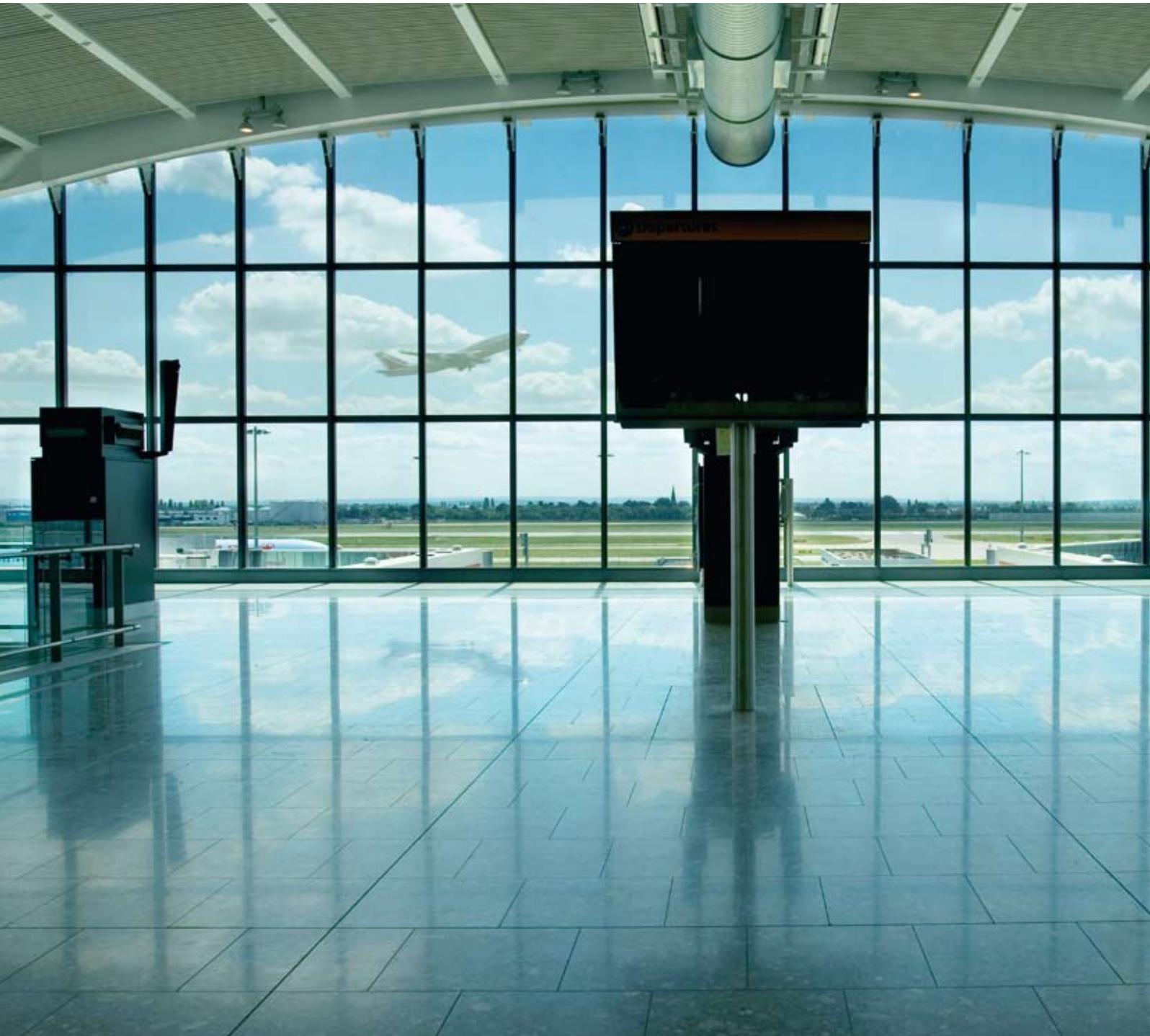


# HEATHROW AIRPORT

At Terminal 5 Mapei products ensured a perfect flooring installation



**H**eathrow Airport in London comprises five terminals. The latest one, Terminal 5 has been recently built to accommodate up to 30 million passengers, consisting of a main terminal building and two smaller satellites, serving solely British Airways flights. On 14 March, 2008, HRH Queen Elizabeth II officially opened the new Terminal 5, describing it as “a 21<sup>st</sup> century gateway to Britain”. Some 60,000 people worked a total of 100 million man hours to build the £4.3 billion complex.

Built on the site of a former sewage works at the western end of the exist-

ing airport, Terminal 5 was designed by 2006 Stirling Prize winners Rogers Stirk Harbour and Partners. Its construction has involved diverting two rivers, building what is claimed to be the UK’s largest free-standing building and tunnelling 13 km for rail and baggage links. The complex includes 50 new aircraft stands, which will rise to 60, two satellite buildings, rail links to London Underground and the Heathrow Express, and a new multi-storey car park.

