

## SPOTLIGHT: RADAR &amp; GEOPHYSICAL

# RUNWAY REVIVAL

Ground penetrating radar is being used to good effect to locate voids at Britain's airports. **Ed Owen** reports.

**K**eeping blacktop in good condition is a tricky business – even the best roads can have unexpected voids beneath them, which can in turn create potholes and unnecessary expense.

This is bad news on a road – potentially a lot worse on an airport runway. New radar techniques can locate these voids, and allow them to be repaired before they become either expensive or dangerous.

Until recently, most Global Positioning Systems (GPS) allowed for a level of accuracy of half a metre at best. The latest Real Time Kinematic (RTK) systems are coordinated to a set of permanent base stations. Once locked into a base station, the measurements are typically good to sub-centimetre accuracy.

Geophysical specialists

Fugro Aperio have linked radar the GPS to generate a powerful new tool. "Integrating the RTK systems with the ground penetrating radar caused plenty of headaches but we have solved problems that nobody else in the industry has overcome yet, and are thrilled with the results," says Mark Thomas, transport infrastructure sector manager.

The survey team load intended survey routes onto a laptop. Once on site, they simply drive the survey vehicle along that path – aligning the vehicle with a symbol on the digital map on their screen.

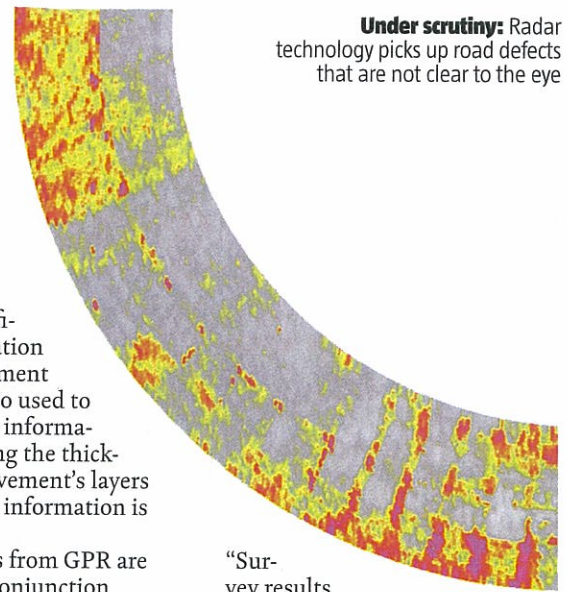
The new technology has been used to good effect at Gatwick airport. BAA's contractors, Dyer and Butler, commissioned precision radar geophysical surveys to map voids in and below pavements at Gatwick.

Results were used to make immediate repairs, and help in long-term planning for the runway. BAA's lead engineer for building and civils at Gatwick Airport Girish Reesaul. He says: "GPR is primarily used in identifying voids within various pavement layers, detecting the presence of excess water in the pavement structure, and inves-

tigating significant delamination between pavement layers. It is also used to check as-built information confirming the thickness of the pavement's layers where limited information is available.

"The results from GPR are then used in conjunction with data from other investigatory methods to identify areas of poor performance, prioritise maintenance activities and validate the data from our predictive pavement deterioration models, so that an efficient maintenance plan for pavements is in place," he says.

**Under scrutiny:** Radar technology picks up road defects that are not clear to the eye



"Survey results from a composite apron (asphalt over concrete) were so clear that we could see voids under the slab joints even though the joints were hidden by the asphalt. We could also see where pipes and cables were buried by picking out the line of the backfilled trenches," adds Thomas.

