Instrumentation and Monitoring

Seminar Session

Wednesday 23 May 2018 | Theatre 2 | 9.30 – 11.10

The benefits of automated monitoring to inform and control construction and built assets is examined in this state-of-the-art review. Robotic imaging systems, new telecoms infrastructures, software algorithms, GNSS, patch scanning, wireless mesh, the cloud and other technologies can all play a part in delivering real-time 3D monitoring. The session is includes real world projects in the tunnelling, road, rail and infrastructure sectors.

Seminar Session Programme

9:30

An automated total station system for the Northern Line extension

Bruno Norberto, Head of Geomatics, Geotechnical Observations

NLE is the first major extension on the London Underground network since the Jubilee Line in the 1990s. The scheme consists of two 5.2m internal diameter, 3.2km long tunnels starting at Battersea Power Station, passing through Nine Elms Station and on to two shafts at Kennington. Two sprayed concrete lining (SCL) tunnels advance the TBM tunnels to a section of the Northern Line called the Kennington Loop. The SCL tunnels connect to the existing tunnel through two step plate junctions (SPJ) with new stations at Battersea Power Station and Nine Elms. Geotechnical and structural monitoring have been deployed. The presentation will focus on 24/7 automatic monitoring using automatic total stations supported by manual readings from BRE sockets and barcodes used to monitor buildings.

9:50

Imaging total stations – static and dynamic monitoring without prisms

John Brewster, Managing Director, Imetrum Ltd

What if you could use a robotic total station (RTS) for monitoring, without prisms? Imagine the savings in set-up time and access costs. What if this device could also give you multipoint monitoring data at 100Hz? With the integration of cameras into many high end Total Stations (Trimble SX10, Leica Novaâ€¦) and advances in image processing, this is not so far-fetched. Surveyors are already using images for improved reporting, identifying targets during DR measurements, and for measurement (photogrammetry). Trimble's Vision whitepaper identifies a bright future ahead, as does European research. Paul Waterfall will discuss the current state of the art for monitoring using an image assisted RTS, and the potential impact on prism and laser-based tracking.

10:10

Automated monitoring in the digital era

Marco Di Mauro, Segment Manager, Leica Geosystems

Automated monitoring solutions have been driven not only by advancements in measuring technology but also by the availability of new telecomms or computing solutions. Thanks to the power of modern hardware and new software algorithms, automated scanning processing and real-time surface comparison are now possible, opening the door to monitor in real time any structure virtually without the need of prisms. High-resolution imaging is now possible thanks to faster telecomms infrastructures saving time and money for site inspections and visual checking, which can now be done remotely in the field via wireless mesh and computed in the cloud.

Continued

10:30

Automated patch scanning and data integration drive better monitoring solutions

Matthias Gropp, Head of Monitoring, Murphy Surveys

Murphy Surveys Monitoring Department provides sensor equipment and manual monitoring services.Using examples from actual and past projects we will show our multi-technology approach to monitoring design, where sensor integration allows faster and more accurate data interpretation and increases the overall solution resilience and reliability.While modern software platforms allow results comparison, Murphy Surveys is working to bring the integration to a deeper level where the data are integrated from the computation stage to produce better results including GNSS data trends to improve Robotic total station networks where stable points are not available.

10:50

Automatic 3D monitoring and the use of network adjustment on the railway

Dominic Kisz, Head of Operations , Datum Monitoring

Since its introduction, automatic 3D monitoring has developed into an extremely fluid and practical solution to better understand risks and impacts to railway infrastructure. This talk discusses the key developments and hurdles that the method has faced over the years whilst also considering the importance of adjustment packages in the search for more accurate data. Examples from projects will demonstrate the improvements in efficiency and reliability of modern monitoring solutions compared with the past. Solutions are continuously improving, sometimes faster than project specifications, the presentation aims to stimulate debate on the state of the art in the monitoring industry.

