

AUSTRALIAN INSTITUTE OF MINE SURVEYORS

AIMS NATIONAL CONFERENCE 2023

HYATT REGENCY, SYDNEY – 13, 14, 15 SEPTEMBER



AUSTRALIAN
INSTITUTE OF
MINE SURVEYORS

PLATINUM WORKSHOPS



Workshop 1

Monitoring Solutions for the life of mine

Safety and preservation of life is the number one priority for mine operators. A close second is productivity and maximising revenue. The two are intrinsically linked. Learn how monitoring solutions available through C.R. Kennedy and its partners provide the data required for safe operations and key decision making. Real world insights from customers projects using a variety of measurement technologies. Prism monitoring, GNSS, Wireless mesh networks, Geotechnical sensors, and Lidar, the newest player in this market, we'll provide an update on how this solution is an advantageous addition to your toolbox. Mines today can easily and simply acquire data from a variety of sensors and centralise in configurable software for alerting and long-term trend analysis.



Workshop 2

UAV Solutions for the mining industry

Now that the UAV / drone products and solutions have become almost industry standard, C.R. Kennedy has a very wide range of products that will allow you to be able to cover most of your day-to-day tasks.

Mapping products available.

For long-range mapping the Wingtra PPK VTOL system allows for BVLOS (Beyond Visual Line of Sight) for large scale mapping of the mine site and boundary area.

For shorter range mapping the new Maverick 3E RTK system is ideal and can be used as a PPK or RTK operation, with 20MP camera and 56x Digital Zoom capabilities.

Then there is the M300 platform, this is such a versatile product allowing the use of the following add-on technologies to be used, again this can be done with PPK or RTK operation.

Mapping with a 45MP camera.

Bathymetric Surveys / Magnetometer surveys / GPR Surveys / Multi and Hyperspectral Surveys if required / Thermal Imaging for inspections of hot spots etc. / LIDAR, low-mid-high end solutions.

LiDAR products available.

DJI M300 has 2 x LiDAR options with the AA450 and miniVUX-3UAV systems, which give great flexibility to have accurate pointcloud data post processed quickly and easily in a shorter timeframe than conventional mapping. These systems also have imagery if additional mapping is required.

Underground surveying has now become a safer and more efficient way with the ExynAero Level 4 Autonomy drones and LiDAR unit. This allows for dangerous void inspection surveys without anyone getting close to the danger zone, plus one can map almost the entire underground portion of the mine. The drone can fly a path on its own with collision avoidance capabilities.

Mapping / Inspection product available.

Newly released DJI DOC, this allows for a drone to be placed strategically with its own pad, power and communications. This allows the drone to be scheduled for various flight missions whereby it will take off fly its route for either security inspections, general data capture or imagery and or video, the unit will return to the base on its own, and be secure, it will be recharged and the required capture data can be sent back to the office for further analysis or processing.

Mapping Software

PIX4D Mapper / Matic / Survey are powerful tools to process your imagery into the final aligned product and for pointcloud generation as well.

GOLD WORKSHOPS



Deswik workshop will be a tips and tricks/masterclass in using Deswik CAD and the point cloud functions. This will be broken down into sections.

Point cloud processing in Deswik – We will run through a variety of different point cloud examples in both UG and OP environments. You'll see how to use the different filters and editing commands to reduce the density of the scan, remove outliers and get the clouds ready for either surface or solid generation

Global Constants, Parameter Tables and Formula – Using these functions in CAD, you can streamline the processing of data and make displaying entities on the model space even easier. You'll see a worked example of these in action for a surface and UG operation

Plotting – Surveyors are known to make the odd plot or two! What features in Deswik can make this simpler, quicker and easier.



Python for Mining Surveyors – An Introductory Workshop

Unlock the potential of the Python programming language and its applications for your mine survey tasks with this workshop. You will gain an introduction to Python and several of its libraries and SDKs, with an emphasis on options designed for the manipulation and creation of spatial data, such as point clouds and triangulations.

The ability to rapidly integrate new tools into existing workflows is critical to success in an evolving digital landscape. This workshop will demonstrate how Python can augment your current processes, enhance efficiency, automate tasks and enable you to create custom solutions to problems that may be outside the scope of existing software.

This session is tailored to provide a basic overview, equipping you with foundational Python knowledge. It will introduce essential terminology and present examples of beneficial Python libraries. Real-world scenarios will be used to demonstrate how Python scripting and libraries can solve complex problems and generate valuable outputs. It will also provide insights into how emerging technologies such as large language AI models can assist in this process.

Join us to discover how you can unlock the power of Python to manage and manipulate mine survey data, and explore possibilities for the future.



Applications of autonomous sensor networks for monitoring track and key rail assets

The application of autonomous sensors to monitor major pieces of infrastructure has been well understood for over 15 years. During this time sensors have become lower powered, easier to install and with more efficient data flows. This has democratised the act of monitoring across a wider range of end-users allowing more time-sensitive and data-supported decisions. This paper will outline the application of sensors in monitoring rail and tunnel infrastructure. In the rail sector, the use of biaxial (now triaxial) sensors to measure lateral trackbed deformation (cant) led to the correlation of longitudinal tilt with manually surveyed settlement. Tilt sensors are now widely deployed in the rail environment negating the need for manual survey and the requirement to have line-of-sight to take an optical measurement.



Trimble Positioning Services and Software for Mining

This session will provide an overview of Trimble Positioning Services (RTX, VRS, Alloy) and how they can benefit the mining industry. The session will also cover new product releases, including hardware and software, as well as an overview of the Trimble Access Mining, Tunnels, and Monitoring modules. A deep dive into monitoring for mining will be presented, looking at the T4D software and showing specific examples. The session will include a demonstration of the latest Trimble Business Centre Software, showcasing its one-stop field-to-finish capabilities with a UAV PPK data set.

Presenters:

- David Corcia: Trimble overview and Trimble Positioning Services (RTX, VRS, Alloy) and how they can benefit mining*
- Russell Box: UPG overview including our sales and support channels; New product releases both hardware and software*
- Dan Hughes: Overview of Trimble Access 2023 and the latest features, enhancements, tips & tricks for mining surveyors.*
- Brent Dawson: Deep dive into monitoring for mining looking at the T4D software and showing specific examples*
- Sean Baxter: Demonstration of the latest Trimble Business Centre Software showcasing its one-stop field-to-finish capabilities with a UAV PPK data set*

This session is intended for mining professionals who are interested in learning more about Trimble Positioning Services and Software.



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