



AUSTPAC RESOURCES NL

March 2000

RECOMMENDATION: SPECULATIVE BUY BASED ON THE COMPANY'S RAPIDLY DEVELOPING ERMS AND EARS MINERALS SANDS TREATMENT TECHNOLOGIES, AND THE POTENTIAL INVOLVEMENT BY A MAJOR CORPORATION IN THE DEVELOPMENT AND FUNDING OF THESE TECHNOLOGIES IN INDIA.

ASX Code: APG

Activity: Developing mineral sands processing technologies

BACKGROUND

After beginning its corporate life as a gold exploration company, Austpac in 1997 decided to concentrate its energies and resources entirely on its patented ERMS and EARS mineral sands processing technologies. Austpac has developed these new technologies in-house, and the processes allow for substantial value-adding by upgrading ilmenite, a low value titanium mineral, into a high value product known as synthetic rutile. This synthetic rutile is a primary feedstock used in the chloride process in order to manufacture titanium dioxide pigment, which in turn is used in the manufacture of paint, plastics and paper. Austpac has a joint venture agreement with the Indian government to build a first commercial plant in Orissa State and has also received significant interest in the project from major industry players. Due diligence is currently being conducted and a funding agreement with one of these major industry players is expected to be announced soon.

CORPORATE DETAILS

Last Sale Price:	\$0.11	Year High/Low:	\$0.145/\$0.02
Issued Shares:	320M	Market Cap:	\$35M
Avg Monthly T'over:	23.6M	Major Shareholder:	GIO (4.3%)

DIRECTORS' PROFILE

Alfred Paton, Chairman: Engineering background, with more than 50 years' business experience. Formerly MD and Chairman of Placer Pacific and Kidston Gold Mines, and a director of Placer Dome. He is currently Chairman of Centennial Coal and AuIron Energy.

Michael Turbott, Managing Director: Exploration background, with 29 years experience in the mining industry. Formerly a director and Vice President of Kennecott Explorations (Australia) and Chairman of Denham Coal Associates and a director of Denham Coal Management.

Harold Hines: 50 years experience in operations, development, management and consulting in the mineral sands and alluvial mining industry. He is Managing Director of the Mineral Sands Consultancy, which provides mine planning, construction and commissioning services.

AUSTPAC'S ERMS & EARS TECHNOLOGIES

Austpac has been processing ilmenite for over ten years and has developed two proprietary processes that have direct application to the mineral sands/titanium dioxide industry. The first is ERMS, which stands for Enhanced Roasting and Magnetic Separation, whilst the second is EARS, which stands for Enhanced Acid Regeneration System. The technologies have tremendous potential, have been developed in-house and are patented and exclusive to Austpac.

How is titanium dioxide pigment produced and what are its uses ?

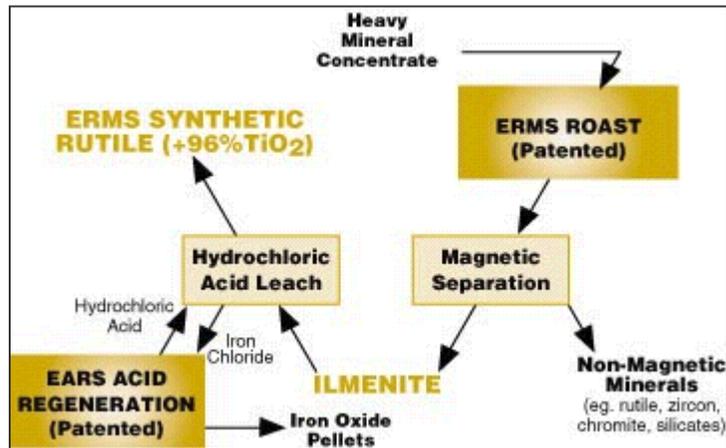
Titanium dioxide (TiO₂) pigment is the brilliant white pigment used in the paint and plastics industries, and to a lesser extent in the paper industry. TiO₂ pigments are superior to all other alternatives and are highly sought by paint and other manufacturers throughout the world. The global TiO₂ pigment market has grown over the last 20 years by 3% p.a. and is now worth around US\$8 billion annually.

