DOUBLE WORD SCORE
DOUBLE LETTER SCORE
TRIPLE LETTER SCORE
TRIPLE WORD SCORE
DOUBLE LETTER SCORE
DOUBLE WORD SCORE
ERMS
EARS
LTR
Annual General Meeting 2004
AUSTPAC
RESOURCES N.L.

Austpac - the Company

- Technology company – Ti minerals processing
- Prime objective – synthetic rutile production
- 460 million shares on issue
- Market Cap (Nov 04): A$17m
- State-of-the-art technologies; patented
- Skilled engineering/technical team
- Projects in or near implementation stage

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Austpac's Technologies and Know-How

- 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)]
- BTS[(1)] – beneficiation of titania slag[(FB)]

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

What does the Titanium Industry need?

- Clean ilmenite concentrate
  - Free of chrome, etc.
  - Usable for chloride and sulfate pigment
- Feedstock for chloride pigment and titanium metal
  - Hi-Ti ilmenite, slag, SR, rutile, UGS
  - Increasing demand for higher grades (>92% TiO_2)
  - Predicted future shortfall of SR
  - Present SR processes unsuitable for many ilmenites
- New technology for Murray Basin, Africa, India

What does Austpac offer

- Clean ilmenite concentrate?
  - ERMS roast – slag & chlorinatable ilmenite
  - LTR roast – sulfatable & chlorinatable ilmenite
- Feedstock for chloride pigment and titanium metal?
  - ERMS SR process – 97% TiO_2, iron co-product
  - BTS process – slag (South Africa?)
- Murray Basin – LTR & ERMS SR processes
- Africa – ERMS, ERMS SR & BTS processes
- India – ERMS SR process

2004 Milestones

- LTR process
  - First plant commissioned and operated (2.5 tph)
  - Fully funded by N.Z. Steel - ~$4M
- EARS process
  - Inco testwork - applicable for nickel chlorides
- ERMS SR process
  - Funding now in place for pilot plant upgrade
  - Upgrade underway at Newcastle
  - Funding options for 30 ktpa plant under review

The LTR Roasting Process

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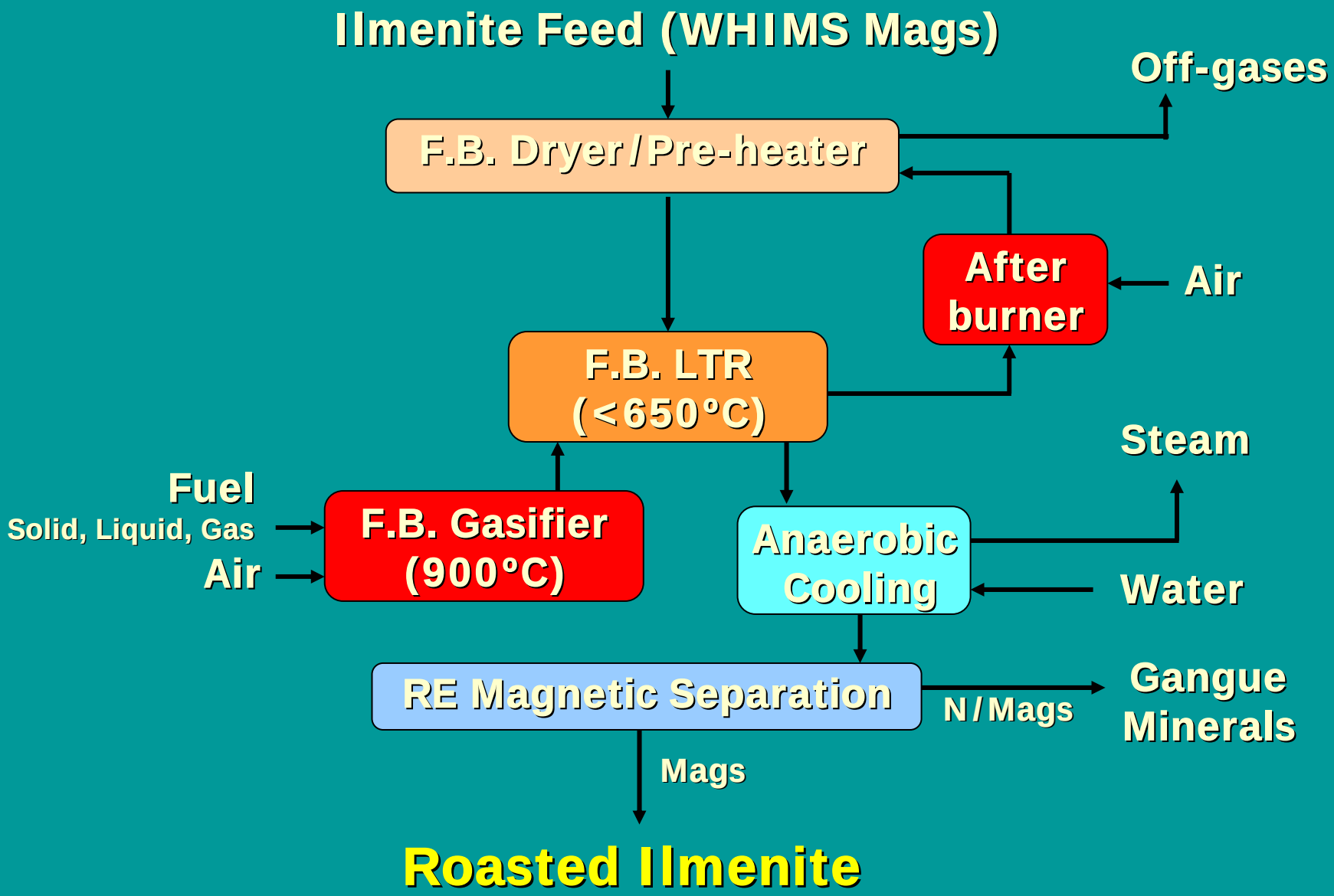
LTR Roast


