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The TecEco Newsletter

Keeping you informed about the eco-cement project. Issue 8 5th September, 2000

Hi to everyone – may apologies for the time gap between newsletters. We have been busy!

AGO Funding Application

The company have lodged a major application with the AGO for funding in conjunction with QMAG (Queensland Magnesia Pty. Ltd.) and William Wallbank and Sons Pty. Ltd. (Wallbank). The application is for over $ 10 million, however this is not a high figure given the tonnages of CO2 abated. ($ 2.69 per tonne abated)

Qmag

Queensland Magnesia is a subsidiary of Australian Magnesium Corporation Limited. The parent company own the largest magnesite deposit in the world and are behind the new magnesium metal project at Stanwell Queensland

Wallbank

William Wallbank and Sons Pty. Ltd. are a major Australian manufacturer of brick making machinery and brick presses.

Brick pressing technology is ideally suited to the manufacture of fly ash bricks, a technology still in a developmental stage around the globe but with huge potential given the stockpiles, low utilisation rates and global production of fly ash in the order of 600,000 million tonnes.

Although fly ash bricks a can be made with Portland cement the use of magnesia adds value in a number of ways. The bricks are lighter, just as strong and most importantly have much lower embodied energy and produce less CO2 as well.

The AGO Proposal

The objective of the project submitted is to develop and deploy magnesium eco-cements and in particular develop mortars and a demonstration fly ash brick making capacity.

Magnesium cements have far greater potential for abatement than Portland cements, the manufacturing techniques for which are nearing peak efficiencies. Within the Portland cement industry further abatement such as CO2 capture and use of low carbon fuels is costly.[1] [2] The new binders developed by TecEco are inherently more energy efficient with substantially less CO2 emissions.

The total project application includes three related sub projects:

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[1] Iea Greenhouse Gas R & D Program Report No PH3/7.

[2] Hendriks C.A., Worrell E, de Jager D., Blok K., and Riemer P. *Emission Reductions of Greenhouse Gases from the Cement Industry*. International Energy Agency Conference Paper

1.The development, testing and deployment of revolutionary new technology magnesium eco-cements;

2 Initiation and establishment of manufacture and marketing of magnesium eco-cements and mortars

3.Initiating, establishing, testing, manufacturing and marketing of eco-cement stabilised fly ash bricks utilising innovative new brick making technologies. (as detailed in the enclosed spreadsheets)

All proponents are committed to the development and deployment of magnesium eco-cements and eco – mortars as well as developing a fly ash brick making capacity. AGO support will provide leverage facilitating the raising of private equity.

The long run economies of scale are superior to Portland mortars and cements due to:

1. Large scale mining of magnesite in Australia & overseas resulting in potentially lower operational costs.
2. Superior thermodynamics

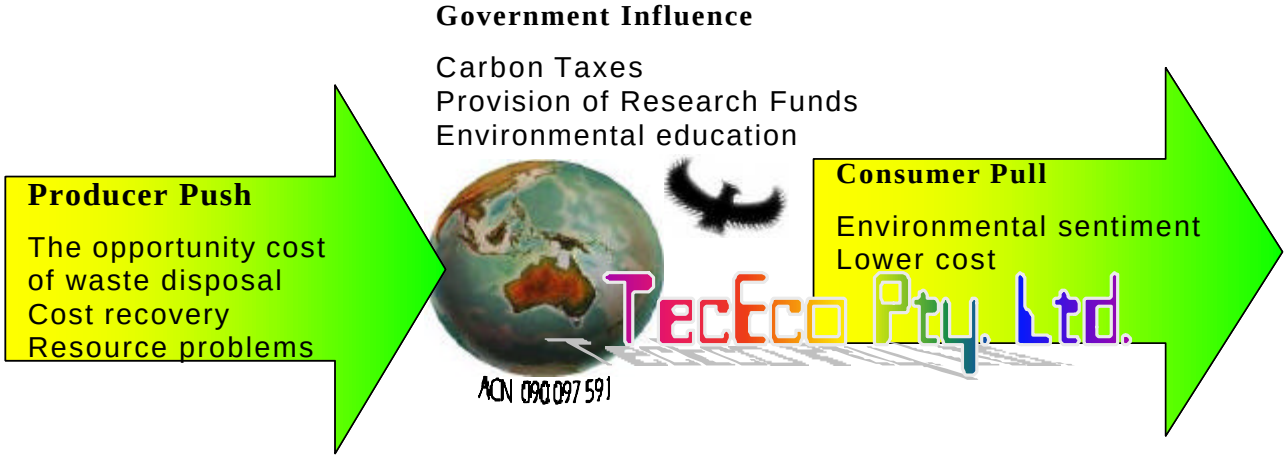
Eco cements are more suitable than Portland cements for following uses:

