



Waterproofing a parking deck in Cologne

A strong team: KEMPEROL plus mastic asphalt

Vehicle traffic, moisture and chloride stress corrosion, extensive temperature fluctuations – multi-storey car parks are exposed to an array of high stresses that can ultimately attack the basic structure of the building and lead to a relatively high level of damage. Although only a few years old, a company's three multi-storey car parks in Cologne recently had to be completely refurbished. Originally, the concrete substrate was installed with surfacing (OS 11 and OS 8). The effects of wear and moisture damage on the parking decks was already so far advanced that the supporting metal structure also needed serious attention. When it came to choosing the new waterproofing solution for the multi-storey car parks, the planners opted for a combination of mastic asphalt and liquid synthetic waterproofing material. In a total of three construction phases in the summer of 2013, all the traffic areas of the three multi-storey car parks – each featuring a weathered top deck and four roofed parking levels – were waterproofed one after the other with welded asphalt sheeting and mastic asphalt as well as with KEMPEROL BR at the junctions.

Secure connection

Due to its high load bearing strength and excellent wear resistance, mastic asphalt has become a preferred wearing course for traffic areas. The use of full-surface bonding KEMPEROL liquid applied waterproofing at junctions prevents moisture from penetrating into the substrate at this potential weak point. The liquid synthetic waterproofing material bridges cracks up to 2 mm. Highly heat-resistant KEMPEROL BR Waterproofing is formulated in such a way that even 250°C hot mastic asphalt can be installed without any performance loss.

The STRABAG employees initially removed the old surfacing and cleaned and levelled the concrete substrate before waterproofing it with epoxy resin and applying an APP membrane. KEMPEROL liquid applied waterproofing was used on all the joints. It not only guarantees reliable connection to all steel structures, but also ensures the integration of intricate details with difficult-to-coat surfaces such as H-beams. Small structures of this kind can only be waterproofed reliably with a liquid applied material. KEMPEROL BR is permanently elastic and flexible in a temperature range of -30°C to +90°C and is able to absorb structural movements.

The fleece-reinforced KEMPEROL was made to project 15 cm into the surface at all the connections and joints and at least 15 cm over the upper edge of the road surface (= water-bearing layer). On vertical brickwork, the waterproofing was partly applied higher and adapted to the actual joint pattern. The new surface structure is as follows:

- Concrete substrate
- Epoxy resin primer, scattered with quartz sand
- APP membrane
- Mastic asphalt

At joints on different substrates (metal, plastic, brickwork):

- KEMPERTEC EP Primer
- KEMPEROL BR Waterproofing (colour: anthracite)

Project Data

Project

7,000 m of connections underneath mastic asphalt; 27,000 m² of waterproofing with welded asphalt sheeting and mastic asphalt

System

KEMPERTEC EP Primer
KEMPEROL BR Waterproofing

KEMPER SYSTEM processor

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