COMPACTION MANAGEMENT

Finishing the job
OHIO DOT Test
24/06/13 – 27/06/13
• Why Compaction Management System? and **not** Intelligent Compaction

• **Intelligent Compaction** ([www.intelligentcompaction.com](http://www.intelligentcompaction.com))
  IC machines are vibratory rollers with accelerometers mounted on the axle of drums, global positioning system, infra-red temperature sensors (for asphalt), and on-board computers **that can display color-coded maps in real-time to track roller passes**, asphalt surface temperatures, and stiffness of compacted materials.

• **At this point Topcon Does not supply IC** but we DO support it

*We already are intelligent. So who needs more!*
• Is an expensive add-on of roller manufacturers
• All rollers require IC for complete job reports
• Different brands do NOT work together
• Stiffness/CMV data of different systems cannot be compared
• No proven correlation between stiffness and density
• Temperature affects part of stiffness calculations
• There is not real business
• So: what does that tell us? How to move on?
What is actually required on the job?

- Increase efficiency
- Increase quality
- Affordable
- Easy for the operators
- Accessible, fast and accurate reports
• Roller passes only for now
  works on every roller

• Temperature later
  important quality factor for asphalt

• Roller passes and temperature are absolute numbers
  hence comparable

• Complete reporting,
  all machines on one report

• Live online mapping
  correct it before problems occur

• We can do ‘intelligent’
  by connecting with the machine
Field results

Ohio DOT
Components

- GX-60 display
- GSM/3G antenna
- GNSS antenna
- Radio antenna
- GNSS, sending GGA VTG string
- GNSS antenna
- Radio board, provides RTK corrections from base station to both GNSS boards
- GNSS, sitelink3D connection network
• From basic to more sophisticated:
  – From SBAS GPS to RTK
  – From independent mapping to live synchronized mapping sitelink3D (enterprise)
  – From pass count only to mapping temperature / density / stiffness*
  – 6.5” display

* Some information is depending on availability of the machine interface

Additional: 915SS or DUHF2 radio
3DMC based

USER INTERFACE
• Machine configuration: dimensions
• Machine configuration: values

- Density: Units - Percent (%)
  - Lower Bounds: 80.0%
  - Upper Bounds: 105%

- Temperature: Units - Celsius (°C)
  - Lower Bounds: 80.0 °C
  - Upper Bounds: 180.0 °C
• Color settings for the mapping

As-built Surface

- Pass Counts
- Stiffness
- Temperature

Interval/step: 20.0°C
Offset: 85.0°C

Ok  Cancel
• Configurable display layout
• Mapping in action
make the data useful

USING

sitelink3D
REAL-TIME 3D MANAGEMENT
File Transfer

Visibility/Tracking

Text Messaging

Remote Access & Support

Machines & Rovers

As-built Mapping
• File transfer
  – Send updated job file data to anyone from anywhere!
    No need to travel to the machines to bring files
• Remote access and support
  – Full remote control of the control panel from the office
• As-built mapping, real time!
  – At the office on 3D Office
  – On sitelink3D web site
  – In-cabin on other machine’s displays
  – Temperature, stiffness, roller passes
Welcome to Topcon’s Sitelink3D Web Portal.

We are busy making this site your one-stop-shop for all your site management, monitoring, reporting and tasking needs.

Right now, we have only implemented a small amount of what is planned - but already you can more easily manage your sites, machines and Sitelink3D client connectivity.

Watch this space as soon you will be able to:

- Easily distribute and manage your txp3 and surface files.
- View your machine locations from online, and monitor real time productivity rates.
- Perform and schedule reports (cut-fill volume, compaction, task completion, productivity, idle-time etc).
- Add tasks, assign machines and monitor task progress.

Customers  Dealers  Deployments  Users
Information flow

Analog sitelink3D

Mapping and other information

Digital sitelink3D

Digital GNSS

CCV + sensor

GGA – CGA string

GNSS RTK corrections

Analog GNSS

Digital GNSS RTK corrections

Analog GNSS RTK corrections

Digital GNSS RTK corrections

TopNETlive

GNSS RTK reference network

sitetlink3D

server

GNSS Base station

TOPCON
• Basic analyses:
  – e.g. did you meet 97% of coverage with pass count between 3 and 5
  – ‘Strange’ results, e.g. increase pass count with decreasing stiffness

• Sitelink3D online mapping (live or later as a report):
  – Pass count
  – Ready for machine interface data:
    • Temperature
    • Density / stiffness
    • Amplitude and frequency
  – Download report for Veda software input

work in progress
Paving the way

Any questions?