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The TecEco Technology Must be Good if Others are Trying to Take Credit for It: Comments on the Announcement by Dr Cheeseman of Imperial College

On the 1st May 2008 news started propagating that Dr Chris Cheeseman of Imperial College London had invented a carbonating magnesium oxide cement. It originated in an article dated 1 May 2008 published by CNPlus, a Construction news publisher in the UK and has also appeared in a feed to aggregateresearch.com and many other places.

If Dr Cheeseman was correctly reported TecEco Pty. Ltd. (TecEco) utterly rejects the contents of the news story as being a total misrepresentation as John Harrison our MD had previously shown him how to make the carbonating magnesium cements reported as invented by him.

According to the report "while carrying out research on one such compound the Imperial team stumbled upon the fact that the resulting cement also absorbed further CO2 from the atmosphere as it hardened." TecEco achieved the development of Eco-Cements, our proprietary name for the same carbonating magnesium cement Dr Cheeseman is reported as having invented, some years ago and have many exemplars around the world. There is even a building in the UK made with carbonating magnesium cements supplied by TecEco that "hardened" in the manner described. The offending articles are available at under Third Party RD & D on the TecEco web site as links in the text on that page.

It would seem from the report that the only thing the researchers at Imperial College have stumbled over is the truth. Eco-Cements are magnesium oxide hydraulic cement blends that in permeable substrates will harden by taking up CO2 and water from the air and John Harrison, the managing director of TecEco who invented them in 1998-99 lodged a PCT to cover them in 2001. These same cements are according to the report exactly what Dr Cheeseman is now claiming he has invented.

That John Harrison of TecEco invented these new carbonating magnesium cements has been widely reported by the media around the world, the first major story being by Fred Pierce who wrote "Green Foundations", published in New Scientist Magazine, vol. 175 issue 2351, p38 on the 13th July, 2002. Further media reports, documentaries and other media confirming Mr. Harrison's invention are available under Media on the TecEco web site. Mr Harrison has since prepared many papers and presentations given at many major conferences around the world recording the fact from the very first that in porous concretes cements containing magnesium oxide carbonate and these same cements are also documented in the Archives of the TecEco web site going back many years.

Dr Cheeseman telephoned Mr. Harrison on the 8th May 2008 and claimed that the report was incorrect and not his doing. This was not confirmed by Mr. Alasdair Reisner the publisher of the original article. On the contrary, when contacted Mr. Reisner stated that Dr Cheeseman made it clear to him that his team had invented something new. Because of this and because the new Imperial College spin off company to develop the cements is called Novacem and Nova suggests "new" TecEco do not believe these later claims by Dr Cheeseman that he was not trying to claim credit for the invention of the cements invented by Mr. Harrison and that CNPlus had not reported him correctly. TecEco warn Dr. Cheeseman and others that they cannot reinvent history and Mr. Harrison reserves his options to take further action if necessary in relation to the misrepresentation and injuries to his reputation as a scientist that have resulted from it.

As Dr Cheeseman has had little experience with TecEco cements and not collaborated with the company since 2005 and as our patents and formulation know how both have very wide relevance we do not believe anything new or that we have not anticipated has been invented by him or his team.

Unbelievable as it may seem when we considered the news of Dr Cheeseman's "invention" in the context of our previous dealings with him and other UK researchers we became concerned that one explanation was that there could be another agenda. For some time authors from the BRE, Imperial College and Cambridge university in partial or complete collaboration (Cambridge and Imperial college certainly collaborated) have been investigating our cements and have reported in the papers they have produced that carbonation was ineffective unless forced. This is not true as we explain in our comments on their papers under Third Party RD & D. There are only two possible reasons for their failings. They were either unable to understand the meaning of porosity as explained in detail by Mr Harrison or they were deliberately not making the concretes they made porous.

We now suspect the latter as part of a deliberate strategy to discredit Mr. Harrison and the TecEco technology. It now seems very possible that the agenda all along was at first to make sure our very important technology was stillborn as it was a potential threat to Portland cement and then as sequestration became more important and thus the value of the technology increased, to take control of its development. We have also received information that a large company may have been behind this - at least in the first instance. TecEco made it quite clear how to make carbonating magnesium cement concretes from the very first papers and presentations given by Mr Harrison yet none of the researchers involved at either the BRE, Cambridge University or Imperial College managed to follow these instructions or achieve efficient carbonation. The research undertaken and papers they produced were in our opinion of woeful quality and we now believe possibly deliberately designed to discredit our technology, Mr Harrison and TecEco. Our comments about them are available on the Third Party RD & D page on the TecEco web site. The alternative which is that all concerned were not able to understand the meaning of the word porosity is unlikely.

