



Waterproofing the floor of the Fraport Technical Centre in Frankfurt/Main

Underground ventilation control centre

A long, steep way down. The LZ04 Technical Centre at Frankfurt Airport, one of the airport's roughly 50 technical centres, is located below Terminal 1 on level U2 at the intersection between terminal, regional railway station and car park. Measuring 450 metres in length, up to 3.8 metres in height and with a gross floor area of approx. 5,500 m², this room looks like a long tube. It accommodates the complete air conditioning technology and building services for the Airport City Mall Frankfurt, which opened in June 2010. This modern shopping mall extends across the entire level U1 of Terminal 1. It is the distribution level between the terminal and the car parks as well as the connection point to the underlying regional railway station and other facilities. If the technology fails downstairs in the Technical Centre, a "bad atmosphere" prevails upstairs in the shopping mall.

Ventilation as well as heating are controlled centrally. Nine ventilation and air conditioning systems with an air capacity of 30,000 m³/h each for supply and exhaust air prepare the air for the effective areas. In addition, a central air treatment system heats the cold outside air with the "heat content" of the exhaust air. This saves heat energy and protects the environment.

Refurbishment during ongoing operation

The LZ04 Technical Centre, which was built together with the original Terminal 1 airport in the mid-1970s, was refurbished progressively between 2007 and 2011. After the comprehensive refurbishment and modernisation of the outdated system, energy consumption is to be reduced by almost two-thirds and CO₂ emissions from 2,300 t/a to 1,471 t/a, despite the expansion of the area and intensification of use. All refurbishment work was carried out without interrupting ongoing operation. The Technical Centre could be used in different areas at any given time. Project manager Holger Schück: "It was a bit like open-heart surgery and the patient is moving."

The ventilation ducts, which supply the mall with fresh air, run next to and partly under the maintenance corridors of the Technical Centre. Special hygiene regulations apply to ventilation and air conditioning systems. In order to prevent water from entering the ventilation ducts during cleaning or repair work, the floors were waterproofed with KEMPEROL after installing the systems in 2010. The waterproofing requirements were: Non slip, abrasion proof, shockproof and, of course, waterproof. At the suggestion of the architectural firm in charge, Jo. Franzke Architekten, Frankfurt, a liquid applied waterproofing system was chosen. The material asserted itself against the alternative "tiles with silicone waterproofing". As KEMPEROL achieves a full-surface bond with the substrate, there is no risk of water seeping into or infiltrating the substrate.

Odourless liquid applied waterproofing

Waterproofing activities indoors require special care. As the work was carried out underground, there was no other option than the odourless liquid applied waterproofing KEMPEROL 2K-PUR. The solvent-free product can be applied on site without the need for additional measures. Air conditioning systems continue to run without interruption, complex air exchange systems do not have to be installed. Logistically, the construction site presented, however, the employees of the contracting company Schmück GmbH with special challenges. The entire material needed to be transported downwards via a single feed shaft, which is arranged at the front end of the entrance to the Technical Centre, and then distributed across the 450-metre-long room. Since the Technical Centre can only be accessed by maintenance personnel and there is neither public traffic nor office workstations, additional surfacing was not technically necessary. The waterproofing is able to withstand mechanical loads and can be walked on for maintenance purposes. However, the moist KEMPEROL surface was scattered with quartz sand to increase the slip resistance.

Project Data

Project

4.500 m² floor coating

Builder

Fraport AG

Architect BDA

Jo.Franzke Generalplaner GmbH,
Frankfurt am Main

System

KEMPERTEC EP-primer,
KEMPERDUR Quarzsand,
KEMPEROL 2K-PUR water proofing

KEMPER SYSTEM processor

Schmück GmbH + Co.KG, Bad Kissingen
www.schmueckbau.de

