
PROJECT MONTHLY UPDATE

LMG'S DEMONSTRATION PLANT

November 2023

Highlights:

- * The Demonstration Plant continues to progress with no health, safety, or environmental incidents to date.
- * Magnesium Oxide production strategy is on track with construction labour expanded to 50+ local trade contractors engaged onsite.
- * GEM Industrial Services mobilised & progressing pipe welding and installation.
- * Spray Roaster Oxide Bin fabrication completed, completed major fabrication for the Pyrohydrolysis area.
- * Coregas Industrial Gases Tanks & Origin's LPG Storage Facility installation completed.

1. Stage 1 Demonstration Plant Progress Update

Engineering & Procurement

The three-to-five-person core engineering team remains actively involved in providing support to the construction team and completing vendor closeout and commissioning handover documentation. The process of handing over documentation from engineering has commenced with the target to complete the transfer of the majority of documentation by year-end. Procurement will support the construction phase by procuring necessary site consumables and mobile equipment as required.

Construction

Magnesium Oxide (MgO) Strategy

The project is currently focused on fast-tracking the construction of the plant areas required to produce one-ton bulk bags of MgO, an intermediate product for customer sales, prior to the production of magnesium metal.

The MgO Bagging Plant is scheduled to be completely fabricated and ready for delivery to site next month.

The construction team have realigned their organisation and planning to focus on the plant areas required to produce MgO. Common systems to all areas of the process, e.g., water, air, and LPG, will still be completed to the extent required for MgO production. The commissioning methodology by sub system will allow construction teams to transition to other areas of the plant as sub systems are handed over to LMG operations personnel ensuring a seamless transition from priority areas to the remainder of the project.

Site

The site team continues with a daily workforce of between 50+ local trades from our two major local contractors, Mechanical Maintenance Services (MMS), who are responsible for all Structural Mechanical Piping (SMP) installation and Operations and Maintenance (O&M), who are responsible for Electrical and Instrumentation installation. GEM Industrial Services have been mobilised, via the MMS SMP contract services agreement, to progress pipe welding and spooling for PVDF, HDPE & PVC piping.



Figure: GEM Industrial pipe workshop on-site for welding of PVDF & CS piping

Civil

The primary civil and concrete works have been completed with only localised miscellaneous concrete foundations and pedestals remaining.



Figure: Miscellaneous concrete footings in progress where required.

Structural, Mechanical and Piping

In last month's update, Stable Engineering, one of our local fabrication contractors, accomplished the fabrication and assembly of the Spray Roaster reactor vessel. Subsequently, Stable are completing the fabrication of the Oxide Bin, which is currently awaiting final coating.

The Oxide Bin is scheduled for transport to site next week for installation.



Figure: Spray Roaster Oxide Bin workshop fabrication complete

The primary SMP focus over the last few weeks has been the completion of the steel erection for the Spray Roaster, a critical path of the project schedule. The erection has proven to be intricate with the SMP team erecting preassembled modules lifted into place as larger segments to expedite installation time.



Figure: Installation of modularised Spray Roaster structural steel platforms



Figure: *Installation of modularised Spray Roaster Stack structural steel with piping*

The structural steelwork erection has been successfully completed with the team progressing with the installation of the mechanical equipment, including tanks and burners, absorption towers, stacks, pumps, fans, blowers, pipe & cable supports.



Figure: *Spray Roaster mechanical equipment installation progressing*

With the completion of the reactor vessel, Steuler, a specialised refractory contractor, has been mobilised to site to complete the internal refractory lining installation required for this reactor vessel.



Figure: *A close-up of the internal refractory lining of the reactor vessel*



Figure: Spray Roaster tanks installed in final position

The SMP team has made significant strides in the erection of the Ferrosilicon and Magnesite Hopper and Bag Breaker units, with both units nearly finished and awaiting the installation of electrical and instrumentation equipment. Additionally, successful installation of the exhaust stacks in the hydromet area has been achieved. The SMP team are currently advancing the piping installation for the hydromet areas.

The MMS SMP team has been bolstered with the addition of GEM Industrial Services, who have been mobilised, to progress pipe welding, spooling, and installation for the plants PVDF, HDPE & PVC and carbon steel piping.



