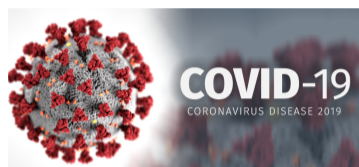




## Ingenia Newsletter Q3 2020



Ingenia advises that we are managing through the current COVID situation well. We have systems and processes in place at the office and on site, ensuring that staff and clients are protected against spread and infection.

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## The 2019/20 Year in Review

### Projects

**Projects completed – 98 (compared to 93 in FY 18/19)**  
**Most projects with a single client for the year – 29 completed**

### Highlights

Olympic Dam **Electric Slag Furnace Condition Review**  
Osborn Naval Shipbuilding Precinct **Jig Wagon Design**  
**Chimney Inspection** via Unmanned Aerial Vehicle (UAV)  
Cement Blending **Plant Design**  
Sky City **Roof Pipe Platform**  
Woomera Air Base **Hangar Door Automation**  
Pump Station **Skid Design**  
Quarry **Structural Condition Assessment**  
Raw Material **Silo and Process Design**  
Container **Folding Access Platform**  
Gantry **Crane and Structure Registration**

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### **New Addition to Team Ingenia**

Ingenia has been blessed with addition to the team of Ali Khiabani, who has fitted in well and has provided immediate impact with bolstering Ingenia's senior structural capability. Now that the feet are firmly under the desk, he is exploring some exciting structural opportunities including currently working on an inland maritime infrastructure project.

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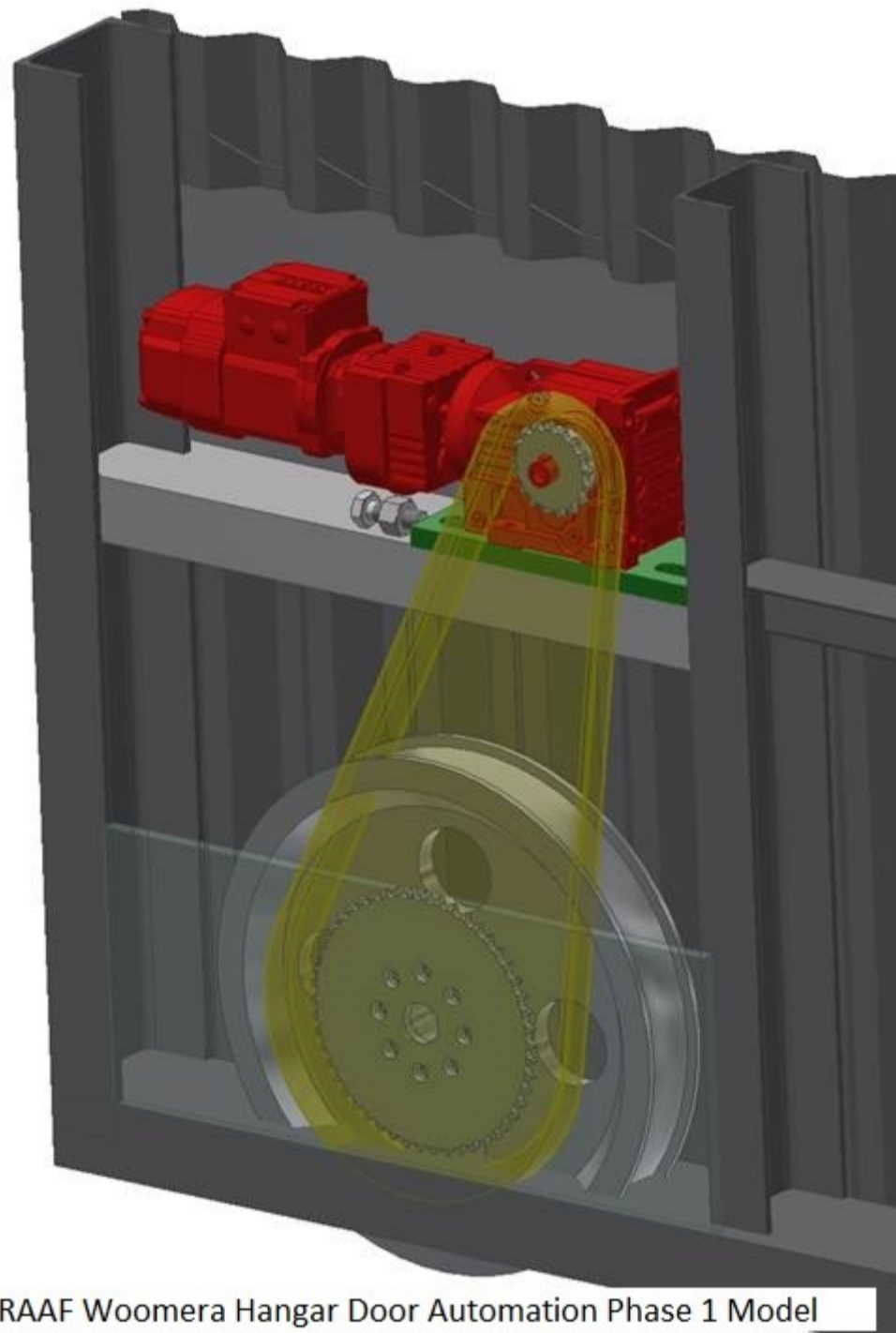
## **RAAF Woomera Hangar Door Automation Phase 1**