Ilmenite Feed (WHIMS Mags)
Off-gases
F.B. Dryer/Pre-heater
After burner
Air
F.B. LTR (<650°C)
Steam
Fuel
Solid, Liquid, Gas
Air
F.B. Gasifier (900°C)
Anaerobic Cooling
Water
RE Magnetic Separation
N/Mags
Gangue Minerals
Mags
Roasted Ilmenite

LTR Roaster

Afterburner

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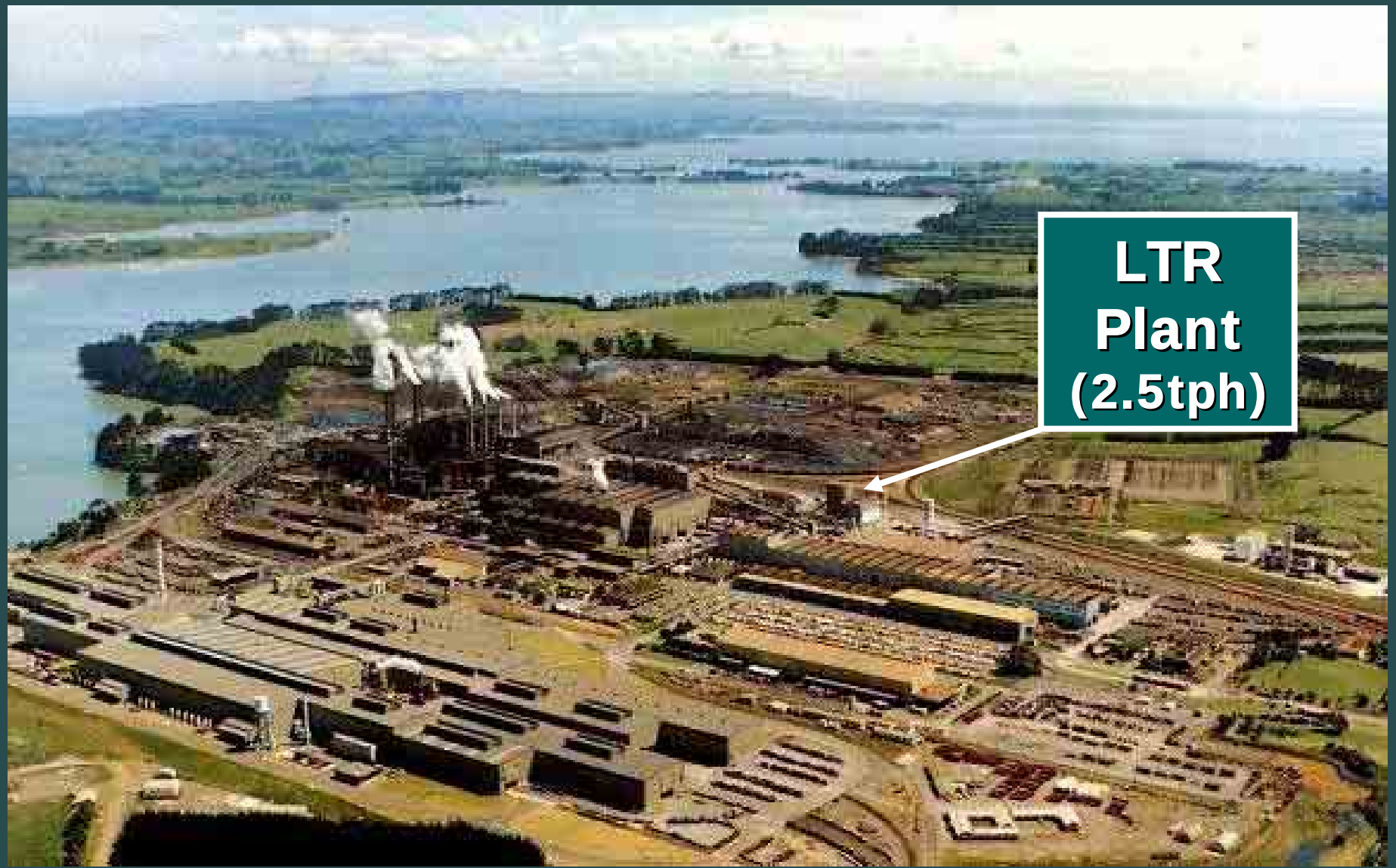
N.Z. Steel - Glenbrook



Fabrication

Delivery

Construction

Commissioning

Production

Key Outcomes

- LTR process is now:
  - proven for commercial scale ilmenite roasting
  - also applicable to other iron minerals
- Invaluable operational experience @ 2.5 tph
- We can now provide LTR process guarantees
- Further applications include:
  - BeMaX's Pooncarie project – Stage 2 (licensed)
  - Other proposals under consideration

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The EARS Acid Regeneration Process

