CASE STUDY

RIS HI-Pave for road and pavement survey
RIS HI-Pave for road and pavement survey

The fastest and most flexible solution for Road Assessment Survey

Benefits

• Fastest GPR Solution minimizing the survey time
• High accuracy thanks to the multi-frequency antennas and unsurpassed data density
• Investigate pavement, base and sub-base course conditions at the same time
• Flexible configurations to satisfy different needs
• Lightweight and compact design
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Applications

- Pavement thickness
- Assess surface, base and sub-base road courses
- Detection of cavities, voids and delamination
- Location of cracks
- Detection of wet areas
- Airport runaway conditions
RIS HI-Pave for road and pavement survey
Possible Configurations

**RIS Hi-Pave HR1**
The single-antenna entry-level configuration for road and runaway pavement evaluation:
- 1 DAD FastWave control unit
- 1 HR2000 antenna (2 GHz horn) for road surveyor
- 1 HR1000 antenna (1 GHz horn) for runaway survey

**RIS Hi-Pave HT2**
The double-antenna configuration for complete road and runaway evaluation (pavement, grade, subgrade):
- 1 DAD FastWave control unit
- 1 HR2000 antenna (2 GHz horn) for road pavement survey or
- 1 HR1000 antenna (1 GHz horn) for runaway survey
- 1 TR600 antenna (600 MHz) for grade and subgrade evaluations

**RIS Hi-Pave HT4**
The four-antenna configuration for complete and wide road and runaway evaluation:
- 1 DAD FastWave control unit
- 2 HR2000 antennas (2 GHz horn) for road survey
- 2 HR1000 antenna (1 GHz horn) for runaway survey
- 2 TR600 antennas (600 MHz) for grade and subgrade evaluations

**RIS Hi-Pave HT4 HS**
The same as the HT4 or HT2 configuration but with 2 synchronised DAD control units for maximum speed (over 200 Km/h) or very dense sampling (5 cm. at 125 km/h)

**RIS Hi-Pave HT2 HS**
## RIS HI-Pave for road and pavement survey

**Technical Specifications**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>HR1000</th>
<th>HR2000</th>
<th>TR600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (MHz)</td>
<td>1000</td>
<td>2000</td>
<td>600</td>
</tr>
<tr>
<td>Antenna Type</td>
<td>Air Launched</td>
<td>Air Launched</td>
<td>Shielded dipole</td>
</tr>
<tr>
<td>Antenna Weight</td>
<td>6,5 kg</td>
<td>6,5 kg</td>
<td>3 kg</td>
</tr>
<tr>
<td>Dimensions (LxWxH)</td>
<td>53x23x50 cm</td>
<td>53x23x50 cm</td>
<td>20x26x20 cm</td>
</tr>
</tbody>
</table>
RIS HI-Pave for road and pavement survey
Survey in Linz (Austria)

Analysis of the construction materials for the airport pavements

Covered area: **60,000 sqm** (landing strips and streets in the airport)
Operating time: **3 days**

To provide additional structural information the survey was performed combing the GPR data with:
- Laser scanner
- Dynatest deflectometer

Survey performed by
GPR data fits with the deflectometer results. For the detected layers the irregular depth, obtained by GPR survey, corresponds to a different bearing capacity.
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Survey in Rieti (Italy)

Field test done in the city of Greccio, near Rieti, to evaluate the dangers of street landslides.

Covered area: 2 km of streets
Operating time: 1 day

Survey performed by
Processed scan showing the different layers: the 1000 MHz frequency antenna gives the user information on the street conditions right below the asphalt.
The survey was made to verify the integrity and thickness of the pavements in the airport (landing strips, taxi track, service street, APRON area).

Covered area: around 100 hectares
Operating time: 2 months
(working in night time only)

Survey performed by GRS
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Survey in Fiumicino Airport (Italy)

Five scans were acquired each time to cover a wider zone of the lanes.

GRID 3D software was used to evaluate layers and set cores position along the selected lanes of the airport.

Thanks to the speed of the system the acquisition could be easily completed even with restraints due to sensible areas and working at night.

Radar map showing different layers at runway 16/L - 34/R
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Comparison between competitors antenna and IDS GeoRadar

Comparison details
• radar data of IDS and competitor Horn Antennas (1 GHz) collected along the same line;
• data processing done with IDS GRED software.

Comparison results
• IDS GeoRadar radar map has a higher resolution which allows to detect the asphalt layer more clearly than competitor antenna;
• IDS GeoRadar antenna has a higher signal penetration which allows to detect better the pipe in the test site.