# Austpac Resources N.L.

# ERMS Synthetic Rutile Plant

# Eastern Australia

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**IM 17 - Barcelona**
**March 2004**

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# Overview

- Austpac's Technologies
- The ERMS SR Process
- The 30,000 tpa plant



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# Austpac's Technologies

- ERMS[(1)] – high temp magnetising roast (>750ºC)[(FB)]
- LTR – low temp magnetising roast (<650°C)[(FB)]
- ERMS SR roast – high temp oxidation/reduction (<995°C)[(FB)]
- HCl leaching – batch[(FB)], continuous[(2)] leach vessels
- EARS[(1)] – regeneration of HCl from Fe chloride[(FB)]

[(FB)]Fluid bed process, [(1)]Patented, [(2)]Patent pending



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# The ERMS SR Process

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# ERMS SR FLOW SHEET

Mineral separation plant

Heavy mineral concentrate

Magnetic separation

ERMS roaster

Roasted ilmenite

REGEN. ACID (25% HCl)

SPENT ACID

Iron pellets

EARS acid regeneration plant

ERMS leach vessels

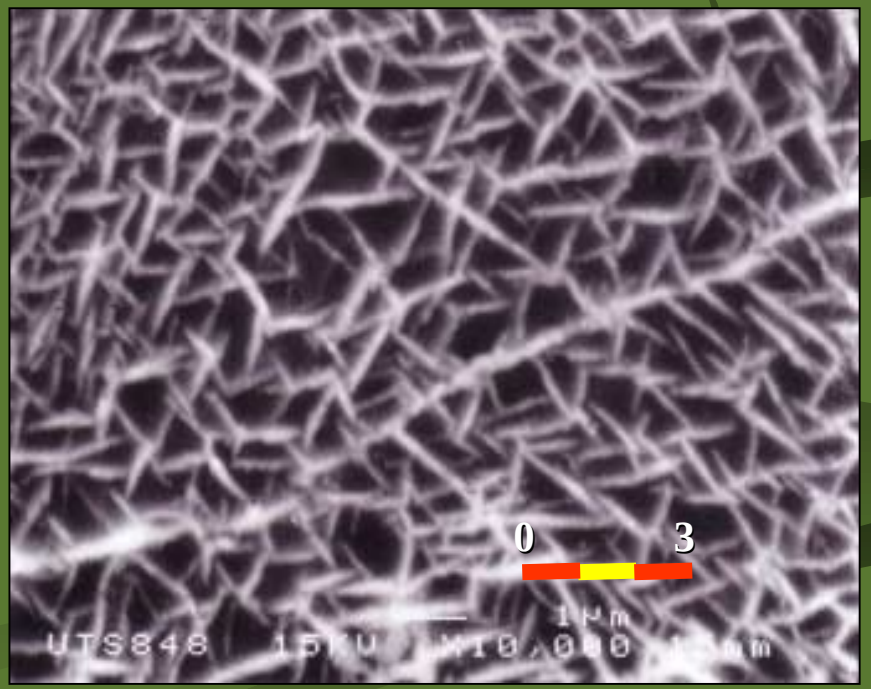
Synthetic rutile

# ERMS SR

## Chemical Analysis

## (N.S.I. ilmenite)

| | |
|---|---|
| $TiO_2$ | 98.00% |
| $Fe_2O_3$ | 0.55% |
| $SiO_2$ | 0.57% |
| $Al_2O_3$ | 0.17% |
| $Cr_2O_3$ | 0.01% |
| CaO | <0.01% |
| MgO | 0.02% |
| MnO | 0.01% |
| U+Th | <10ppm |



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# Synthetic Rutile Quality

Becher (92-94% $TiO_2$)

Benilite (93-95% $TiO_2$)

ERMS SR (97-98% $TiO_2$)

Ultra high grade feedstock for $TiO_2$ pigment and titanium metal



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# EARS Iron Pellets

## Chemical Analysis

| | |
|---|---|
| Fe metal | 89.7% |
| FeO | 6.00% |
| $TiO_2$ | 0.16% |
| $SiO_2$ | 0.18% |
| $Cr_2O_3$ | 0.08% |
| CaO | 0.03% |
| MgO | 1.18% |
| MnO | 2.29% |
| $V_2O_5$ | 0.84% |
| $P_2O_5$ | 0.007% |




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# Advantages of ERMS SR

- Applicable to all ilmenites
- Ultra-high grade synthetic rutile product
- Saleable iron co-product
- Can use solid, liquid or gas as fuel
- Continuous process – low Capex & Opex
- Environmentally friendly process

# The Eastern Australian

# 30,000 tpa

# ERMS SR Project

APG AGM
November 2003

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# Rationale for 30k tpa ERMS SR

- Growth in high-grade feedstock market
- Technology proven at pilot plant level
- Scale-up risk acceptable (<25:1)
- Economics of 30k tpa ERMS SR plant attractive
- However project bankability requires:
  - Assured ilmenite supply
  - Sales contract for SR product
- East Coast Australia Project conceived