The evidence is compelling. Why else would the BRE make formulations out of CEN reference sand designed for minimum porosity when John Harrison our principal scientist and managing director has advocated since the beginning that porosity is essential because when it is increased beyond a threshold point the result is gas permeability, necessary for carbonation.(See the web page on The Importance of Particle Packing) The

very first paper ever published by Mr Harrison which was before the BRE started work on TecEco cements makes it clear that pozzolans are optional and for carbonation porosity is essential. (See "New Cements Based on the Addition of Reactive Magnesia to Portland Cement With or Without Added Pozzolan" by John Harrison) In this early paper we made it clear in the final abstract, also available to Dr Cheeseman, the BRE and other researchers in the UK that "TecEco have demonstrated that reactive magnesia can be blended with other hydraulic cements such as Portland cement and usually a pozzolan in virtually any proportion and result in concretes that are theoretically more durable and in the case of porous materials such as bricks, blocks, pavers and mortars, that carbonate and therefore sequester CO2."

A draft of this paper which was the first delivered at a major Australian conference on the 17th-19th July 2003 was sent to Dr Keith Quillen at the BRE on the 11th April 2003. His comment was that "Overall it reads well" yet the BRE team insisted on deliberately reducing porosity by using CEN reference sands designed for use with BS EN 196-1: 2005 and where minimum porosity is required for strength. As a consequence of this the findings regarding carbonation in the BRE final report findings were inconclusive and contradictory.

Dr Al Tabbaa of Cambridge University who was collaborating with Dr Cheeseman was also provided a reference to "New Cements Based on the Addition of Reactive Magnesia to Portland Cement With or Without Added Pozzolan" and at least three papers produced by her research group refer to it. The title makes it clear and later papers and presentations available on our web site make it even clearer that pozzolans are not mandatory for a carbonating mix and porosity essential yet the group in almost all experiments used dense high fly ash mixes that result in dense concretes that could not possibly carbonate. Click here for our criticisms of the Cambridge papers.

Dr Al Tabbaa and her team from Cambridge university were collaborating closely with Imperial College and we wonder why they made high fly ash concretes which could not possibly carbonate other than to be able to conclude that our cements and concretes made with them were ineffective? They did so in spite of numerous papers published by John Harrison specifying porosity including and after the first paper published at an important conference mentioned in relation to the BRE above. Nic Vlasopoulis, the student at Imperial College collaborating with the Cambridge project at the time worked closely with Dr Cheeseman and John Harrison emailed him a number of papers explaining the porosity requirement including one titled "Carbonating and Hydraulic Mortars - the difference is not only in the binder. Aggregates are also important." and these were copied to Dr Luc Vandeperre who at the time was at Cambridge University working under Dr Al Tabbaa and has since joined Imperial College. In spite of sending them papers explaining how to successfully make carbonating concretes and much verbal and written assistance these researchers in their various papers continued to make dense concretes that could not possibly carbonate and from these inappropriate experiments, concluded like the BRE that concretes made with our cements did not carbonate effectively. Our comments on the terrible papers they produced have been for some few weeks available on the TecEco web site under Third Party RD & D

In spite of every paper that John Harrison has ever written or presentation he has ever given in relation to carbonation mentioning porosity as the key (See Conference Papers and Conference Presentations and for technical detail see our web page on The

Importance of Particle Packing) all papers written by UK researchers indicate that they could not achieve efficient carbonation. Now according to CNPlus Imperial College have announced that they have "discovered" that porous concretes made with magnesium oxide carbonate viz: "The binder produced by the team is understood to absorb CO2 most readily with maximum exposure to the air, suggesting its optimum use would be with - porous products such as concrete blocks." This is exactly the same conclusion we had come to years before and that is explained in so many papers and presentations as well as on the web site for some years. Just in case they were thinking of it Imperial college cannot claim independent invention either because we have evidence that we referred Nic Vlasopoulis who was a student under Christopher Cheeseman to our early papers in which the requirement for porosity is explained in detail in an email on the 9th March 2005. We also spent some time photocopying a block making manual from Columbia which we dispatched to him with the advice that he should follow the formulation strategy in the manual. The reason was of course that dry block mixes made in accordance with instructions in the manual are porous.

We have no choice but to conclude that there is strong evidence that Cambridge university under Dr Al Tabbaa, Dr Cheeseman from Imperial College and possibly the BRE deliberately made concretes that were not porous so they either could not carbonate or did not carbonate very well in order to discredit John Harrison, TecEco and the technology. The alternative - that Dr Chris Cheeseman and his team as well as their collaborators at Cambridge university and possibly the BRE cannot follow simple instructions is also possible but unlikely. In his phone call to us on the 8th May, 2008 Dr Cheeseman tried to distance himself from the Cambridge team with whom he collaborated. We have emails from Dr Al Tabbaa and a copy of the applications for funding confirming the collaboration.