- Mortars (abatement calculated).

- Eco-cements (approximate abatement calculated):
  Stabilising agents in the production of “earth” buildings
  Grouts & drill hole cements
  Pellet production
  Controlled low strength materials (CLSM’s)
  Soil stabilisation/solidification
  Agglomeration of furnace feeds
  Waste and toxic waste immobilisation/fixation

- Waste utilisation and capture (including manufacture of fly ash bricks – abatement calculated).

TecEco eco-cement mortars, eco-cements and flyash bricks are driven by a number of “push” factors as well as “pull” factors (see diagram below)



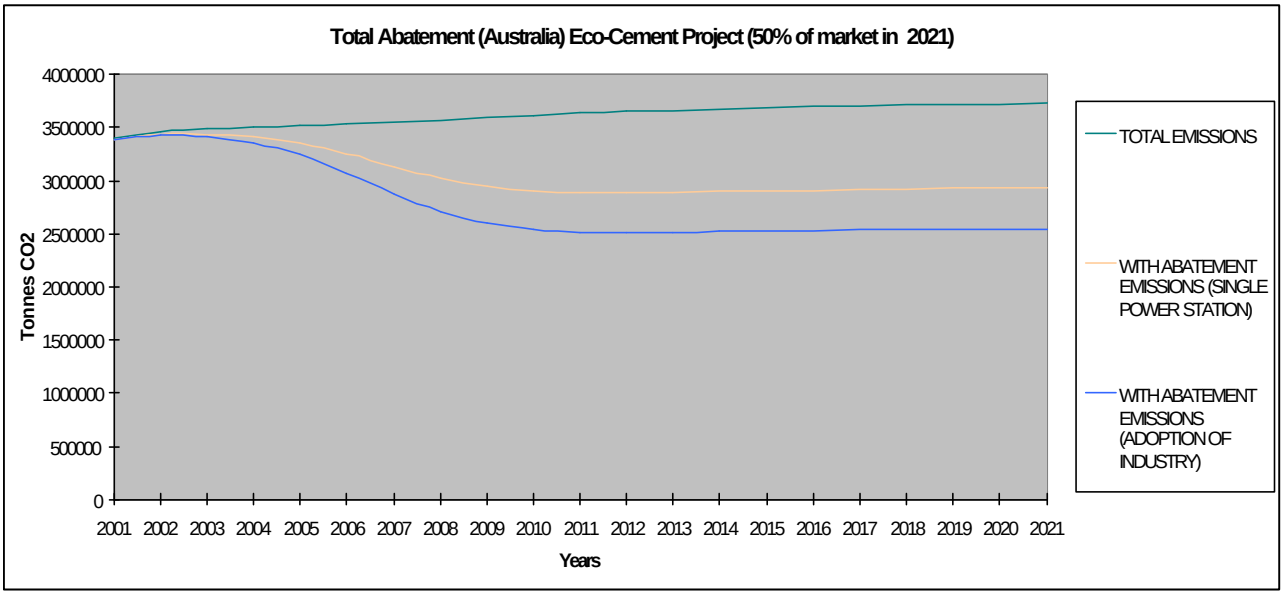
Abatement

We have finally completed complex abatement calculations and given a maximum of 50% of the market for bricks, mortars and all other uses of Portland cement in 21 years (defined as {(Production + net imports of Portland cement) – (Use in brick mortars + masonry mortars + masonry units + readymix)}/4) in Australia the figure for abatement in the period 2008 – 2012 is a colossal 5193186 tonnes. The figure for 2013-2017 as 50% of the market is captured is 5816467 tonnes