Ingenia was engaged to undertake a project to automate hangar doors of two hangars at the RAAF facility at Woomera, South Australia. The hangar doors

were to be modified to be independently electrically driven as specified. The door motors were to be specified and supplied with the ability for the motor/gearbox system to be 'de-clutched' from both inside and outside the hangar, and fitted with towing lugs, to allow the doors to be opened or closed in the event of power loss.

One of the main challenges of the project was that both hangars are contained within the 'Technical Area' defined by the Heritage Management Plan (HMP) as being of high significance. The buildings themselves are identified as being of moderate significance due to their structure and scale within the landscape.

The mechanical and structural design requirements for the project commenced with an assessment on the structural integrity of the hangar doors and tracks. The design element included a modular door drive assembly which was to be mounted into the existing door assembly. This drive assembly encapsulated a driven wheel, sprockets chains and gearmotor to provide functionality to the door. The assembly also had a requirement for manual disengagement for emergencies and under power failure conditions. The design of the system was analysed through each step of the design using our Safety in Design process with guarding and interlocks to AS/NZ 4024. Personnel access was provided via a magnetic locked access doors with interlocking to prevent personnel and equipment.



RAAF Woomera Hangar Door Automation Phase 1 Model



The completion of on-site testing of the vehicle and the remote inspection solution

## Remote Visual Inspection of Underground Tunnel

Ingenia was engaged to undertake visual inspections of tunnels at a materials handling client's facility in Adelaide as part of a scope required for the demolition of plant and equipment above. The inspection was required with a very short lead time as the client's project management team determined tunnels below proposed works were in unknown condition as they unsafe for entry. The scope of the inspection was to determine to condition of the concrete tunnels and whether damage or obstructions were present.

At the time Ingenia had only offered UAV / drone inspections, and spatial point clouds only. Rising to the challenge, the team got together and overnight, engineered and 3D Printed an adapter to fit to an off the shelf solution, so current drone equipment could be correctly mounted and used on a remotely controlled robotic vehicle. The client was extremely appreciative in the way the team went about designing the solution and completing the work within the timeframe available.

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## A Snapshot of Current Projects

- Process Hazard Analysis for a materials handling client in SA
- Electric Slag Furnace Shell Integrity Report for a major mining client in SA
- Elevated Tank design for a client at Hermannsberg in NT
- Pump Station Investigation for a major mining client in SA
- Design of an Observation Jetty for the Renmark Water Park project in SA
- Design of an API 650 tank for a client in WA
- Tower dust collector suction ducting for a materials handling client in SA
- Rock Crusher slab analysis for a quarry client in SA
- Concrete pier moulds for a client on the Regency to Pym road infrastructure project in SA
- Transport Cradle for Large Machine Transport
- Modification to Filler for Food production client in SA
- Spatial Point Cloud Scans for Various Clients in SA

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**General Manager, Daniel Halls and partner Danielle Strobel have announced that they are expecting their first baby. Daniel is about to know what it's like to burn the candle at both ends when a little girl is expected in September. The Ingenia team wishes Danielle and Daniel all the best for the upcoming addition.**



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