Even if the report from CNPlus is only partly true, taken with everything else there is a strong case supporting the contention that there has been another agenda whereby Cambridge University and Imperial College London as well as possibly the BRE were collaborating in an attempt to deliberately discredit the technology, Mr. Harrison and TecEco. They were doing the opposite of what was advised and making concretes that were not porous and then claiming carbonation to be ineffective. The possibility remains that they thought that if they kept it up long enough they would drive TecEco into financial difficulty and then be able to take control of the technology by making concretes that are porous (and thus permeable), claiming they had succeeded where we had failed in spite of the many tonnes of exemplars we have produced around the world of Eco-Cement (our carbonating cement) concretes

The TecEco technology must be good for Dr Cheeseman and Imperial College in collaboration with the BRE and Cambridge University to go to the incredible trouble they appear to have gone to discredit it. Their research inadequacy or plot if it is has cost our company a fortune and the planet vital years. We know our technology is important as it represents the only safe form of sequestration that can potentially be driven by profit. Geosequestration will not work as leakage eventually exceeds the amount that can be annually sequestered and there are no other solutions available. Sequestration by building with man made carbonate in the built environment will on the other hand solve the global warming problem without downside risks.

As the true inventor Mr. Harrison is aggrieved by Dr Cheeseman's reported claims, particularly so as he met all concerned including Dr Cheeseman in 2003 and 2004 and

described the TecEco innovation to them and at conferences we know Dr Cheeseman attended. The BRE, Dr Al Tabbaa and Dr Cheeseman were all further given samples of porous (and thus permeable) carbonated magnesium cement concretes made by Mr. Harrison during this period and told how to make them. There are also on the record many email correspondences about the new carbonating magnesium oxide cement and offers to collaborate were made by Dr Cheeseman which Mr. Harrison accepted but that Dr Cheeseman never followed through with.

We suspect at first the agenda with the BRE was to get rid of the technology as a potential threat to Portland cement. Dr Cheeseman confirms our technology as a potential threat when he is quoted as saying "It will be a long process to see something that can compete with traditional Portland cement, but there is that potential." TecEco also suspect that later Dr Cheeseman of Imperial College and Dr al Tabbaa concluded that rather that collaborate they could take control of the technology as sequestration had in the intervening period become very important and financially worthwhile. We surmise that they thought TecEco was in a too weakened state thanks to their efforts to resist. Understandably John Harrison is now very angry.

TecEco Demand an Investigation to Find Out How Public Money Could be Used to Allow the Most Important Technology Perhaps in the World to Be Discredited for What May Amount to Commercial Reasons

TecEco plan to ask for an investigation into the ineffectiveness of the UK research and hopefully this will uncover the truth. Whether deliberately or otherwise TecEco, it's technology and it's managing director have been discredited using money provided by the British taxpayer. In relation to the new Research project at Imperial college the enquiry should further examine the basis of the funding application to the Department for Innovation, Universities and Skills Technology Strategy Board by Dr Cheeseman and his research group as according to all reports it is based on a misrepresentation that he and his team have discovered something they did not discover.

TecEco agree with Dr Cheeseman that TecEco Eco-Cement is potential competition for Portland cement. The technology is also very important as civilisation is in a parlous state due to the CO2 problem and the cements represent a profitable pathway to sequestration in the built environment on a massive scale using man made carbonate. See Gaia Engineering synopsis.

Unfortunately, thanks to the efforts of the BRE, Dr Al Tabbaa and Dr Cheeseman the introduction of the technology to the cement industry has been delayed by several years. We know a large company may possibly have been behind the initial attempts to discredit the technology because it was a potential threat to Portland cement. After their drawn out campaign to weaken TecEco financially to reduce the threat to Portland cement the facts suggest that when they realised that carbon trading was adding tremendous potential value to TecEco's carbonating magnesium cement technology, Dr Cheeseman, his new company, Imperial college and others collaborating thought they could take control by publicly taking credit for the innovation.

Given the urgency of solving the CO2 problem it is important that researchers interested in the TecEco sequestration technology using man made carbonate in the built environment adopt a more honest approach as much more will be achieved in the short time we have left to remove CO2 from the air.

We will be demanding an investigation to find out the truth and particularly how public money could be used for such a dismal or alternatively possibly clandestine purpose. Hopefully out of the investigation, the British and other governments will realise that in the ensuing crisis the competitive approach to research funding which results in avaricious, greedy and dishonest behaviour may not be appropriate.