Making Money by Changing the Technology Paradigm

An obdurate cement industry is missing significant business opportunities offered by new materials technologies.

This article by John Harrison, managing director of TecEco Pty Ltd and the inventor of tec, eco and enviro-cements explains why so.

There is no more enduring business than the business of change and the technology paradigm defines what is or is not a resource. These words have far more significant meaning than when Paul Zane Pilzer wrote them (Pilzer 1990)

Stubbornly inflexible, the cement industry are sticking the philosophy “that if its grey its great and all we make goes out the gate.” In doing so significant business opportunities in the context of what Pilzer had to say about change and resources are being ignored.

The oil industry is responsible for even more emissions than the cement industry and in contrast seems prepared to reinvent itself. Evidence includes the diversification that has already occurred, and the willingness to embrace geological sequestration of CO_2 not just because more oil can be pushed out of existing reserves by the gas but because the industry believe it is most suitably positioned to bury it with know how in holes pipes and fluid transport. By cracking coal and oil to produce clean burning hydrogen widely touted as the fuel of the future oil companies will produce large amounts of CO_2. Burying it where it will be absorbed by the surrounding rock or at least indefinitely trapped in a world of costing of externalities through mechanisms such as carbon taxes, makes sense.

Using old tires to fuel kilns produces undesirable emissions and has other downsides and is a waste of molecules with high embodied energies, best recycled for their chemical composition or at least physical property. The use of supplementary cementitous materials such as fly ash and ground vitrified blast furnace slag closes loops and is commendable but will eventually be limited by supply.

There are significant emerging opportunities for cement industry participants in adopting new technologies such as the TecEco magnesian cement, kiln and waste utilization offerings:

- to improve the material significantly
- deliver new offerings to the market for more diverse uses
- reduce the impact of carbon taxes
- create a more sustainable built environment

Holding the cement industry back are:

- A failure to recognize business opportunities revealed by cultural change[1].
- A religious belief that the way the industry operates is how stakeholders including customers want it to.
- A lack of environmental responsibility
- An inability to think laterally

Paradigm technology shifts can occur for the better and have sometimes done so quite rapidly. I remember as a boy in London not being able to see much because of the smog. Just about every building used coal directly for heating and yet today there is no coal mined in the UK. Coal cellars are being converted into wine cellars and gone is the smog and early morning noise of delivery.

According to the UK Hadley Centre, most of the world's forests will begin to turn from sinks to sources - dying off and emitting carbon-by around 2040 (Gelbspan 2004). Recently Robin Batterham, Australia's chief scientist, said he supported the Federal Government's decision not to ratify the Kyoto Protocol on climate change because the reductions it set were not high enough. "I'm talking about enormous reductions - 80 per cent by the end of the century," Dr Batterham said. "Fifty per cent by 2050, I think, is realistic." (Batterham 2004) and in the UK, Sir David King, the government's chief scientific adviser, recently said "there is more carbon dioxide in the atmosphere than for 55 million years, enough to melt all the ice on the planet and submerge cities like London, New York and New Orleans". Dr King also said that climate change was a bigger threat than global terrorism. "We are moving from a warm period into the first hot period that man has ever experienced since he walked on the planet.....the heat wave of last summer in which 25,000 Europeans died had killed more people than terrorism, yet had not been given anything like the same level of attention.....I am sure that climate change is the biggest problem that civilisation has had to face in 5,000 years." (Brown 2004)[2]. The news from the Intergovernmental Committee on Climate Change is just as alarming.

Massive sequestration on a global scale is required. The built environment is our footprint on the planet, something like 70% of all materials flows and a patch on the planet we know well enough to change without fear of unforseen ramifications[3]. The concept of the built environment as a giant global carbon sink that utilises wastes is not only conceptually brilliant and would solve a lot of our problems. It's doable, low risk, visible and high reward for industry and governments.

Over two tonnes of concrete are produced per annum per person on earth and the associated materials flows are the biggest in the built environment. Contrary to lay opinion, concrete, even as it is today is also quite environmentally friendly having a relatively low embodied energy compared to other building materials. If emissions could be captured during manufacture using for example the new TecEco kiln technology then not only would cementitious composites be even more sustainable

[1] People are demanding sustainability, more so as they are realising that it need not necessarily cost more.
[2] See TecEco Newsletter 36, for details
[3] Compare this to the dangers of dumping huge volumes of ferrous sulphate into the oceans and other much talked about schemes.

but a new business opportunity in the form of the net carbon credits would emerge from using the material in substitution for other building materials such as steel and aluminium with much higher embodied energies and net emissions. To enable such cross substitution the concrete industry will however need to move beyond the aforementioned philosophy of “if its grey its great and all we make goes out the gate” to develop a range of more benign mineral binders using for example the new TecEco tec. eco and enviro-cement technologies which can incorporate a much wider range of other materials, to impart the properties required.

Solutions to problems are business opportunities and the inefficient process of recycling today undertaken for essentially “feel good” political reasons is well funded with monies that with a little effort by the concrete industry to incorporate wastes in mineral composites for their physical property rather than chemical composition to create a whole range of new materials suitable for substitution of other higher energy materials in the construction industry could fund the associated growth in market share.

Fundamental and unbiased market analysis is required. Missing is a proper evaluation of what today’s customers really want. This all important question addressed to a lay person would deliver answers such as tensile flexural and compressive strength, durability, light weight, ability to insulate and so on only some of which properties are being delivered.

Construction methods of the future will involve robotics requiring materials with Bingham plastic like rheology for erection by tireless machines that print buildings in a manner not unlike a plan printer. New mineral composites based on the TecEco technology and incorporating many waste materials can supply this new market as it technically emerges

Other business opportunities involving net emissions reductions will emerge in the new post Kyoto regime such as developments already being contemplated in South Africa under the clean development mechanism (CDM) by TecEco Pty. Ltd. utilising eco-cement.

It is time for change - so why all the opposition from an industry that would benefit by it?

References

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