Related Seminar Presentations

Talks in **other seminar sessions** that include content relevant to Instrumentation and Monitoring:

Tuesday 22

The 4th industrial revolution, where monitoring data meet BIM

Marco Di Mauro, Segment Manager, Leica Geosystems

Building Information Modelling (BIM) Seminar Session
11.35 Tue 22 Auditorium

Addressing the supply chain: the true ROI of UAV survey services

William Tompkinson, Principal, Insightful Dimensions

UAV's Seminar Session
12.20 Tue 22 Theatre 1

Wednesday 23

Surveying in Antarctica – blue ice runways for large Jets

Ian Stilgoe, Vice President Geopositioning Europe, Topcon

Surveying Seminar Session
13.30 Wed 23 Theatre 2

Continued

Related Commercial Workshops

Workshops **hosted by exhibiting companies** that include content relevant to Instrumentation and Monitoring:

Tuesday 22

High precision satellite positioning and geomatics solutions
CHC Navigation
Tue 22 | 09:30 - 10:00 | Room B

Innovative system to build and manage key assets database
GISonLine
Tue 22 | 09:30 - 10:00 | Room F

Vessel-based marine mobile laser scanning
Swathe Services
Tue 22 | 10:15 - 10:45 | Theatre 3

GNSS interference mitigation
Forsberg Services
Tue 22 | 10:15 - 10:45 | Room B

Geotechnical/Structural wireless monitoring product launch
Senceive
Tue 22 | 10:15 - 10:45 | Theatre 2

MotionMap UK – Ground stability mapped
CGG NPA Satellite Mapping
Tue 22 | 11:00 - 11:30 | Room B

Remote sensing satellite solutions and services
DFH Satellite Company, CAST
Tue 22 | 11:45 - 12:15 | Room B

High precision instrumentation and software for monitoring
KOREC
Tue 22 | 11:45 - 12:15 | Room E

Marine asset integrity and structural monitoring surveys
Bibby HydroMap
Tue 22 | 12:30 - 13:00 | Theatre 3

N4ce software re-launch with point cloud processing
Applications in CADD
Tue 22 | 12:30 - 13:00 | Room F

Revolutionary new data collection and field software solutions for surveyors
Trimble
Tue 22 | 12:30 - 13:00 | Room E

Visual-ize and Atlas Computers showing GeoMax field to finish and SCC point cloud processing
Visual-ize
Tue 22 | 12:30 - 13:00 | Theatre 2

Survey services and data capture
L&M Survey Services
Tue 22 | 14:00 - 14:30 | Room E

Special applications of ground penetrating radar for drones
Geoscanners
Tue 22 | 14:45 - 15:15 | Room H

The Microdrones MD4 – 1000 - The scalable rotary wing UAV
Survey Solutions Scotland
Tue 22 | 15:30 - 16:00 | Room E

Wednesday 23

360 Spherical Vision Cameras
FLIR Systems
Wed 23 | 09:30 - 10:00 | Theatre 3

Geophysical Surveys – it's not all GPR!
Phase Site Investigations
Wed 23 | 10:15 - 10:45 | Room F

3D mapping solutions for mobile mapping, UAS mapping, indoor mapping and aerial oblique mapping
Orbit GT
Wed 23 | 10:15 - 10:45 | Room H

Latest advances in drone surveying integrating UAV technology within current workflow
COPTRZ
Wed 23 | 11:00 - 11:30 | Room F

Affordable, on-demand high-accuracy GNSS
Trimble
Wed 23 | 11:45 - 12:15 | Room E

GeoMax surveying instruments and XPAD software
GeoMax Positioning
Wed 23 | 11:45 - 12:15 | Room B

Geotechnical/Structural wireless monitoring product launch
Senceive
Wed 23 | 13:15 - 13:45 | Room B

Drone captured data, its applications and the law
Drones on Demand
Wed 23 | 13:15 - 13:45 | Room F

Planning and visualisation web application for geospatial professionals
Maptasks
Wed 23 | 14:00 - 14:30 | Room C

Laser scanning deformation monitoring
ENCARDIO-MONITERRA GROUP
Wed 23 | 14:00 - 14:30 | Room H

2018 release presentation: report editor, stockpile volume computation and much more
3DReshaper
Wed 23 | 14:45 - 15:15 | Theatre 2

Vectorisation of data: Fixed point tracking vs. surface scanning systems
Pangea Geosystems
Wed 23 | 14:45 - 15:15 | Room C