

Project case study

SmartRock concrete sensors trialled at Heathrow Airport

Product

SmartRock digital concrete maturity monitoring system

Main contractor

Mace

Sub-contractor

Oliver Connell

Client

Heathrow Airport Limited

Project overview

The trial of our SmartRock concrete maturity sensors showed the potential to speed up the reinstatement of pavement quality concrete on a taxiway at Heathrow. It demonstrated that the taxiway could potentially be handed back into operation 14 days earlier than programmed, saving the contractors and airport time and money and helping reduce health and safety risks and vehicle movements on a live airfield construction site.

Project description

Heathrow is Britain's busiest airport serving up to 85 million passengers this year. As a result, any work needed to its runways, taxiways and aircraft stands need to be completed to the highest standards and as quickly as possible to minimise time, cost and disruption.

Main contractor Mace, in conjunction with sub-contractor Oliver Connell, trialled the use of our SmartRock concrete maturity sensors to monitor the strength gain of the pavement quality concrete needed to upgrade one of the airport's main taxiways to reduce the time it would be out of commission.

The SmartRock digital system is made up of sensors that are placed at intervals (around one every 80m³) within the concrete slabs. The dual-point sensors record data every 15 minutes for 60 days, sending the information via Bluetooth direct to a mobile phone or tablet.

The real-time data provided demonstrated the in-situ early strength gain of the concrete, giving the confidence needed to reinstate the taxiway for airport traffic.

Based on the results from the initial trial using the sensors, the concrete had gained its designed strength 14 days early compared with the original project programme.



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Barry Mowczak, Senior Construction Manager at Mace, said: “The SmartRock system has the potential for the taxiways to be handed back early due to the confidence it gave us in the strength of the concrete based on the correlation of the mix design calibration results, providing the airport with cost, time and programme savings.

“The sensors have the potential to eliminate the need for taking core samples, which can put weak spots in the new pavement construction, and also prevent any health and safety issues that could result from the manual handling of testing equipment on site.”

The SmartRock system can also provide the confidence to use concrete with higher cement replacement levels, helping reduce the CO₂ emissions associated with a project, which aligns with Heathrow Airport Limited’s 2.0 sustainability commitments.