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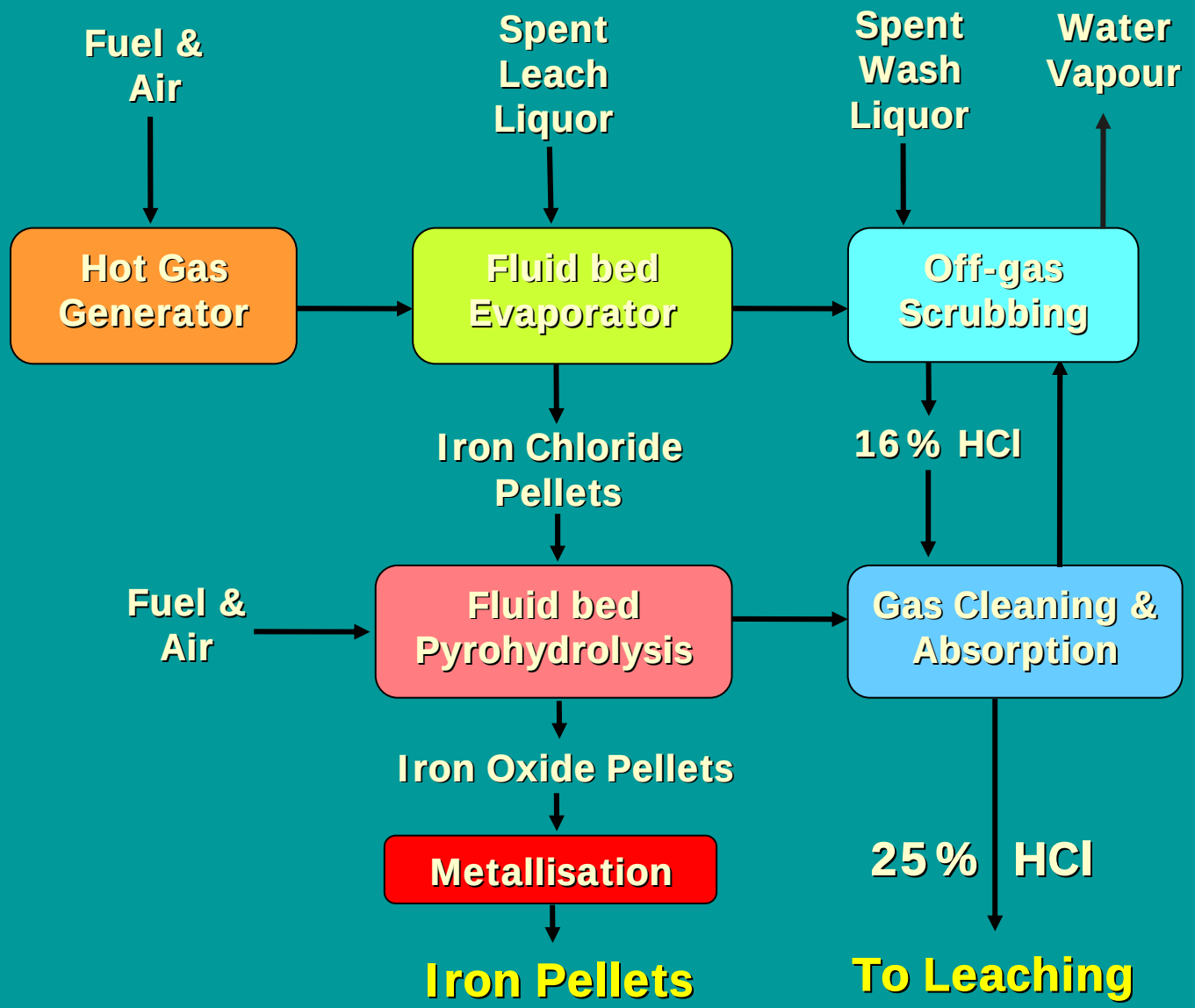
EARS Flow Sheet



Status of EARS

- Extensively tested on iron chlorides
- Inco testwork program for Goro Nickel Project
- Successfully processed nickel chlorides
- Not applied to Goro due to time constraints
- Pilot plant upgrade includes complete EARS plant
- Once demonstrated applications include:
  - iron chlorides – steel pickling, galvanising
  - nickel chlorides – new nickel processes

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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

REGENERATED ACID

SPENT ACID [$FeCl_2$]

