Dynapac Compaction Analyzer and Optimizer

Fredrik Åkesson
Dynapac Sweden
Yesterday

Compaction meter values

>60  >70

After 2 passes

After 4 passes

DYNAPAC

Part of the Atlas Copco Group
Compaction Meter-Function

Signal processing

Vib. frequency
Harmonics

Soft material
Slightly harder material
Hard material
CMV vs. compaction

Slightly harder material

Soft material

Hard material

$S_A$ vs. $f_q$

CMV

8

50

150
### Expected Compaction Meter Values

<table>
<thead>
<tr>
<th>Clay and silt</th>
<th>Sand</th>
<th>Gravel</th>
<th>Rock fill</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-30</td>
<td>25-50</td>
<td>30-60</td>
<td>60-100</td>
</tr>
</tbody>
</table>

- Silt and clay at or just below the optimum water content
Dynapac Compaction Analyzer-Soil, Features

- Storage and analysis of compaction meter data
- Full-color 12,1” display for operator guidance
- Positioning
  - Relative
  - Absolute (GNSS) (Sub-meter to cm accuracy available)
    - With reference line or without
- Any local grid available (thanks to built-in transformation)
- Adjustable resolution
- Calibration module included
- Full analysis capability incl. TXT-file export
- PDF or paper print-outs
- Office and roller versions. Both include simulator mode
Reference line
Production, station and offset
Production, grid coordinates
Analysis

Print-out
Monitors the ground stiffness and adjusts the amplitude accordingly
Dynapac Compaction Optimizer-Features

- 0-2 mm (0.079”) amplitude
- Six manual steps or automatic, stepless adjustment
- Fully compatible with DCA
Eccentrics

- Zero Amplitude
- Full amplitude
Register the number of passes (static/vibratory)

Measure and register the surface temperature (calculate core temperature.)

Graphic display of the temperature and the number of passes (real time in the roller)

Documentation of the compaction process

Background material for the quality analysis

Support for continuous improvements of the paving process, rolling patterns and overall compaction results
System components
Production mode-Roller screen
Passes in the correct temp range
Summary

- **DCA**
  - Provides full operator support in monitoring the compaction process
  - Supplies compaction control data with full area coverage for documentation and analysis.
  - Full flexibility regarding accuracy and positioning options

- **DCO**
  - True amplitude adjustment from 0-0.078"
  - Measures and monitors the ground stiffness-Amplitude is adjusted accordingly
  - Automatic or manual function available
Summary

- **DCA-A**
  - Provides operator support regarding mat temperature and number of passes made
  - Warning/indication of low temperature
  - Documentation of rolling pattern, process temperature and passes made, excellent tool for process improvement and quality assurance