

## Austpac's Patented Technologies

**ERMS SR** (*Enhanced Roasting and Magnetic Separation*) - a unique process to *upgrade* ilmenite, a common titanium mineral. Ilmenite is roasted to condition it for leaching, and then leached in hydrochloric acid. The process produces two saleable products; ultra high grade synrutile and metallic iron pellets.

**EARS** (*Enhanced Acid Regeneration System*) - an innovative process to *recycle* waste iron chloride solutions from the titanium and steel industries, together with iron oxide wastes, producing hydrochloric acid and iron metal pellets.

**DRI** (*Direct Reduced Iron*) - a new *value-adding* process to make direct reduced iron (DRI) from iron ore fines and produce a high grade feedstock for arc furnaces used in steel making.

**Austpac Resources N.L.** is a minerals technology company focused on the titanium, steel and iron ore industries. Austpac's key technology transforms ilmenite into high grade synthetic rutile, a preferred feedstock for titanium dioxide pigment and titanium metal production.

The technology is also used to process waste chloride solutions and iron oxides produced by steel making to recover hydrochloric acid and iron metal pellets.

A third process can be used to produce Direct Reduced Iron (DRI) from both hematite and magnetite iron ores.



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## Proving Austpac's Technologies

A 3,000 tonnes per annum ERMS SR Demonstration Plant is being built in two stages at Austpac's facilities in Newcastle, NSW.



**Stage 1-** The ilmenite roasting and magnetic separation section, operates on a 24 hour 7 days per week basis. During the 2008 'production run', a total of 720 tonnes of ilmenite will be processed.

**Stage 2 -** The ilmenite leaching/synrutile production and EARS acid regeneration section. During the 'production run', around 300 tonnes of ultra high grade ERMS synrutile and 200 tonnes of iron pellets will be produced for market trials. A number of groups have expressed strong interest in the products.

The Demonstration Plant will provide all data required for detailed engineering design and costing for a commercial ERMS SR synrutile plant. Austpac will commence this study in 2008, with a decision to proceed scheduled for mid 2009.



## Corridor Sands Ilmenite

BHP Billiton is Austpac's largest shareholder and has been granted a licence to use the ERMS SR technology in Africa, subject to payment of a royalty based on gross annual sales.

During 2008, Austpac will upgrade an ilmenite concentrate from BHP Billiton's massive Corridor Sands heavy mineral deposit in southern Mozambique. When developed, Corridor Sands will be among the lowest cost mineral sand producers. ERMS SR is the only process capable of treating the Corridor Sands ilmenite to produce ultra high grade synrutile and an iron pellet co-product.

## Steel Industry Waste

EAF dusts from electric arc furnaces, iron oxide mill scale from steel mills and spent pickle liquor (acidic iron chloride waste solutions) from steel coating are waste products that are creating environmental problems for many steel producers around the world.

## Recycling with EARS

Austpac's unique EARS acid regeneration process can economically recover both the chloride and the iron from pickle liquors, as well as recover iron from the mill scale and EAF dust.



The EARS section of the Newcastle Demonstration Plant will have a capacity of 40 tonnes per day (tpd). In 2008, Austpac will undertake large scale trials recycling steel industry wastes from the Newcastle region. This will prove the EARS process on a commercial scale, ready for world wide application in the steel industry.



The EARS process is expected to be accepted as the environmental solution for the significant waste problem now facing the world's steel industry. It is estimated that a stand-alone 50 tpd EARS plant could generate a profit of more than \$10 million per year before tax.

## Commercialising Austpac's Steel Recycling Technology

Austpac has signed an agreement with MultiServ Group Limited, the world's largest provider of outsourced, on-site mill services to the global steel and metals industries, to identify and evaluate worldwide opportunities for the application of Austpac's processes in the steel industry. Austpac expects a full commercial agreement will be negotiated during the second half of 2008 to commercialise the EARS process.



## Environmental Benefits

Austpac's technologies are environmentally friendly, and produce no solid or liquid wastes. All of the technologies have been incorporated into the Newcastle Demonstration Plant. Austpac's processes are carbon-capture capable, and emit far less CO<sub>2</sub> per tonne of product than similar upgrading or recycling processes.

## Uses of Titanium

Titanium dioxide pigment is used in the manufacture of paints, plastics, paper, ink, rubber, textiles, cosmetics, leather and ceramics.

Titanium metal's light weight, combined with great strength, rust resistance and very high melting point make it ideal for use in aircraft engines, cars, sports equipment (golf clubs, tennis racquets and bike frames), and general industrial equipment.