The chloride process, a more environmentally friendly process than the older sulfate process, produces over 60% of the world's TiO₂ pigment. The chloride process requires a feedstock with a high TiO₂ content (generally >85%). Most natural sources of high TiO₂ minerals such as rutile, are now exhausted, so chlorinatable feedstock is manufactured from ilmenite, a common mineral generally containing around 50% TiO₂. Upgrading can be achieved either by electrosmelting, which produces titania slag, or by chemical processing to produce the >90% TiO₂ material known as synthetic rutile.

Benefits of the ERMS/EARS technologies developed by Auspac

Auspac's ERMS & EARS technologies, when combined, can produce the world's best quality synthetic rutile (>96% TiO₂), at a claimed cost advantage of as much as 25%. The ERMS roasting process more effectively magnetises ilmenite than comparable methods, so it can be easily separated from other minerals. The EARS acid regeneration system reconverts iron chloride (a by-product of the acid leaching process) into hydrochloric acid at a significantly lower cost than the alternatives, whilst a plant is also up to 50% cheaper to build than an alternative plant. Both technologies are also environmentally friendly and the end-products are free of the radioactive issues associated with various alternate technologies. The successful treatment of ilmenite samples from over 60 deposits indicates that ERMS and EARS are the only technologies able to process any sort of ilmenite anywhere in the world. ERMS and EARS are potentially the most significant and efficient mineral sands technologies available today in the world market.

Figure 1: Simplified flow diagram of ERMS and EARS processes



How are Austpac’s technologies being commercially developed ?

Austpac has two major initiatives through which its technologies are proceeding to commercial development. These are:

- i. *South Africa:* in 1998, two technology licences were issued to Iscor Limited, the major South African steel producer, the first for the commercial application of Austpac’s ERMS technology and the second for its EARS technology. The issue of the licences followed two years of testing by Iscor. The technologies will be used in conjunction with Iscor’s US\$300M heavy mineral project, which includes a mine, separation plant and a 250,000 tpa titania slag smelter, situated near Richards Bay in KwaZulu-Natal Province. These licences represent a strong vote of confidence in Austpac’s technologies by a major international corporation. During January 2000, Iscor confirmed that they were likely to proceed with the project, with a final decision likely in early March. Licence fee payments to Austpac will commence upon project start-up.
- ii. *India:* in mid-1998, Austpac signed an agreement with Indian Rare Earths Limited (IRE), the government entity that controls all mineral sand developments in India. This agreement involved the investigation of the feasibility of establishing an ERMS synthetic rutile plant in India, to be known as the AusRutile Project. IRE became interested in the ERMS process in 1997 when it was demonstrated that the technology could produce high-grade synthetic rutile from ilmenite from three substantial deposits on the east coast of the country. These deposits have an aggregate resource base of more than 120M tonnes of economically viable ilmenite, representing approximately 8% of the world’s known ilmenite resources. They could support annual production of 500,000 tonnes of synthetic rutile for more than 70 years.

Figure 2: Location of Indian mineral sands deposits



Austpac's treatment process is the only viable treatment option

Austpac's technologies are the only feasible treatment option for processing this type of ilmenite. The proposed plant will be located at IRE's OSCOM facilities in Orissa state and will have capacity of 10,000 tpa. A pre-feasibility study completed in December 1998 estimated a capital cost of US\$5.3M and showed the project to be economically viable. Austpac and IRE have formed a joint venture company, in which Austpac will have a 74% participating interest and IRE 26%, with Austpac managing the plant. The resource base at OSCOM is sufficient to support a much larger plant, so the facility could readily be expanded to comprise the 10,000 tpa demonstration plant, a new 100,000 tpa ERMS synthetic rutile plant and an EARS acid regeneration plant with sufficient capacity for both ERMS plants. Further expansions could be based on the OSCOM resource or on greenfields plants exploiting the large, undeveloped resources held under lease by IRE in Andhra Pradesh and Tamil Nadu.

