ALTA 2024 28
27 - 31 May | Perth, Australia

PILOTING THE NEOMETALS ELI PROCESS

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ABSTRACT

Considering the rapidly growing demand for lithium and the activity in the sector, the development of a lower cost direct route to battery grade lithium hydroxide monohydrate from a purified lithium chloride solution is long overdue. Over the past 7 years Neometals has been developing the patented ELi process to achieve exactly this goal.

Most recently Neometals has been working with commercial laboratories and technology vendors to develop and demonstrate a flexible flowsheet for both spodumene and lithium chloride brine feeds, that can effectively reduce key impurity levels enabling direct electrolysis to produce a lithium hydroxide solution (avoiding much of the costs and inefficiencies of conventional routes).

In support of an engineering cost study, Neometals has now completed bench and pilot scale demonstration of the critical unit processes needed for purification of several lithium chloride brines and a lithium chloride solution derived from a Western Australia spodumene sample. The purification flowsheet involves sequential i) bulk impurity removal steps and ii) impurity rejection / polishing steps to achieve levels of impurities, including the divalent cations (Mg^{2+}, Ca^{2+}, Sr^{2+}), boron, silicon and sulphate to sub-mg/L levels.

Results from the purification and electrolysis steps will be presented in this paper and used to support the claimed relative economic advantages of this flowsheet compared to more conventional processing options.

Keywords: Lithium, Spodumene, Brine, Purification, Hydrometallurgy.