



ALPHA
FINE CHEMICALS

ESPERANCE NICKEL SULPHATE PLANT



Alpha Fine Chemicals (AFC) is proposing to construct and operate a nickel sulphate plant at Esperance in the south east of Western Australia. Using new technology that is simpler, safer and less expensive than existing methods, the **Esperance Nickel Sulphate Plant** will produce 20,000 tonnes per annum of high purity nickel sulphate crystals to supply the lithium-ion battery market for electric vehicles and stationary storage.



Using a patented technology called the CMN Process, the plant will be the first commercial operation of this type in the world. This process does not involve complex (high pressure, high temperature) process operations or toxic or flammable gases. As a consequence, such a processing plant is easier, simpler and less expensive to build and operate. The quality of the nickel sulphate crystals produced will rival that produced by current global market leaders.

Feasibility and environmental studies are currently underway to inform the critical design, engineering and environmental management requirements of the project.

With a projected life of more than 20 years, the plant will provide at least 50 permanent jobs in the Esperance region as well as opportunities for trade, technical and construction services to supply the project. A final investment decision for the project is anticipated in Q3 2018.



What is nickel sulphate used for?

The major end uses of nickel sulphate are plating (both electroplating and electroless plating) and battery cathodes. Demand for nickel sulphate in the plating industry is growing steadily driven by the consumer products and automobile industries.

Historically, nickel cadmium and nickel metal hydride batteries were the primary consumers of nickel in batteries. Now, with the development of lithium-ion batteries, demand for nickel sulphate is projected to grow significantly as the electric vehicle market expands across the globe.

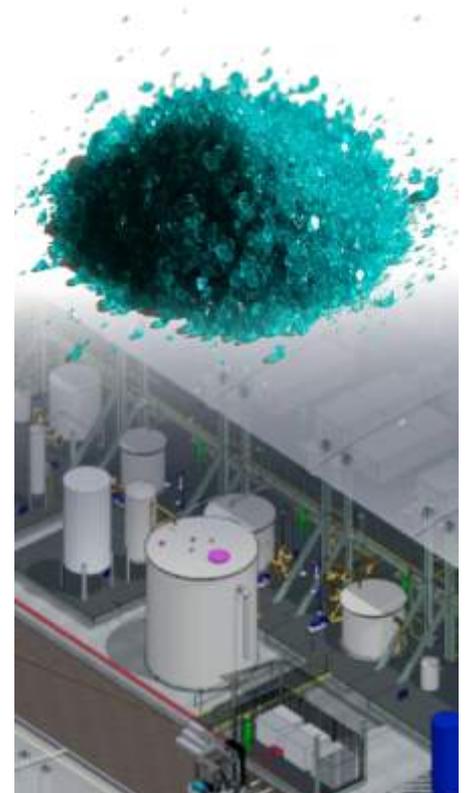


How is nickel sulphate made?

Nickel sulphate is made by refining nickel-containing intermediate feed sources (e.g. mixed hydroxide precipitate or MHP, and crude nickel sulphates) into a high quality product in crystal form by removing the impurities that are typically found in the intermediate feed sources.

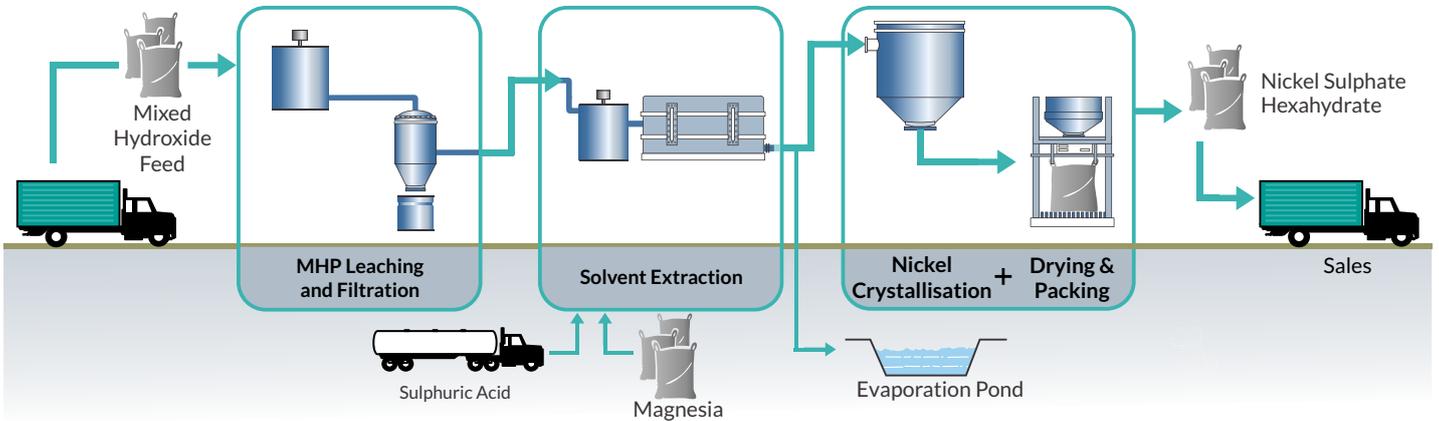
The MHP is dissolved in dilute sulphuric acid and the resulting solution is purified using a process known as solvent extraction.