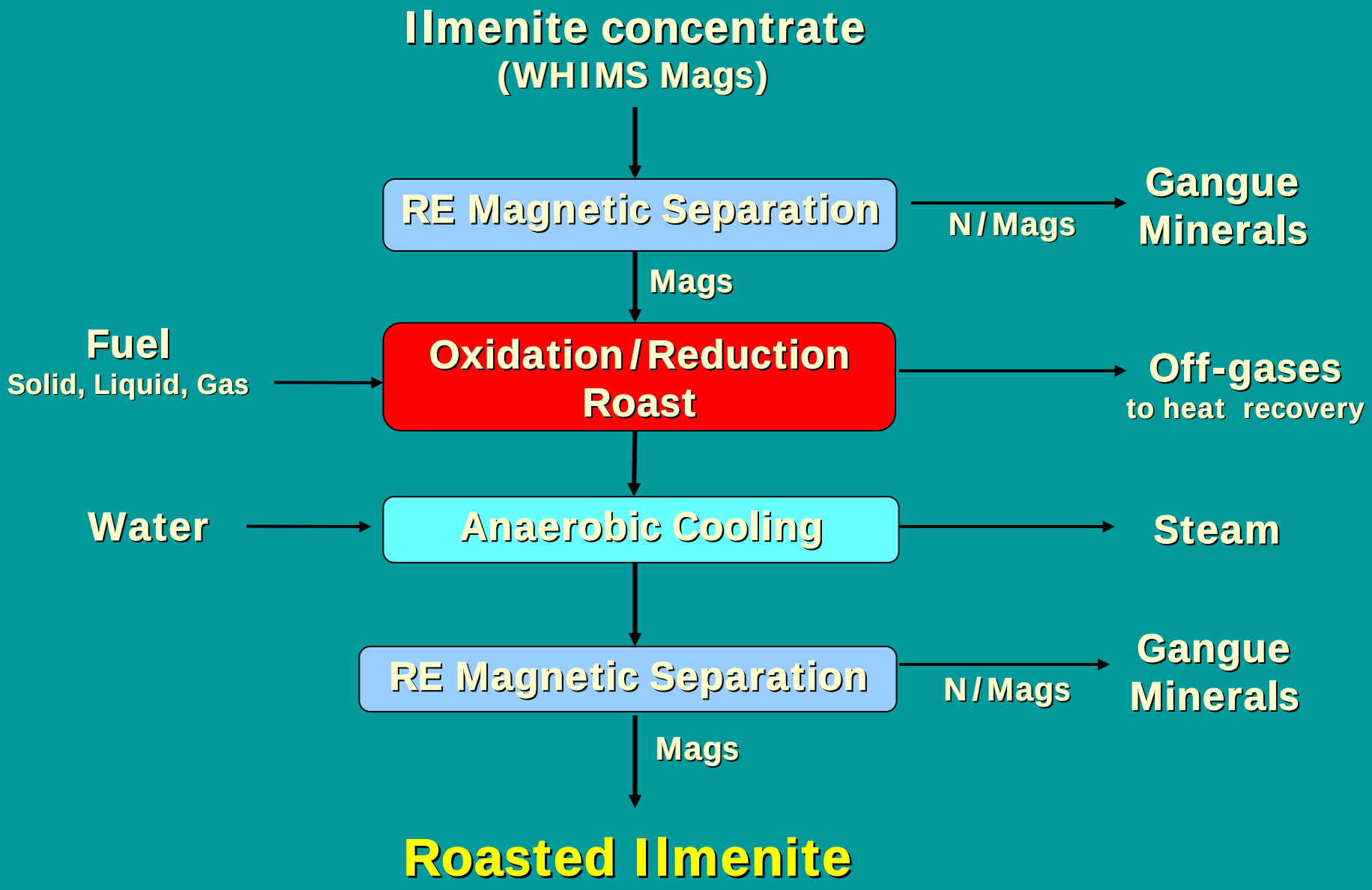
ERMS leach vessels

Synthetic rutile

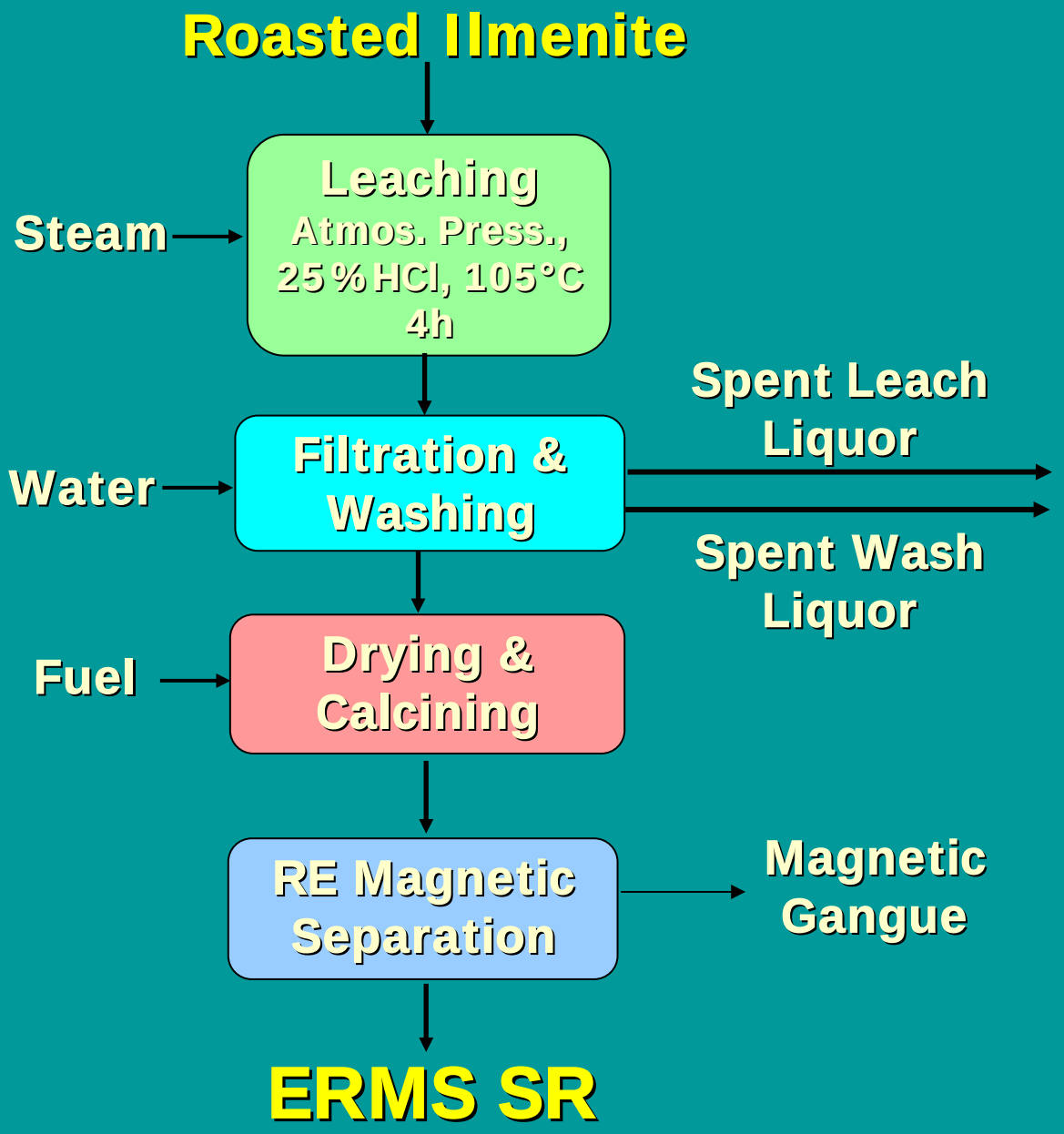
EARS acid regeneration plant

Saleable iron pellets

ERMS SR Roast

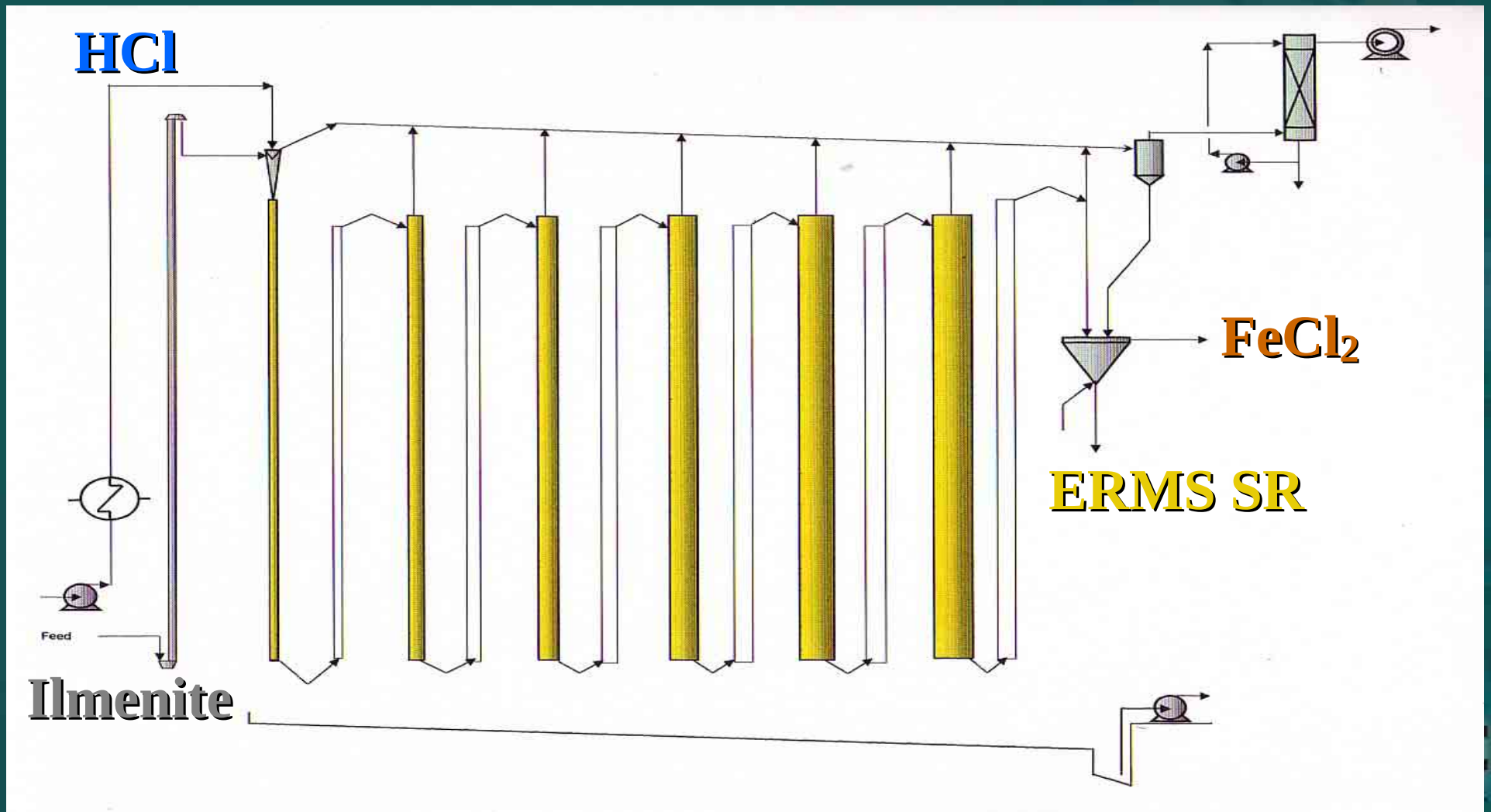


ERMS SR Leach

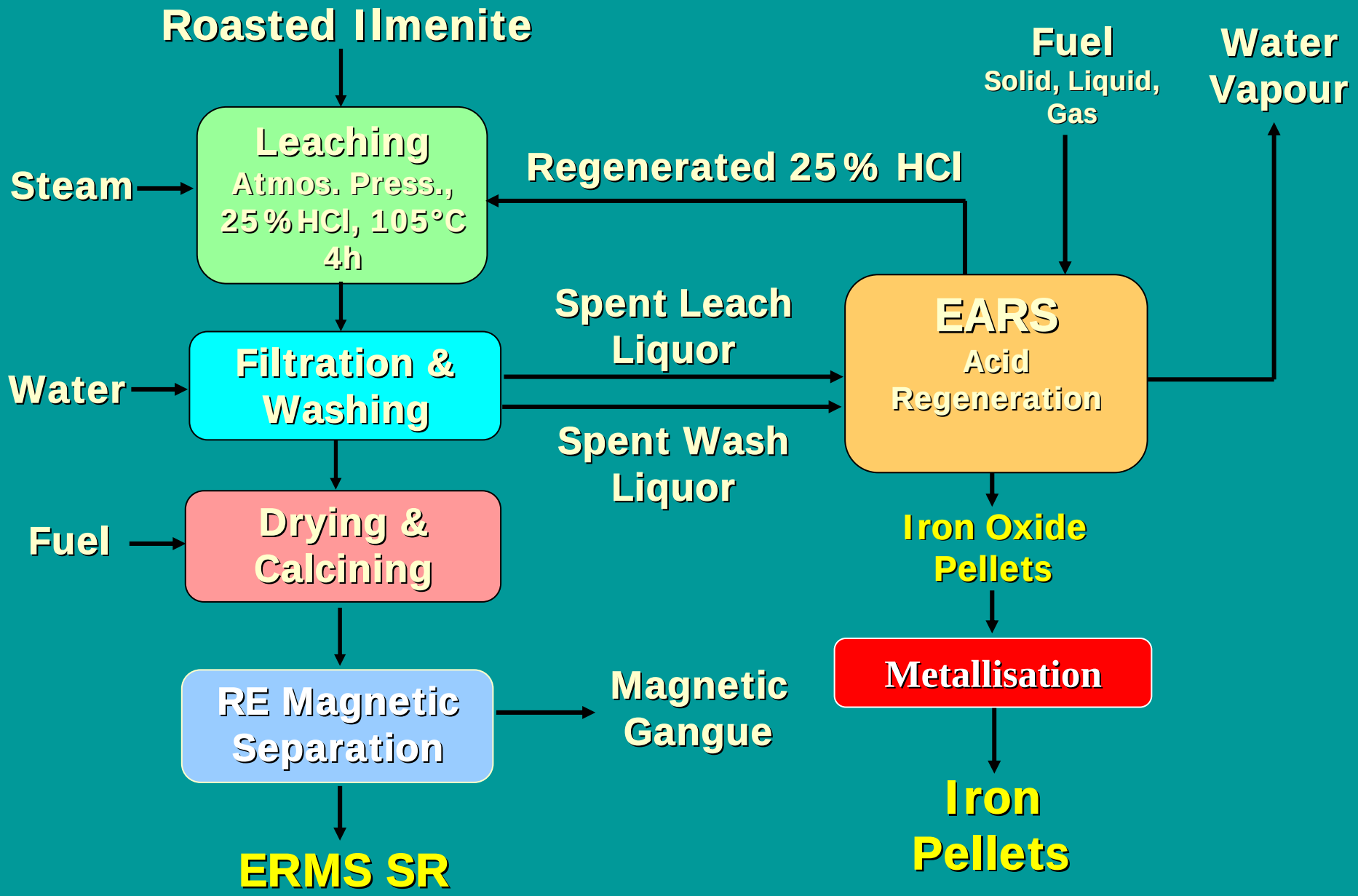


Continuous Leach Reactor

(Patents pending)



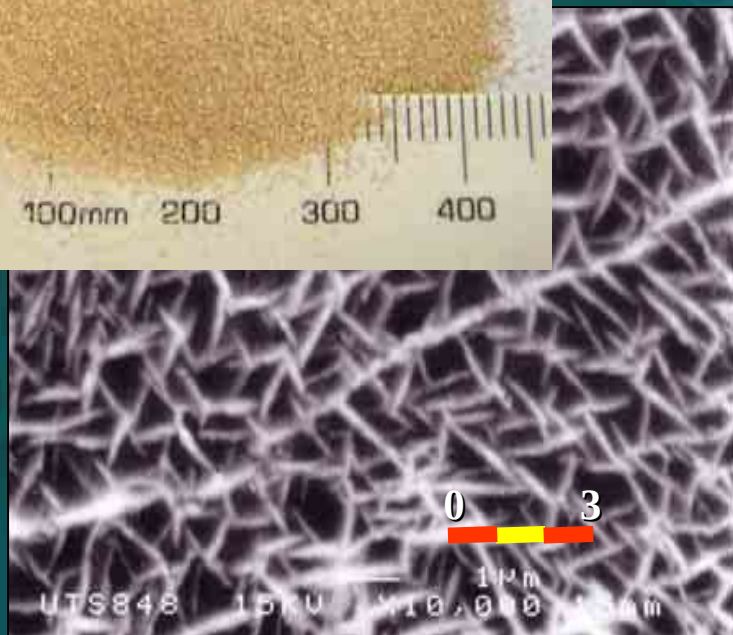
ERMS SR Leach + EARS Process



ERMS SR

Chemical Analysis

- 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



EARS Iron Pellets

Chemical Analysis

Fe	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%

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

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Rationale for 30k tpa ERMS SR

- Growth in high-grade feedstock market
- Market shortfall by 2006 of >100,000 tonnes
- Economics of 30k tpa ERMS SR plant attractive
- Scale-up factor from pilot plant < 25:1
- E. Coast ERMS SR project bankable provided:
  - Long term ilmenite supply contract - CRL
  - Sales contract for SR product - Iluka
- Bankable Feasibility Study necessary

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Commercialisation Steps

- BFS to cost $4.0M, 9 months to complete
  - Pilot plant – CLR, EARS $2.5M
  - BFS engineering, site work $1.0M
  - Project financing support $0.5M
- Construct 30k tpa ERMS SR plant
  - Capital cost: $50 million
  - Construction time: 15 months
  - Commission/ramp up: 6 months

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Where are we now?

- Unable to attract institutions at start of 2004
- Shareholder share purchase plan - $1.25M
- Subsequent funding pending - $0.9M + $3M
- Funding options being pursued for 30k tpa plant
- Pilot plant upgrade commenced
- 1,500 tpa ERMS/EARS SR plant at Newcastle by second quarter 2005

