

Correspondence between J. Freer and R.E. Robinson

Comment on the Journal Comment

Letter from J. Freer to R.E. Robinson

The first thing I read on receipt of the SAIMM *Journal* is the Journal Comment.

In the August 2015 issue, I was captivated by the third paragraph of your Comment as it reflects my thinking as part of the wider issue of energy for eternity – for what I call The Hydrogen Age.

Nor was your thinking missed by Cynthia Carol, one-time CEO of AAC, when she chaired the UN's Conference of Parties in Durban some years ago (COP approx. 16). She noted that what platinum sales to the motor industry were lost through 'Hydrocarbons Must Fall' would be more than made up by platinum sales to the same industry for their hydrogen fuelled fuel cells for the electric propulsion of vehicles of all sizes.

Regarding the wider issue, I would refer to a book titled 'Smelling Land – The Hydrogen Defense Against Climate Catastrophe' by David Sanborn Scott, published in 2007 by the Canadian Hydrogen Association www.h2.ca. I left two copies with the Dept. of Chemical and Metallurgical Engineering's library at Wits for loan to anyone who may be interested.

In it Scott defines what he calls 'hydricity' as the reversible reaction of electricity through water, which produces hydrogen and oxygen while hydrogen through a fuel cell produces electricity and water. The recovery of the water makes hydricity a form of activity for renewable energy where water is the energy source and hydrogen the energy carrier.

Toshiba has designed and is now manufacturing a hydrogen generator mounted in a container. Photovoltaic cells collect rays from the sun to generate electricity on-site for the electrolysis of water. Such a container could be sold to any 'garage' to produce hydrogen on-site to fuel the increasing number of hydrogen fuelled vehicles, especially all those present in the northern hemisphere.

So that's how I spend a lot of my time, gleaning new information where I can and then studying and deducing some interactions.

Reply to J. Freer from R.E. Robinson

Your letter brings back many happy associations of our work together for 50 years in the uranium and mining-metallurgy industry. I apologize for the delay in replying, but this letter has been dictated to my daughter who is punching the keys!

I am a very keen proponent of the fuel cell, particularly after Anglo American's announcement of their sponsorship in South Africa of the fuel cell supply installation for the Chamber of Mines building in Central Johannesburg. This along, with other world projects, makes me a strong supporter of this fuel cell technology as an area where South Africa should play a vital role, given our unique resources of platinum.

The most efficient development of platinum resources is critical if this evolution is to occur, with South Africa at the forefront. The second consideration is a portable, safe, and economic supply of hydrogen gas and its production from other materials (natural gas, methane, methanol), that can be easily and cheaply converted.

It is in this later aspect that we in South Africa can make an additional contribution of great significance. Recovery of mine by-products maximizes the opportunity for not only production of hydrogen gas, but also promotion of sustainable, educated, and prosperous communities.

We have a large and increasing number of engineering graduates emerging from our universities, along with a number of platinum-related projects to be defined and evaluated.