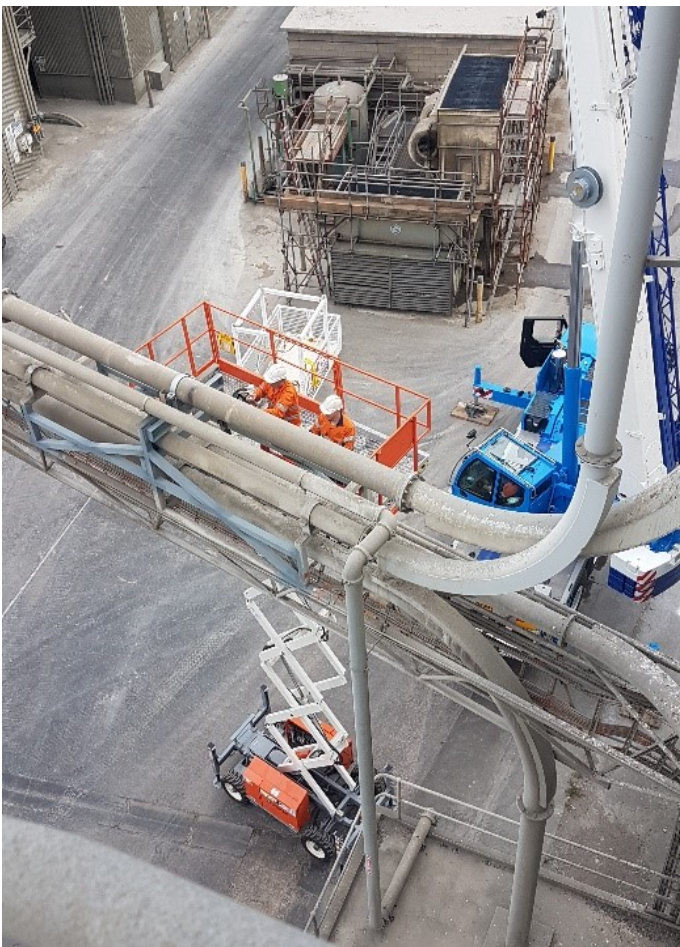




NEWSLETTER – April 2019



Welcome to Ingenia’s news update highlighting the events from the first quarter of 2019. Its been a busy first quarter with a wide range of projects in various industry sectors and for new and existing clients. The defence sector is beginning to present opportunities for the business. We are now engaging various Primes on defence infrastructure scopes. This has been a deliberate effort and focus on preparing our business and ensuring our capabilities known to the sector.



Project Management - Pumping Line Support

Ingenia was engaged by a major industrial client for the design and installation of upgraded pipeline supports. Existing pumping line vibrations were leading to significant movement of platforms and fatigue within pipe mounts and support frames.

Daniel Halls initiated the work and provided pipeline load analysis and modelling based on pipes located through 3D Laser point survey. Arie Overduin worked with Muralikumar Krishnaiyan who designed an alternate support structure for each of the revised pipe support locations. The engineered design input was passed to Aaron DeVisser and Mike Salter who developed the engineering concept into 3D CAD Model and fabrication drawings. With the design drawings provided to Smart Fabrication, the supports were fabricated for installation.

Simon Schulz coordinated the onsite installation of the fabricated steel work during the recent site shutdown with minimal interruption to continuing site activities. Following the installation, a site lead commented that “you have fixed it! The vibrations use to be 10 times as bad” and mentioned they were now comfortable to walk on the service platforms again. This is a great example of the Ingenia Engineering Team’s capabilities.

Partnering with Defence Alliance on Lendlease Project

Ingenia has partnered with the Dematec / Smart Fabrication alliance for a scope of work for Lendlease on the Future Frigates shipbuilding facility.

The project is designing the Jig Wagons that will be used to transport sections of the vessels along the initial stages of the ship section assembly line. Ingenia is providing detailed engineering and design, with the alliance responsible for the fabrication, automation and propulsion systems of the equipment. This project is a great example of Ingenia's capability and ability to be flexible and work in with various partners to enhance the outcomes of the project. Its an exciting time in developing our defence capability.



Ingenia's Chief Asset Consultant and Technical Officer

Mike has been employed as a Technical Officer by Ingenia since its inception and has worked under Ivan Winter since 2007. Mike has 8 years CAD drafting experience and during this time he has developed 3D designs, detailed manufacturing drawings and performed stress analysis using Autodesk Inventor Finite Element Analysis tool.

Also an integral part of Ingenia's Asset Management team, Mike assists in the implementation of the Mainpac software for various clients and end user training. He is also our contact person for Fleetsu fleet management software.