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Old Pilot Plant

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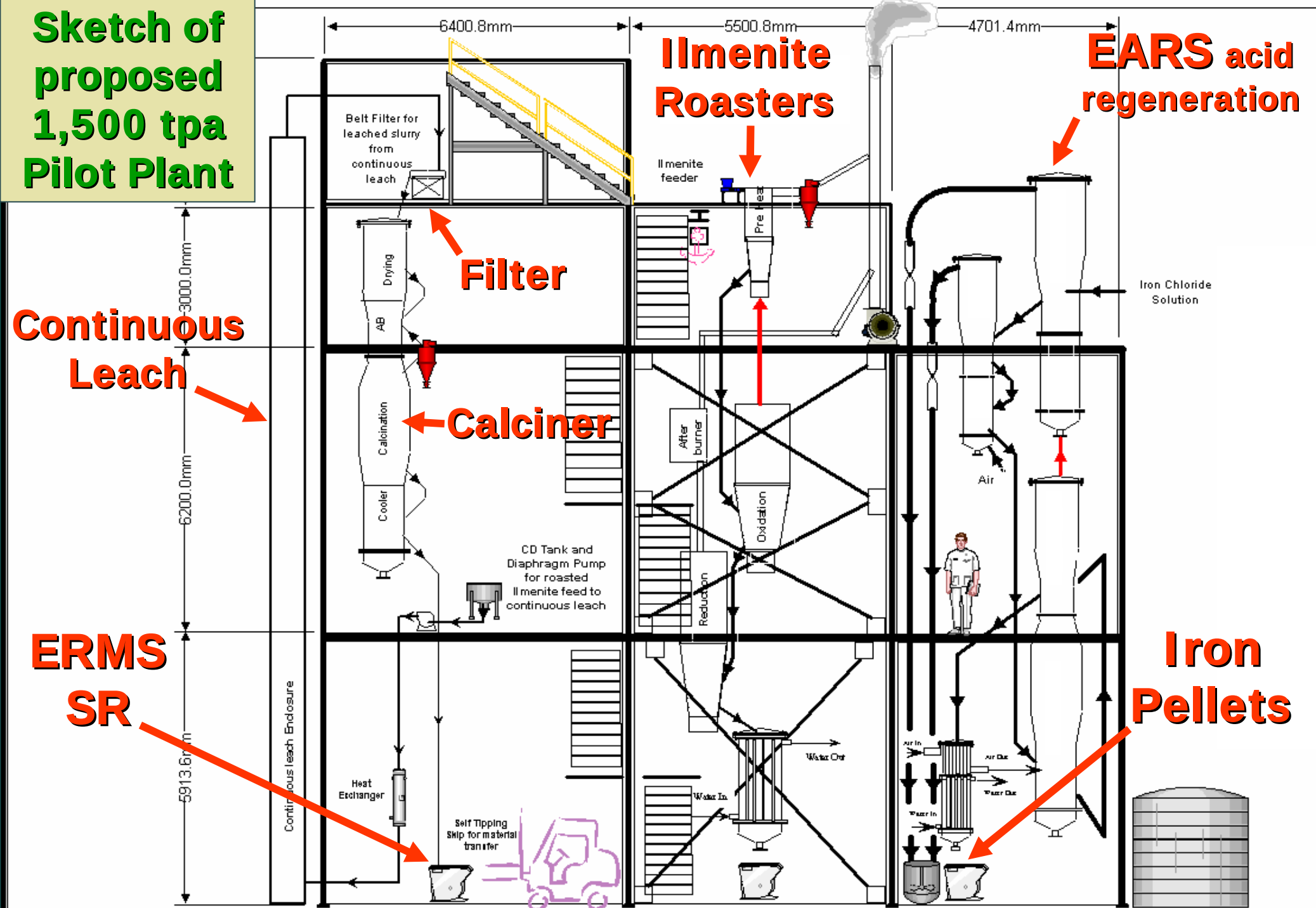
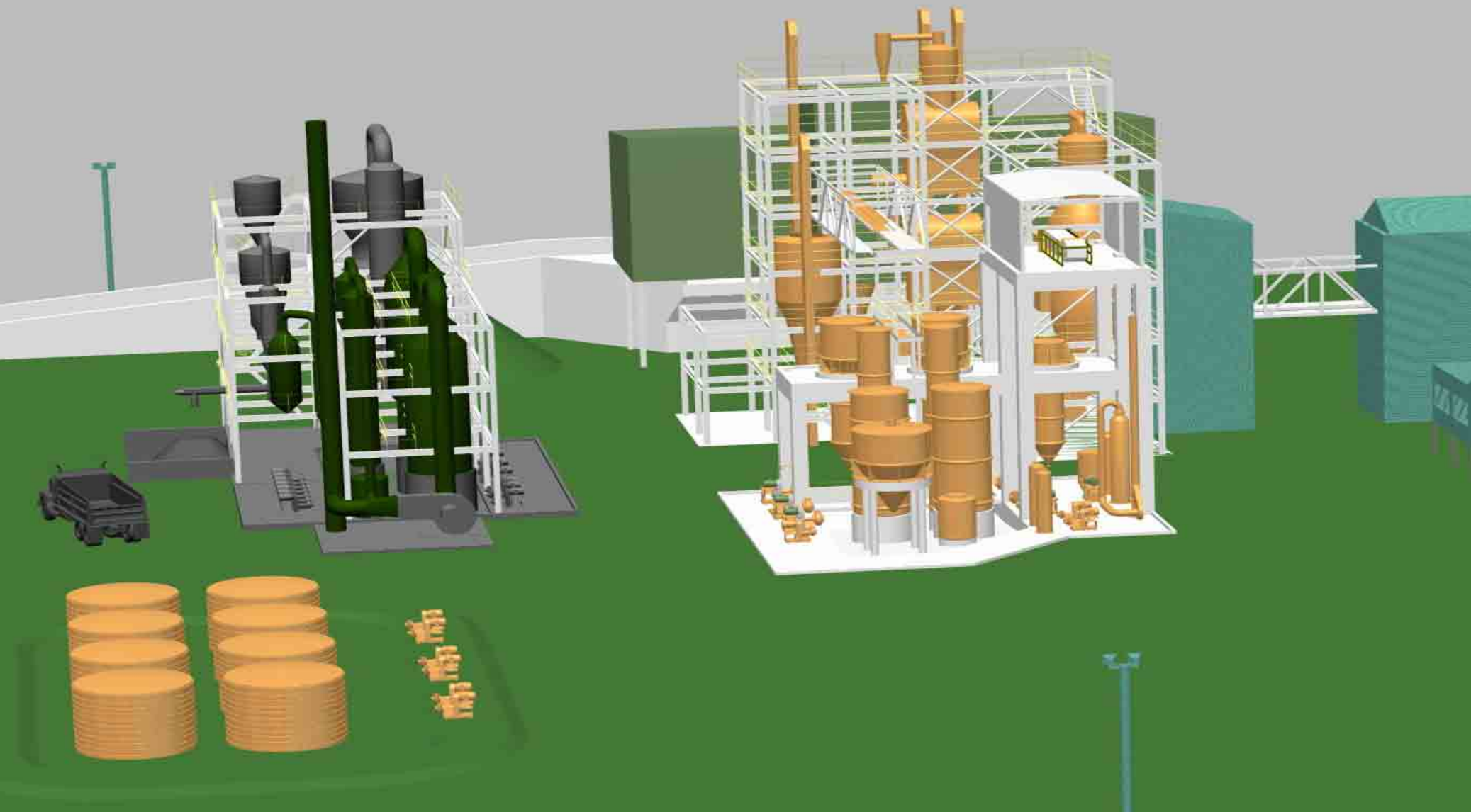
Process Tower Refurbishment

