AIRMAP, MAPPING THE SURFACE AND SUBSURFACE OF PAVEMENTS IN AIRPORTS

Introduction
Ramboll has developed a unique survey method to provide information about the surface as well as the subsurface of all paved areas in airports as part of the optimization of maintenance cost on airside. The approach is used on more than 10 million m² airside pavement yearly.

The method is a part of the packages AIRCAST and AIRPAVE.

The survey method is based on a suite of non-destructive scanning tools.

The measurements can be done during night time and while the airport is kept in operation.

With this knowledge the management of the airport will be able to objective manage the urgency of maintenance activities and the need for short and long term investments in major maintenance and rehabilitation in a traceable approach based on objective assessments.

Sensors
The system contains a combination of high precision sensors.

Ground Penetrating Radar (GPR) that uses radar pulses to image the subsurface. GPR can be used in a variety of media, including rock, soil, ice, fresh water, pavements and structures. It can detect layers, delamination, objects, voids and cracks. Ramboll applies a state of the art 3D system, which in a single pass can map both shallow asphalt layers as well as the bearing course.

The Laser scanning method produces a point cloud containing information of the texture, rutting and other damages of the surfaces.

High definition photography provides a full geo-referenced picture for extensive registration and analysis of the surfaces.

Surveying
The measurements are done with high accuracy at planned lines until the desired coverage is achieved.

As several sensors can be in simultaneous operation the data collection is extremely efficient.

Results
Processing and calculation of various parameters are automated to obtain uniform and objective results as background for optimized management of the airside assets.

The results will be information about:

- surface textures
- pavement damages
- pavement types
- pavement thicknesses
- relative development of the damages over time
- location of cables, pipes and other utilities
- quality control regarding performed contract work
- a high precision digital terrain model (DTM) which describes the pavement gradients.

For further information, please contact
Ramboll Denmark
Hannemanns Alle 53
DK-2300 Copenhagen S
Tel: +45 55611000
Roger Wüsten
Technical Manager/Geophysicist.
+45 5561 6779
rww@ramboll.dk
Peter Eldshøj
Senior Director
+46 10 453 5458
Peter.Eldshoj@ramboll.se

Benefits
- Data are safely collected at high speed and while the airport is in operation.
- Objective and precise data sets as basis for planning of maintenance and to optimize maintenance and rehabilitation of the pavement asset.
- A detailed 3D model of the surface and the subsurface of the airside pavement.
- Repeated measurement over time will inform about the deterioration development and can be managed in AIRPAVE.

Crack map based on surface images and laser data.

3D model of thickness of asphalt in Copenhagen Airport