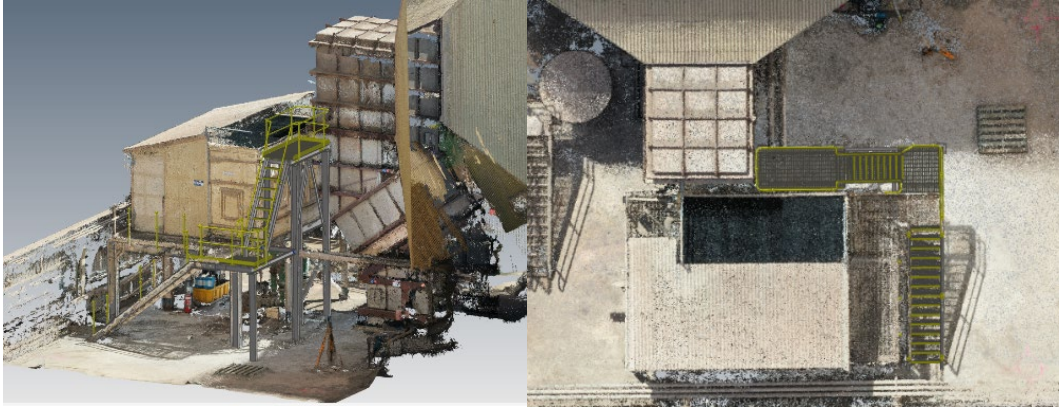
Prior to joining Ingenia, Mike was employed in the wine label printing industry for 18 years. A trade-qualified Senior Graphic Reproducer, he spent 2 years in the USA as Pre-press Manager implementing Collotype Labels overseas expansion. Upon returning to Australia, he joined Collotype's research & development team and played a key role in the installation of CTP (Computer To Plate) technology.

During Mike's time at Ingenia he has shown to be very adaptable to change and technology, developing procedures and process improvements to assist in the company's rapid growth. He is a key part of the engineering team and has developed some strong working relationships with a number of clients.

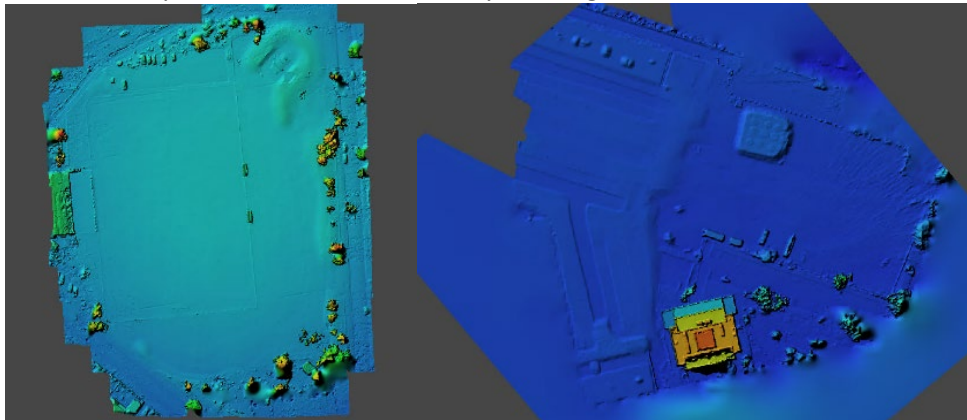


Ingenia's Developing UAV Capability

Ingenia has recently been investing time into developing a method to accurately map and record 3D spatial data from site using the latest in UAV technology and coupling it with our existing Total Station Survey to create 3D models that are accurate within +/-5-10mm. As pictured below, we can then integrate this data into our design software to better understand the site and its potential collisions with existing structure, thus limiting our time on site and broadening our data on the target area.



The data from our UAV can be interpreted in many ways. From one flight mission we can obtain many different deliverables that can be useful throughout the project preliminary stage through to project delivery. We can provide a high resolution Orthomosaic image, which is a great alternative to old "Google Maps" data. It will allow you to zoom further in to see every detail and can be updated as often as the site changes. Orthomosaics can also be delivered in the form of DEM (Digital Elevation Model) which shows the differences in ground elevation using colour. Below we have pictured is a local soccer pitch and the Port Authority building site.



Combining this UAV data with our knowledge of VR Visualization, we can offer a complete package for full scale project visualization. Bringing together our, or supplied 3D model with the collected UAV data, we can offer a full VR presentation and visualization of your site with the new plant, structural or buildings realistically placed in their future position. This offers a to scale viewing of your new site without a single modification to the real world.



Some of the projects and scopes that Ingenia have completed this quarter

- *Stair drawings for a fabrication client's Olympic Dam project.*
- *Jib Crane Platform design for a meat processor's blood decanter.*
- *Engineering and design of a fabrication client's IBC structure at a grain terminal.*
- *A pipe bracket structural review of a refrigeration client's food manufacturing project.*
- *FEA on critical materials handling asset for a large industrial client.*
- *Drawings for a fabrication client for Port Adelaide Berth support frame and ladder*
- *Engineering and design of a fabrication clients' MSCL pipe support and access*
- *Structural calculations on a wall lifting frame for an industrial services client.*

Email - enquiries@ingenia.com.au Telephone - +61 8 7721 9970 101 Henley Beach Road, Mile End SA 5031

