



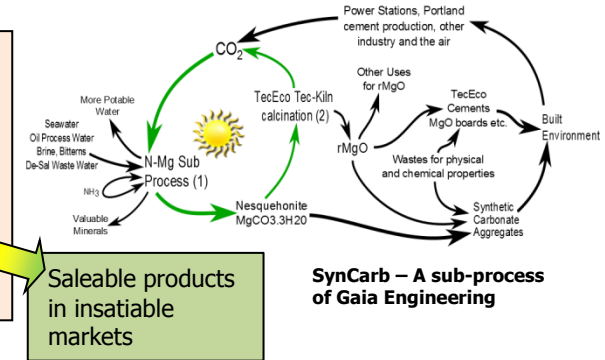
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## SYNCARB – PROFITABLE CARBON CAPTURE AND STORAGE



SynCarb Sequestration  
Simple  
Scalable  
Low up front capital costs  
No environmental impacts  
Easily implemented  
Industrially symbiotic and deployable over a wide geographical area

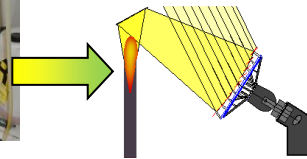


Saleable products in insatiable markets

SynCarb – A sub-process of Gaia Engineering

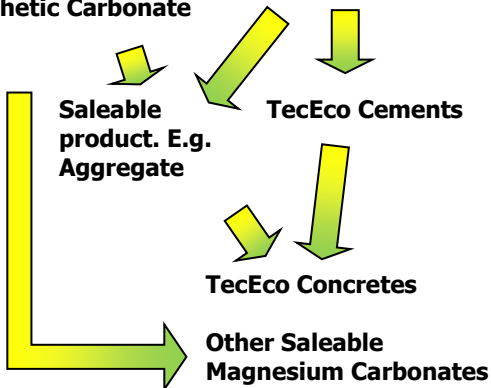


**Carbon capture** from the burning of fossil fuels and manufacture of Portland cement



Production of Synthetic Carbonate

TecEco Tec-Kiln



The Nesquehonite can be sold directly, converted into other saleable magnesium compounds or calcined in our Tec-Kiln without releases (step 2) to make rMgO. The CO<sub>2</sub> emissions from step 2 can be recycled back into step 1 resulting in the precipitation of more magnesium carbonate.

rMgO (reactive magnesia) is a commodity product and can be sold or used as a binder to agglomerate massive amounts of magnesium carbonates and potentially other wastes to make synthetic aggregate. rMgO is also the basis of TecEco Cements.

The acid produced can be sold or used industrially to, for example, extract metals from lateritic ores thereby adding value.

John Harrison is an internationally recognised scientist who also has a background in economics and accounting. He is a magnesium binder expert and helped start the green cement movement. John was the first to propose a synthetic carbonate built environment as a solution to global warming and has been working on all the technology components for the SynCarb process for many years.

Fred Pearce in New Scientist had the following to say about John's magnesium binder technology:

*"THERE is a way to make our city streets as green as the Amazon rainforest. Almost every aspect of the built environment, from bridges to factories to tower blocks, and from roads to sea walls, could be turned into structures that soak up carbon dioxide- the main greenhouse gas behind global warming. All we need to do is change the way we make cement."*  
(Pearce, F., 2002. Green Foundations. New Scientist, 175(2351), pp.39-40.)

The TecEco SynCarb sub-process of Gaia Engineering produces large quantities of magnesium carbonates such as nesquehonite (MgCO<sub>3</sub>.3H<sub>2</sub>O) from waste magnesium cations (Mg<sup>++</sup>) such as found in oil process water, desalination waste water, bitterns and brines (step 1).

The SynCarb process can produce synthetic carbonate aggregates and the potential for sequestration is much greater than originally reported by New Scientist

TecEco have successfully developed and patented the reactive magnesia cements invented by John Harrison the managing director and are now deploying the revolutionary new Gaia Engineering SynCarb process to sequester significant quantities of CO<sub>2</sub> by converting it and other wastes to resources such as aggregate for use in concretes.

The potential for engineering the earth's climate is huge. All carbon dioxide flue gases and even CO<sub>2</sub> from the air can be sequestered because if magnesium ions in brines such as seawater are included the supply is unlimited. All anthropogenic emissions past and in the future can therefore safely be stored in marketable stable synthetic carbonates using the TecEco SynCarb process. That is why we call our technology Gaia Engineering.

The World Business Council for Sustainable Development (WBCSD), International Energy Agency (IEA), UN and many other international organisations are calling for efficient carbon capture which has so far not been cost effective. That is, until we announced our SynCarb process.

TecEco will contract with selected companies that are prepared to adhere to strict secrecy and fund development to build SynCarb plants to sequester carbon dioxide in what is a perfect industrial ecology at a cost that is so low that in most cases a profit can be made on the carbon credits alone.

The TecEco Gaia Engineering SynCarb technology for making synthetic carbonate is potentially very profitable because it has low capital costs, few process steps and low process energies. Unlike other options for cheaply solving the global warming problem being considered, there are no legacies for future generations to deal with. Other sequestration technologies, unlike the SynCarb process, do not produce saleable product such as cheaper, better building materials.

The SynCarb process utilises waste sources of magnesium ions, such as from bitterns, desalination or oil process waste water, and combines them with magnesium ions to produce nesquehonite, hydromagnesite or other saleable magnesium carbonates (Step 1 - the N-Mg sub process in the diagram). The carbonates produced can then be agglomerated with and without other industrial wastes with our Eco-Cements made in our new kiln. The manufacture of synthetic carbonate aggregate in this way is an example of geomimicry. (Mimicking the way nature stores carbon as carbonate sediment)

We are building our demonstration plants into lockable containers, at least two being required for a full working implementation, one for the continuous capture of CO<sub>2</sub> and the other for the production of reactive magnesia (rMgO) in our new kiln that operates in a closed system and combines calcination with grinding.

Our SynCarb process is simple science combined with smart process technology and can run 24/7 under the control of computers. The specific configuration and design of each installation will depend on the waste streams available and a full open source LCCA that should convince the most cautious of clients of the low cost of the process involved is available on all our web sites.

TecEco: <http://www.tececo.com>

Gaia Engineering: [www.gaiaengineering.com](http://www.gaiaengineering.com).

TecEco LCCA tool: <http://www.tececo.com/downloads.tools.php>

We look forward to working with you to realise your vision of a sustainable business.

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