Ausenco Limited of Brisbane have been commissioned to undertake a site specific study for the demonstration plant, whilst definitive testwork on the OSCOM ilmenite has been underway since November at Austpac's newly integrated pilot plant at Kooragang Island, Newcastle. It will take about 12 weeks for Ausenco to compile detailed plant costings and design. The Ausenco study will also evaluate expanding the initial plant to 15,000 tpa at minimal incremental cost, which would significantly improve the economics of the initial plant. Government approvals and registrations for the AusRutile Project are well advanced and should be completed during the second quarter of 2000, with plant construction possibly commencing during the second half of 2000 and first production occurring in 2001.

This deal could be just the beginning in India

The Indian government's goal is to encourage the construction of at least two 100,000 tpa synthetic rutile plants within the next decade, so attracting chloride TiO₂ pigment technology to India. Through its participation, Austpac will become a significant partner in the production of high volumes of high-grade feedstock for the TiO₂ pigment industry within the next 5-10 years. Austpac has been approached by a number of groups that have expressed interest in the project. The company's objective is now to obtain funding for its share of the project and also funding for future operations. Due diligence by a major corporation is at an advanced stage and site visits to India have been carried out. Interested parties have recognised that the combination of Austpac's technologies and IRE's resource base has created a major new opportunity in the TiO₂ industry. An announcement on this potentially exciting development is expected during the current quarter.

Assuming a capital cost in the vicinity of US\$5.3M, Austpac will need to raise in the vicinity of A\$6M for its share of project finance, as well as additional working capital. The project has the potential to generate annual after-tax cashflow of around A\$1.5M for Austpac, with a relatively short payback period of just four years. The upside for Austpac is the successful completion and of the 10,000 tpa first commercial plant, when it is planned to build an ERMS and EARS plant with a capacity of more than 100,000 tpa. The capital cost of this larger plant is forecast to be in the vicinity of US\$50M, but with the potential to generate annual revenues of US\$50M and after-tax cashflows of US\$15M. These numbers will be verified by Ausenco's current study. Looking ahead, there is potential for the development of additional synthetic rutile plants incorporating Austpac's patented technology to develop other minerals sands deposits throughout India.

Potential for Austpac technology to treat Murray Basin minerals sands

In recent years, minerals sands exploration activity in the Murray Basin of eastern Australia has undergone a resurgence, primarily as a result of the discovery of coarser grained deposits compared to the finer grained, uneconomic deposits which have been known for years in the basin. These Murray Basin deposits are probably the last significant resource of premium ilmenite in Australia and could potentially attract a significant price premium. When traditional magnetic separation is used to process the sands, the resulting ilmenite generally contains >1% Cr₂O₃, which means that the ilmenite concentrate is either unsaleable, or at best cannot command a premium price. Austpac has undertaken ERMS testwork for a number of Murray Basin exploration companies and its technology has been shown to be highly effective. Austpac's aim is to licence its technology to these emerging producers, which in turn could generate significant returns over the medium-to-longer terms.

RECOMMENDATION

Austpac deserves commendation for its persistence over recent years in its single-minded determination and focus on the development and refinement of its mineral sands processing technologies. The company is now positioned at a very exciting stage, with excellent short and long-term business opportunities emerging in India, with the possibility of a major corporate financing deal being finalised within the next few weeks. Austpac's technology looks set to be a major industry breakthrough, with the company set to reap the rewards of its persistence for many years to come. We regard the company and its management highly and recommend it as a strong Speculative Buy, with excellent medium to long-term prospects.

Authorised by Andrew Sekely – Manager Equities, Sydney

March 3, 2000

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