Figure: Ferrosilicon Bag Breaker erection complete

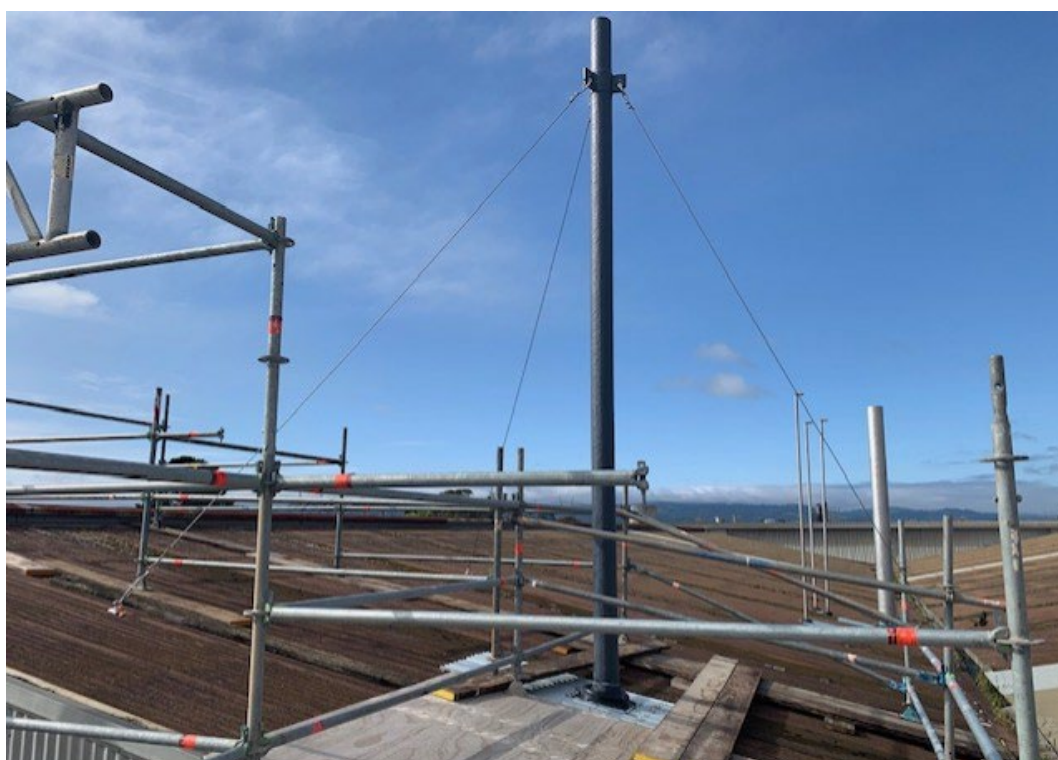


Figure: Erection completion for Acid Area Scrubber exhaust stack

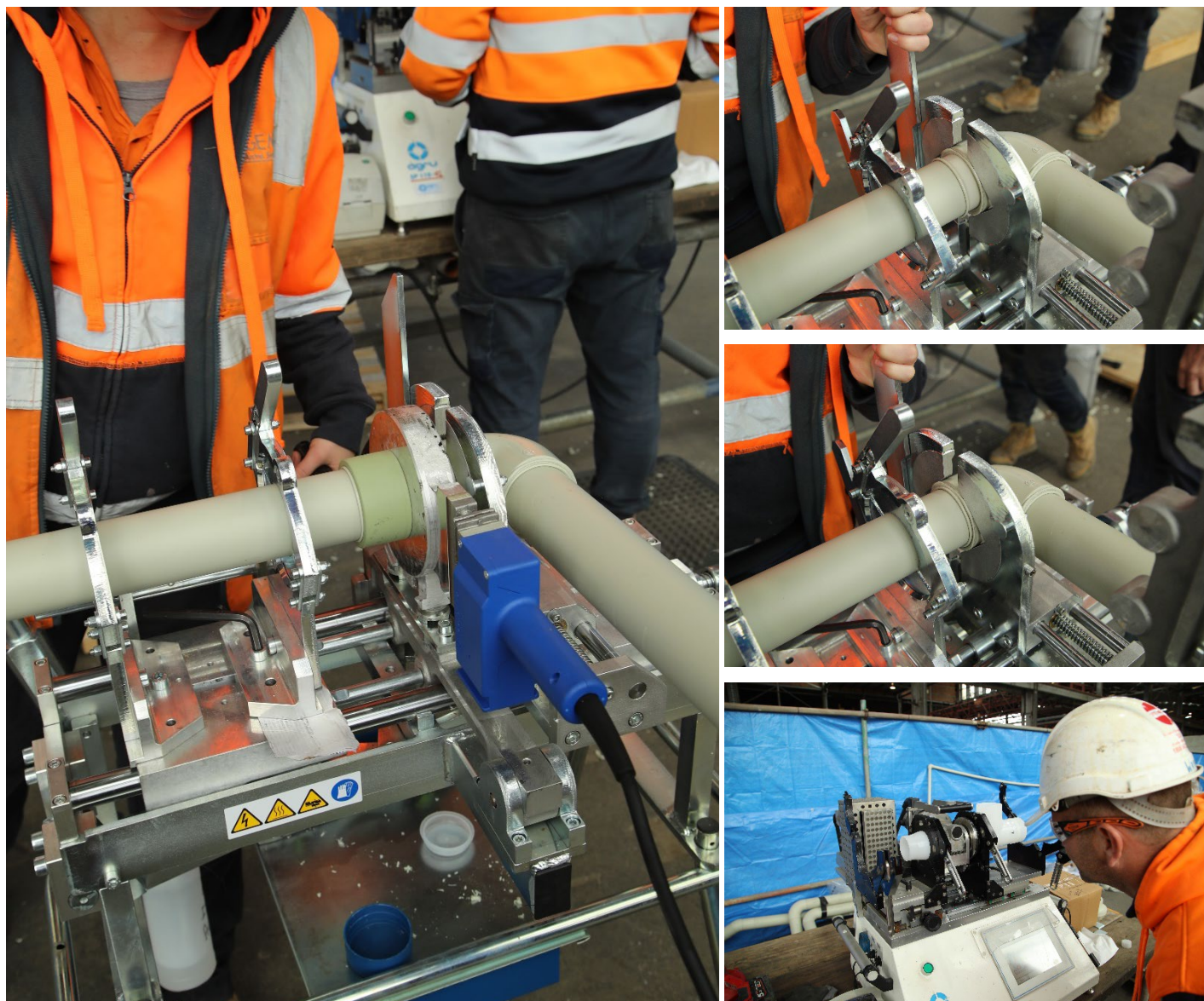


Figure: PVDF pipe welding

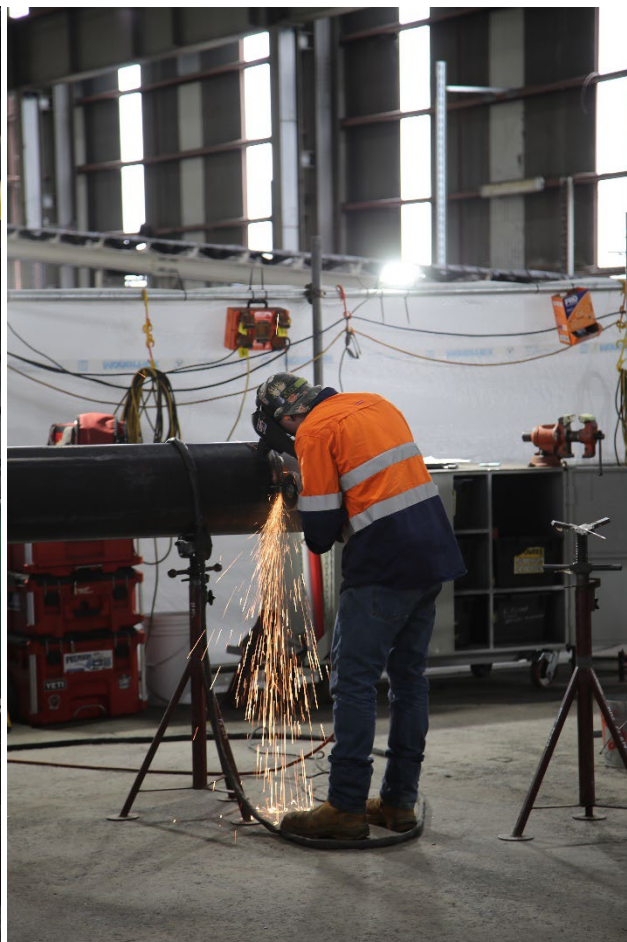


Figure: Carbon steel pipe welding and spooling

The Coregas team have successfully completed the installation of the equipment required for the supply of industrial gases for the plant, which include the Oxygen and Carbon Dioxide tanks, along with Argon cylinder man-pack facility, ready for commissioning. This storage and delivery model allows for resupply to be managed by Coregas on a 24/7 basis.