# Ilmenite Supply

- Supply agreement – Consolidated Rutile Ltd; 70k tpa, 10yrs +
- Chrome-contaminated concentrate from North Stradbroke Island



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# SR Sales Agreement

- Iluka; 30 ktpa, minimum 5yrs, renewable
- Take-or-pay contract, SR sold at market with minimum price commitment
- Subject to Bankable Feasibility Study
- Iluka option  at end of BFS to take 10.1% in Austpac @ 30% premium to then market
- Iluka obtains licence to use technology
- Austpac has 10% free carried interest and option for additional 20% in Iluka's ERMS SR plants



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# 30k tpa ERMS SR Plant

- BFS cost A$5.0M, 6 months to complete:
  - Pilot plant – cont. leach, EARS A$2.30M
  - BFS study (Eng. , site work) A$0.98M
  - Corporate & project support A$1.72M
- BFS fund raising underway
- Capital cost estimate: A$50 million
- 15 month construction time



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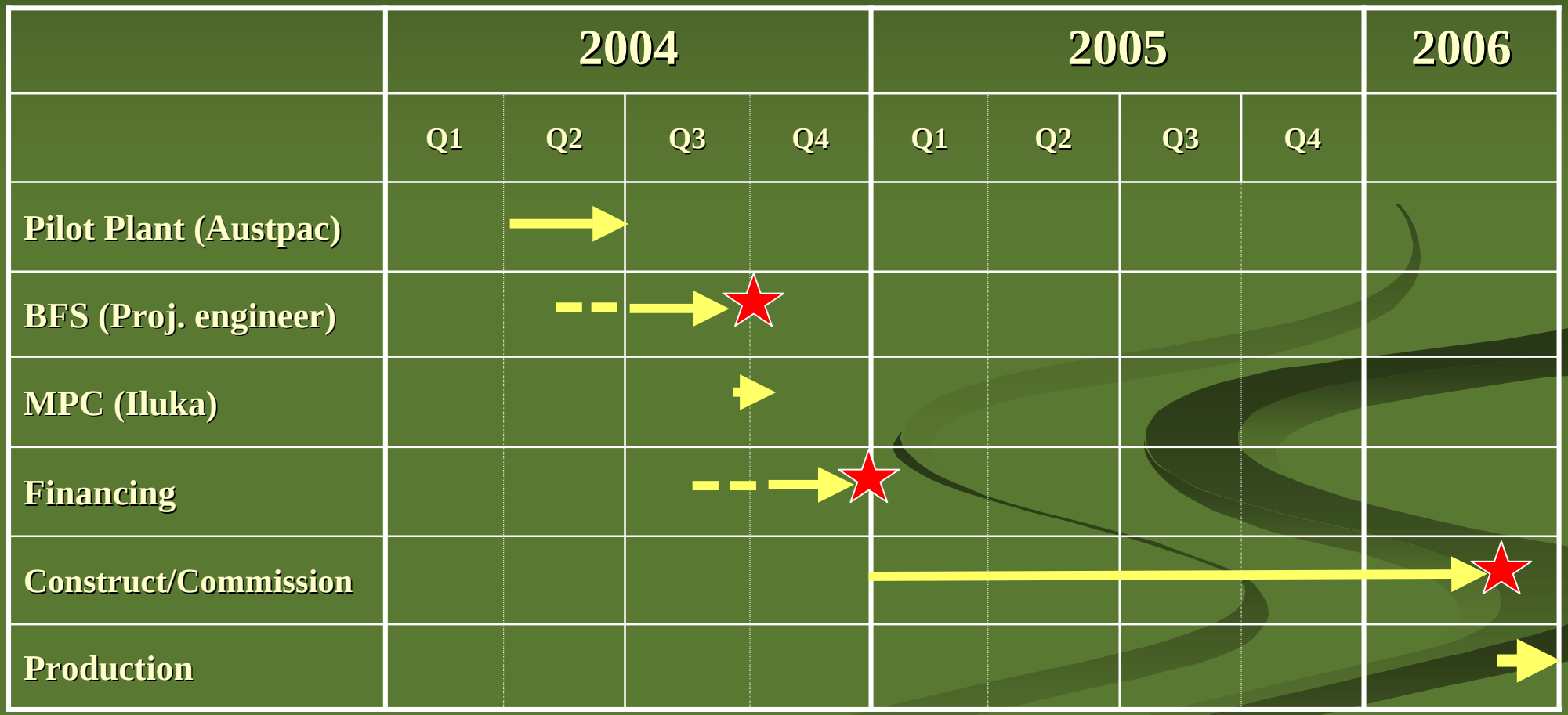
# 30k tpa ERMS SR Plant

- **Inputs:**
  - Ilmenite (51% $TiO_2$) — 60,000 tpa
  - Coal (26 GJ/t) — 22, 000 tpa
  - Total energy requirement — 18.7 GJ/t SR
  - Makeup acid — 1000 tpa
  - Water — 151,000 tpa
- **Outputs:**
  - ERMS SR — 30,000 tpa
  - Iron co-product — 21,000 tpa

# Project Timetable




★ Project milestones



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# ERMS SR - 2006


**Ultra high grade feedstock for the Titanium industry**