Old Roasters

New Roasters


Sketch of proposed 1,500 tpa Pilot Plant
6400.8mm
5500.8mm
4701.4mm
Ilmenite Roasters
EARS acid regeneration
Belt Filter for leached slurry from continuous leach
Ilmenite feeder
Filter
Drying
AB
Iron Chloride Solution
Continuous Leach
Calciner
Calcination
Cooler
After burner
Oxidation
Reduction
Air
CD Tank and Diaphragm Pump for roasted Ilmenite feed to continuous leach
3000.0mm
6200.0mm
5913.6mm
ERMS SR
Iron Pellets
Continuous Leach Enclosure
Heat Exchanger
Self Tipping Skip for material transfer
Water In
Water Out
Air In
Air Out
Water In
Water Out

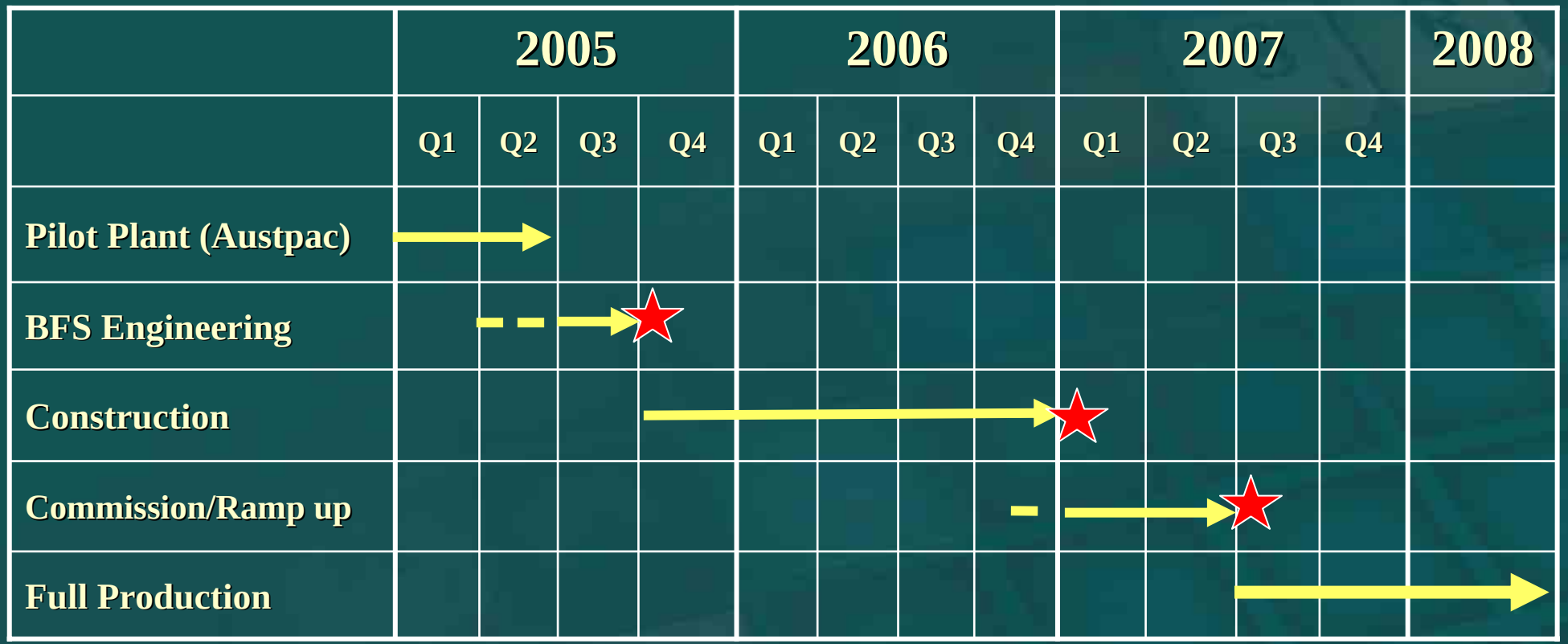
The 30,000 tpa ERMS SR Project, Eastern Australia



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**
  - **Make-up acid** — **1,000 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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Current Status

- Emerging SR producer; 30k tpa – Eastern Australia
- Future growth for ERMS SR:
  - Murray Basin – Iluka, others
  - India – huge high grade resources need ERMS SR
  - Others – Africa, North America
- LTR Roasting:
  - New Zealand Steel – 2.5 tph plant, proven technology
  - BeMaX – Murray Basin; 15 tph plant in Stage 2
  - Others
- EARS acid regeneration:
  - Steel – pickling for galvanising or coating
  - Nickel – Inco testwork, proven for nickel chlorides