The plant will use common organic extractants to separate the nickel from the unwanted elements. The purified nickel sulphate solution is then converted into odourless blue crystals using a crystallizer. The crystals will be packed and sealed in dual-lined one-tonne bulk bags ready for shipping.





The CMN Process has the advantage of being simpler, less expensive and safer than other similar processes.



Location

Options for locating the plant near Esperance are currently being assessed. AFC will continue to work with local stakeholders to identify potential sites based on zoning, size, compatibility with surrounding land uses, access to transport routes and proximity to the port. Where possible, trees and other vegetation will be planted to screen the processing plant from view.



The plant site

The site will include a number of modules that collectively form the nickel sulphate plant. These include the main processing plant, storage sheds, process tanks, pumps, piping, workshop, administration building, carpark and two to three large evaporation ponds. The largest module will be the processing plant, which is anticipated to be around 13m in height.

Evaporation ponds are used to capture the final waste stream from the plant to facilitate evaporation of the water, leaving valuable Epsom salts, which will be harvested and sold. All ponds are expected to have a clay base and be sealed with high density polyethylene liners. There will be no discharge of waste streams from the plant into the environment.

Best industrial design and operating practices will be implemented to ensure that safety and environmental risks are minimised. Any emissions will be monitored and comply with the relevant regulations for a processing plant of this nature. Only minor odours will be detectable inside the processing plant.



Transport

All materials will be transported to and from the plant by container trucks and light vehicles. Entry to the site will be from Myrup Road. The MHP feed and product quantities are relatively small. It is expected that there will be 5 to 10 truck movements per day, to and from the site.



Approvals

AFC is currently working with engineering, environmental and planning advisers to complete the various studies and submissions required to obtain approval for the construction and operation of the plant. It is anticipated that all approvals will be in place by Q3 2018.



Protecting the environment

Operating in accordance with environmental regulations and licence requirements is a key focus for the company. Environmental studies are underway to ensure that AFC fully understands the baseline local environmental conditions and that the plant is designed and operated in a manner that appropriately manages or mitigates any environmental impact.

Water for the plant will be sourced from a series of groundwater bores located on or nearby the plant site. Evaporation ponds will be lined and the processing plant will be surrounded by a bund to ensure no discharge from the site.

Ongoing environmental monitoring will be an integral part of responsible operation of the plant.



Employment opportunities

AFC is committed to employing local people for this project during construction and operations. It is anticipated that more than 50 permanent local jobs will be created. A range of roles will be required such as technical, safety, plant operators, administrative and managerial positions.

AFC is committed to a non-discriminatory employment policy and is engaging with the local Indigenous community to ensure they are provided with every opportunity to work at the plant.

To find out more about future job opportunities, please subscribe via the AFC website to receive Community Updates on the project. Through these updates, we will let you know how and when to register your interest.

Timeline



About AFC

AFC is a privately owned company consisting of a small group of Australian and Chinese shareholders. AFC's goal is to be a producer of chemical grade metal products hence the name Alpha Fine Chemicals. With the global rights to the patented CMN Process, the production of nickel sulphate is AFC's initial primary focus.



How can I find out more?

Visit: www.afchemicals.com.au to find out more, subscribe to community updates, register your interest for future employment or let us know about your business's capability to supply the project.

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