

Email to NAB dated 1/3/08 from Neil Tangri (neil@no-burn.org)

Plasma arc has been bandied around for several years, but there has never been a fully-functioning commercial operation built. I know that Chemical Weapons Working Group and groundWork (South Africa) both fought off plasma arc proposals, so they may have more information. I think that's the first important point: it's still a technology that hasn't got off the ground.

There are several other inconsistencies. They claim that they can generate energy from the syngas; however, maintaining the high temperatures inside the reactor (they say 2000 C/ 3600 F) would consume immense amounts of energy -- far more than could be generated by burning whatever syngas they produce. I would demand to see an energy balance sheet: how much energy will they draw off the grid (or a standalone power source). Can the grid even support that demand? Would it require additional generating capacity? Furthermore, if they are burning syngas, that contains contaminants; how are they going to scrub it or otherwise clean it? That requires a burner with an air pollution permit. If they propose selling the syngas off-site, where is their potential market? I know of no commercial market for a gas with unverified contents. Moreover, transportation of H₂ is extremely dangerous.

Their website acknowledges that the process produces carbon dioxide (in addition to the CO₂ and nitrous oxides released from burning the syngas), which are all greenhouse gases. Add to this the greenhouse gases emitted to produce all the power that they will draw, and it will become a significant source.

They claim that the vitrified slag (they like to call it "glass") is a salable material, not waste. I'd like to see proof of anyone willing to purchase it. The one example I have seen was weak, brittle, and unworkable -- and untested in terms of its contents. Ditto for the carbon black, which is likely to have plenty of heavy metal contaminants. If they aren't presorting metals (i.e., they try to recover the metals after passing through the plasma arc), they are likely to have an unwieldy alloy sludge rather than salable steel, aluminum, etc. Some metals, such as aluminum and of course mercury, will vaporize and end up -- where, exactly? Who knows?

One of the safety questions is how they are going to control the plasma temperatures: "normal" incinerators are known to explode when pressurized gas containers are accidentally introduced -- how much worse would that be in a plasma reactor?

If you demand answers based on real-life experience, rather than theory and hand-waving, they won't be able to answer, because they haven't actually built any such machines. So the community would be a guinea pig.

It is interesting that they are conceding that plasma arc torches are incinerators and then claiming that their technology is somehow different: particularly since they seem to use the terms interchangeably on their skimpy website. I would ask what difference there is: I'm sure it is insignificant. But if you can get any kind of an answer, do send it on so we can all have another go at them.

My own feeling is that most plasma arc companies never intend to actually build a plasma arc device. As Alan implies, they're pretty close to science fiction. Rather, it is a scam to draw in investors, communities, regulators, etc. and make some money off the initial subsidies, land grants, etc -- and then move on to the next unsuspecting victim.

Neil