Work consisted of deep basement construction to the main terminal building, a satellite terminal, a six-platform rail station, service, baggage and tracked transit system tunnels, a multi-storey car park, diversion of the Longford and Duke of Northumberland rivers, reconstruction of the Western Perimeter corridor and the construction of a spur directly linking to the M25.

#### Attention Paid to the Environment

In the first phases of the project a consulting commission was formed to assess the new building’s impact on the environment. The whole complex was designed based on energy-saving and eco-sustainability principles.

The walls are made of glass and steel and the roof is a curved “wave-form”. This structure allows natural light to penetrate inside at any hour of the day, which reduces the use of artificial light. 85% of rainwater is collected and reused for non-drinking purposes; some 85% of Terminal 5’s heat requirements are provided by combined, heat and power (with consequent reduced use of fuel). Heathrow Airport also uses renewable biomass gasification, a process generating a renewable gas from locally sourced waste wood and sustainable forests that can then be used to fuel the plant. Measures were taken for recycling waste and turning waste into energy including trialling innovative zero-carbon electricity; curbing airfield emissions and reducing emissions from vehicles.

#### Composite Marble in Terminal 5

Mapei products contributed to a successful installation of extensive areas of flooring covering an impressive 120,000 m<sup>2</sup> within the prestigious new Terminal building, including the laying of ceramic and marble floorings in the main concourse, international departures and VIP areas. Key to the specification of Mapei product was their high performance to enable a flawless finish across a large area combined with ease



Photo 1. Heathrow Airport, T5B satellite one, gate area.

Photo 2. HRH Queen Elizabeth II officially opened the new Terminal 5 in March 2008.

Photo 3. The passport control area features conglomerate stone laid with GRANIRAPID and grouted with KERACOLOR FF.

Photo 4. Heathrow Airport features a curved wave-form roof including the airside departure lounge shown.



of use for a smooth installation. TOPCEM special hydraulic binder for normal-setting screeds was installed by the company Grants of Shoreditch to prepare the vast floor substrate of the above mentioned areas, and additional sections of service and shopping areas. Its fast-drying properties allowed the installation of ceramic tiles after just 24 hours and stone materials after only 3 days.

Domus Tiles supplied the stone and ceramic coverings specified for the

floors. Composite marble slabs (597x597 mm) were selected for the bulk of the main concourse and bonded with GRANIRAPID, a two-component, rapid setting, flexible adhesive with extraordinary bonding properties especially suitable for floors subject to heavy foot traffic. Tile joints were grouted with KERACOLOR FF, a polymer modified cementitious grout for joints of 0-6 mm, available in 18 colours.

Larger composite stone slabs of a different size (1200 x 600 mm) were used for

both the international departures and the VIP lounge floor areas. GRANIRAPID and KERACOLOR FF were also used for this installation.

Domus Tiles also supplied the porcelain tiles (Stontech, I Grandi and Newstone) for the ancillary areas, which were bonded using KERAQUICK, a flexible fast setting adhesive, and joints were again grouted with KERACOLOR FF.

Among the highlights of the new terminal is the impressive Harrods retail outlet. 1200 x 600 mm Domus Composite Stone slabs were again installed with GRANIRAPID and joints were grouted with KERACOLOR FF completing the job to a high finished standard. These same professional standards were continued within the new Dixons store and throughout other areas of the terminal building.

#### Resin in the Airport

As well as the extensive tile installation, Mapei products were used for areas requiring a resin floor surface, such as the rail station (3,000 m<sup>2</sup>), maintenance areas and 10,000 m<sup>2</sup> of corridors.

The screeds in all areas were prepared with TOPCEM. The substrate in the rail station was then treated with a two-component, solvent-free, epoxy primer

## IN THE SPOTLIGHT

### GRANIRAPID

It is a high performance, deformable, fast setting and hydration, two-component cementitious adhesive for ceramic tiles and stone material. It is classified as **C2FS1**



according to European standard **EN 12004** and has been awarded the **CE** mark in compliance with Annex ZA, standard **EN 12004**. It is particularly suitable for the installation of stone material that is moderately unstable to moisture and requires a rapid drying of the adhesive. It is suitable for bonding floors subject to heavy traffic. Because of its extraordinary bonding and fast-setting characteristics, GRANIRAPID is particularly suitable for rapid re-tiling jobs and flooring that has to be in service within very short time (supermarkets, industries, hospitals, airports, swimming pools, etc.).