SUMMARY ABATEMENT

ABATEMENT 2008 - 2012		**SINGLE POWER STATION**	**ADOPTION BY INDUSTRY**	**CONFIDENCE LEVEL**
Net abatement in CO2 emissions - eco-cement/flyash brick	Mt CO2-e	210135	1974672	High
Reduction in CO2 emissions with substitution eco-cement for Portland cement in mortars	Mt CO2-e	877427	877427	High
Reduction in CO2 emissions with substitution eco-cement for Portland cement in uses suitable for eco-cements	Mt CO2-e	2341087	2341087	High
	Mt CO2-e	3428649	5193186	High
TOTAL ABATEMENT 2008 - 2012	Mt CO2-e	3428649	5193186	High

ABATEMENT 2013 - 2017				
Net abatement in CO2 emissions - eco-cement/flyash brick	Mt CO2-e	255185	2156653	High
Reduction in CO2 emissions with substitution eco-cement for Portland cement in mortars	Mt CO2-e	951505	951505	High
Reduction in CO2 emissions with substitution eco-cement for Portland cement in uses suitable for eco-cements	Mt CO2-e	2708309	2708309	High
	Mt CO2-e	3914999	5816467	High
TOTAL ABATEMENT 2013 - 2017	Mt CO2-e	3914999	5816467	High



Our Thanks to Referees

A number of eminent scientists and others have provided TecEco with references and we wish to thank them.

Abatement Calculations			
Name:	Dr David McDonald		
Position:	Professional scientist		
Organisation:	CSIRO Marine, Hobart		
Telephone:	03 62325222	Fax:	03 62325000

Dr David McDonald is a professional econometrician & mathematical modeller, a fellow of the Modelling & Simulation Society of Australia & New Zealand, a member of the American Statistical Association a member of the Econometric Society and on the editorial board of the International Journal of Environmental Modelling & Software.

Statistics for Abatement Calculations			
Name:	Dr Selwyn Tucker		
Position:	Professional scientist		
Organisation:	CSIRO dbce, Melbourne		
Telephone:	03 92526000	Fax:	03 92526249

Merit			
Name:	Emeritus Professor Don Nicklin		
Position:	Consultant. Member PMSEIC & IR&D boards etc.		
Organisation:	Niche Consulting Services Pty. Ltd. (retired University Qld.)		
Telephone:	07 32892298	Fax:	07 32892866

Emeritus Professor Don Nicklin was born in 1934 in Home Hill, North Queensland, and studied at Brisbane Grammar School, the University of Queensland and the University of Cambridge. He worked for some years with du Pont in North America before joining the Department of Chemical Engineering at the University of Queensland where he served for periods as Head of the Department, Dean of the Faculty of Engineering and Pro Vice Chancellor. In 1993 he left the University to practise as an independent consultant. He is on the Board of TICOR, is Chairman of the Board of Austa Energy Corporation Ltd, is Chairman of the Board of the Centre for Mining Technology and Equipment and is a member of the Industry Research and Development (IR&D) Board. He currently serves on the Prime Minister's Science, Engineering and Innovation Council (PMSEIC). During a period on the Board of the Queensland Museum, he was instrumental in setting up the Queensland Sciencentre, and is Chairman of its Management Committee. He was awarded the Chemeca Medal in 1987 (the highest award within the chemical engineering profession in Australia); he is a Fellow of the Academy of Technological Sciences and Engineering; and was made an Officer of the Order Australia in June 1996. His wife Joanna practised as an Occupational Therapist, and they had six children.