Figure: Coregas oxygen and carbon dioxide system installed

The Origin team have successfully completed the LPG storage facility, ready for supply of LPG, including the installation of the 120,000 litre LPG bullet, designated fill point and underground portion of the LPG pipeline. The origin team will continue to progress with the above ground gas pipeline along the sheds to the Spray Roaster and Reduction Furnace.



Figure: Origin LPG bullet and underground pipeline being installed

Electrical & Instrumentation

The electrical and instrumentation (EI) work has reached an advanced stage, with successful cabling completed for all three main switch rooms and the main switchboard. The EI team is actively engaged in constructing local junction boxes, local control stations, and progressing with instrumentation cable pulls. The removal and installation of the new Main Switchboard (MSB) has progressed in conjunction with Pro-Built and AusNet with completion scheduled for late December.



Figure: Electrical and instrumentation cable installation & main switchboard (MSB) replacement

Schedule

The change in focus to MgO has impacted the overall program with construction in non-MgO areas being unavoidably delayed as a result, despite the project teams best efforts to find additional personnel to run the construction activities in parallel. The availability of construction labour is having a large impact on the project team's ability to adjust the strategy to focus on all areas of the project. As such MgO is targeted to be in production in March and the follow up with magnesium metal expected soon afterwards. The project team will continuously review the labour situation to identify opportunities to increase resourcing level to pull forward the non-MgO areas of the plant.

Weather events have moderately impacted the project with the unseasonal weather patterns preventing continuous activity with the spray roaster construction.

Any further changes to this timetable will be included in future monthly updates.

The December progress report will be released in the third week of January 2024 since construction activity will be paused for the Christmas/New Year period.

2. Operations

LMG is starting to liaise with government agencies and employment groups to identify workforce opportunities for workers from downsizing industries such as paper manufacturing and power generation. LMG is looking to add value to the local region by providing employment opportunities for redundant workers to regain employment and remain in the region they live. This is a key focus of LMG to ensure we make a lasting impact on the region.

LMG will be commencing the employment process early next year with more information in next month's project update.

3. Summary

Overall, the project strategy remains on track with slight impacts on magnesium metal production timing as a result of ongoing pressure on labour availability. The project team will continuously adjust the strategy to identify and capture opportunities to improve the schedule, diligently to respond to each challenge and work with all stakeholders to successfully deliver the project.



David Paterson
Chief Executive Officer

4 December 2023

About Latrobe Magnesium

Latrobe Magnesium is developing a magnesium production plant in Victoria's Latrobe Valley using its world first patented extraction process. LMG intends to extract and sell magnesium metal and cementitious material from industrial fly ash, which is currently a waste resource from Yallourn brown coal power generation.

LMG has completed a feasibility study validating its combined hydrometallurgical / thermal reduction process that extracts the metal. Early construction has commenced on its Stage 1, initial 1,000 tonne per annum magnesium plant with commissioning targeted to commence end of Q1 2024.

A commercial plant will then be developed, with a capacity of +10,000 tonne per annum magnesium, shortly thereafter. Further plant capacity expansion will be determined once Geotech works have been completed on the existing Yallourn landfill due for completion in 2024. The plant will be in the heart of Victoria's coal power generation precinct, providing immediate access to feedstock, infrastructure, and labour.

LMG plans to sell the refined magnesium under long-term contracts to USA customers. Currently, Australia imports 100% of the 8,000 tonnes annually consumed.

Magnesium has the best strength-to-weight ratio of all common structural metals and is increasingly used in the manufacture of car parts, laptop computers, mobile phones, and power tools.

The LMG project is at the forefront of environmental benefit – by recycling power plant waste, avoiding landfill and is a low CO₂ emitter. LMG adopts the principles of an industrial ecology system.