PRIMER SN, followed by MAPEFLOOR I 350 SL, a two-component, solvent-free, multi-purpose, neutral-coloured epoxy treatment for finishing industrial floors, used with MAPECOLOR PASTE in RAL 7047 to provide the specified shade. MAPEFLOOR I 350 SL is a Class 1 Fire Rated product – a major factor for its specification at T5.

10,000 m<sup>2</sup> of corridors at T5 were finished with MAPECOAT I 24, a two component epoxy paint for the acid resistant coating of concrete surfaces;



Photo 5. Conglomerate marble slabs were laid in most of the concourses with GRANIRAPID adhesive and joints were grouted with KERACOLOR FF.

Photo 6. In several areas of Terminal 5 screeds were prepared with TOPCEM special hydraulic binder. In some areas (main concourse, international departures, service areas) ceramic tiles and stone slabs were laid with GRANIRAPID, KERAQUICK and KERACOLOR FF. For the resin floors MAPEFLOOR I 350 SL was used in the rail station area and MAPECOAT I 600 W in the maintenance areas.

a further 3,000 m<sup>2</sup> of flooring in the TTS maintenance areas was coated with MAPEFLOOR I 600 W, two component transparent epoxy finish dispersed in water. MAPECOLOR PASTE in RAL 7001 was added to provide the desired colour. 

Photos were supplied by BAA Aviation Photo Library, which we would like to thank. The information mentioned in this article has been partly taken from BBC news, which we would like to thank.

## TECHNICAL DATA

**Terminal 5, Heathrow Airport, London (UK)**  
**Period of Construction:** 2002 - 2008

**Period of the Intervention:** 2002-2008  
**Intervention by Mapei:** supplying products for preparing screeds, treating floor substrates and laying ceramic tiles and conglomerate stone slabs in the main concourse, international departures and VIP areas, as well as in some shops and service areas; laying resin floorings in the corridors, in the rail station and in the maintenance areas.

**Designer:** Rogers Stirk Harbour & Partners  
**Client:** BAA – British Airport Authority,

Heathrow  
**Works Director:** Matthew Riley (BAA Commercial Director T5)  
**Laying Companies:** Vetter UK and Grants of Shoreditch (for the screeds and ceramic and stone material floorings); DeCourt Commercial Limited (for resin floorings)  
**Laid Materials:** ceramic tiles, conglomerate stone slabs, resin floorings  
**Mapei Distributors:** Domus Tiles (Surrey), Boyden Tiles (Surrey), Grants of Shoreditch (London)  
**Mapei Co-ordinators:** Russell Yeell, Steve Price and Mark Louch (Mapei UK)

**Mapei Products:** the products mentioned in this article belong to the "Building Speciality Line" and "Products for Ceramic Tiles and Stone Materials" ranges. The technical data sheets are available at the web site: [www.mapei.com](http://www.mapei.com). Mapei's adhesives for ceramics and stone materials conform to EN 12004 and have been awarded the CE mark in compliance with Annex ZA, standard EN 12004. Mapei grouts for ceramics and stone materials conform to EN 13888. Almost all the Mapei products for laying floors and walls have been awarded the EMICODE EC1 ("very low emission level of volatile organic compounds") mark by GEV. Mapei products for the protection and repair of concrete surfaces and structures have been awarded the CE mark in compliance with EN 1504 standards. Mapei levelling and smoothing compounds and pre-blended mortars for screeds conform to EN 13813 standard and have been awarded the CE mark in compliance with annex ZA, standard EN 13813.

### Laying the screeds

**Topcem:** special hydraulic binder for normal-setting, fast drying (4 days) and controlled shrinkage screeds.

### Installing ceramics and stone materials

**Granirapid (C2FS1, EC1, CE EN 12004):** high performance, deformable, two-component cementitious adhesive with rapid setting and hydration for bonding ceramic tiles and stone material.

**Keracolor FF (CG2, EC1 R):** high performance, polymer-modified, water-repellent, cementitious grout with DropEffect® technology for joints up to 6 mm.

**Keraquick (C2FTS1, EC1, CE EN 12004):** high performance, deformable, rapid-setting cementitious adhesive with no vertical slip for moisture stable ceramic tiles and stone material.

### Laying resin floors

**Mapecoat I 24 (CE EN 1504-2, coating (c), principles PI, MC and IR):** two-component epoxy paint for acid-resistant non-toxic coating of concrete surfaces.

**Mapecoat I 600 W:** two-component, transparent epoxy finish in water dispersion.

**Mapecolor Paste:** colouring system for the products of the Mapefloor line.

**Mapefloor I 350 SL (CE EN 13813):** two-component, multi-purpose, neutral-coloured, "class 1", fire-resistant epoxy treatment for industrial floors at a thickness up to 4 mm.

**Primer SN:** two-component, solvent-free epoxy filling primer.