enables large formats up to 3 m edge length, a slab thickness of max. 40 mm (- 50 %) and a weight of < 100 kg/m² (- 50 %).



- Edge length: 0,5 to 2,5 m
- Plate thickness: 80 mm to 200 mm
- Weight: 200 kg/m²
- unreinforced
- Selling price: 60 €/m²

- Edge length: 1,5 m to 3,0 m
- Plate thickness: max. 40 mm
- Weight: < 100 kg/m²
- textile reinforced
- Selling price: 50 €/m²

Deficits:

- High weight due to high panel thickness
- High susceptibility to transport damage
- High transport costs
- Difficult handling during manufacture and installation
- High space requirement

LiPa Solution:

- Weight - 50 %
- Transport damages - 90 %
- Transport costs - 50 %
- Installation time - 75 %
- Storage capacity + 100 %
- Use of resources/CO₂ - 30 %

Market potential:

Increase in sales 2,4 Mio. €



With a market share of 0,5 %

Solution

The development of the textile-reinforced concrete floor slab takes place in several steps. First, a special concrete mix and a needs-based reinforcement textile are developed. The reinforcement materials glass fibers, basalt fibers and PVA fibers are considered and the reinforcement textile and concrete mix are matched to each other. The main focus of the project is the development of a process control system that guarantees the economical production of high-quality textile-reinforced concrete floor slabs. In addition, various surface treatment methods will be investigated, and the practical suitability of the large-format slabs will be demonstrated in a demonstrator project.

Acknowledgement

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