Merit			
Name:	Warren Jones		
Position:	Director, Environmental Planning & Scientific Services		
Organisation:	Dept. Primary Industries Water and Environment, Tas.		
Telephone:	03 62336336	Fax:	62 336800

Merit			
Name:	Peter Duncan		
Position:	Director		
Organisation:	Omnipol Australia (former federal minister)		
Telephone:	08 82674990	Fax:	08 82672370

Technical Merit			
Name:	Christian Schardt M.Sc.		
Position:	Geochemist, PHd student and Fullbright scholar		
Organisation:	University of Tasmania		
Telephone:	03 62341351	Fax:	

Technical Merit			
Name:	Ralph Botrill M.Sc.		
Position:	Minealogist and Petrologist		
Organisation:	Mineral Resources Tasmania		
Telephone:	03 62338359	Fax:	03 62338338

Willingness to Participate			
Name:	Dr Barry O'Grady		
Position:	Acting Head,School of Chemistry		
Organisation:	University of Tasmania		
Telephone:	03 62267886	Fax:	03 6226 2858

Willingness to Participate			
Name:	Professor Frank Bullen		
Position:	School of Engineering		
Organisation:	University of Tasmania		
Telephone:	03 62262131	Fax:	03 62267863

Intellectual Property Aspects			
Name:	David Gibson B.Sc. (Hons)		
Position:	Patent Attourney		
Organisation:	Freehills, Carter Smith Beadle		
Telephone:	03 92881577	Fax:	03 92881567

Export Potential			
Name:	Robert Boylan		
Position:	Investment Commissioner North Asia		
Organisation:	Invest Australia		
Telephone:	03 92881577	Fax:	03 92881567

Use fly ash			
Name:	Richard Elkingon		
Position:	Manager Corporate Relations and Environment		
Organisation:	Loy Yang Power		
Telephone:	03 51732992	Fax:	03 51732038

Use fly ash	
Name:	Stuart Kempsey
Position:	Manager Victoria

Organisation:	Pozzolanic Enterprises Pty. Ltd.		
Telephone:	03 96465188	Fax:	03 96466160

Equity raising			
Name:	Paul Clarke Wellsmore		
Position:	Financing Manager		
Organisation:	Elm Financial Services		
Telephone:	07 55704666	Fax:	07 55704999

Equity raising			
Name:	Hugh Toll		
Position:			
Organisation:	Macquarie Direct Investment Limited		
Telephone:	02 82323333	Fax:	02 82324111

NOTE
Interest has been expressed by professor F Glasser , Aberdeen university (UK) in examining eco-cements. Prof Glasser is a world authority on cement chemistry.

Corporate Documentation

The following are available electronically (please email us.)

DOCUMENT	ELECTRONIC FILE ALSO SUBMITTED	FILE TYPE	NO PAGES	NOTE
TecEco Strategic Summary	StrategicSummary150700.doc	Adobe acrobat	4	A nuts and bolts summary.
Research & Development Plan	TecEcoR&D300500.pdf	Adobe acrobat	43	The research and development plan.
TecEco Business plan	TecEco180500.pdf	Adobe acrobat	108	The main business plan
Independent Appraisal P Godfrey	IndependentAppraisalGodfrey090500	Adobe acrobat	23	An independent appraisal by P Godfrey commissioned by DSD (Tas)
Technical document	Confidential	Confidential		Our secret files
Abatement	AGOEcoCementAbatement.xls & AGOStatistics.xls	Microsoft Excel		Abatement calcs
Budgets & tables	ProjectR&Dschedule&Budgets180500.xls	Microsoft Excel		Budgets and tables We suggest you do not print the Penn World Table spreadsheet.
Table References	References&Interest050900.xls	Microsoft Excel		List of referees
References	TecEcoRefsNotConfidential050900.zip	Zip file		References as Microsoft Windows 98 image files (awd). Ask for gifs or tifs if you cannot read awd files
Tendon Tech Prestressing Technolog	TechTendonSummary250800.PDF	Adobe acrobat	5	Tendon Tech prestressing technology summary
Tendon Tech Prestressing Technolog	TendonTechTechnology250298.PDF	Adobe acrobat	50	Tendon Tech prestressing technology document