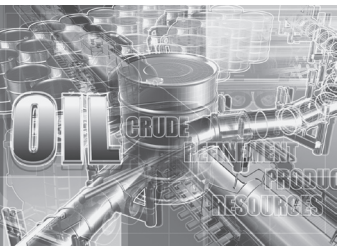


Everything you wanted to know about oil but were afraid to ask



Or

Oil for Dummies

by Doug Maurstad

Who's blowing smoke here?

I've been saying since day one that Hyperion has no intention of building an oil refinery in Union County, and after the research I've done this week about their application, I have never been more convinced that they aren't coming. Let me put logic to the test and see if you don't come to the same conclusion.

In Hyperion's application from the very beginning they state that this will be a "green" refinery. State of the art refinery built with an IGCC (Integrated Gasification Combined Cycle) power facility. Now what exactly does this mean?

I did some research on the internet and came up with the following information as to what an IGCC facility is. The information that I found completely reinforces my theory that this refinery is not going to happen.

Some of the information that I'm listing in this article is courtesy of Nancy LaPlaca in Denver CO. she graciously gave me permission to reprint information from her article on the internet. Her website is www.energyjustice.net/coal.igcc/. GCC is a type of power plant that gasifies coal into synthetic gas or Syngas. This powers a gas turbine. The heat from the gas turbine exhaust then generates steam to run a steam turbine, and VIOLA, you have electricity. None of the basic technologies – coal gasification, gas turbines, and steam turbines – are new. It is the integration of these into electric power plants that is new and presents engineering problems. This, my friend, is why there will never be a refinery in Union County, South Dakota.

Although IGCC is promoted as being capture "ready," the key word here is "ready" – NO IGCC plants are actually capturing and storing CO₂ in commercial quantities.

IGCC plants burn either coal or "petroleum coke." An oil refinery residue. All contain high levels of toxins, and "pet coke" contains high levels of sulfur. Generally, conventional pulverized coal plants operate at 32-38% efficiency, while IGCC plants operate at 36-39%. However capturing CO₂ increases cost significantly and have only been demonstrated at a handful of sites, in amounts that are a small fraction of the total CO₂ emissions. What this boils down to is cash money. It is cost prohibitive to operate this way.

IGCC veteran Stephen Jenkins testified in January 2007 that IGCC technology won't be ready for 6-8 years, has limited performance and emissions guarantees, and that commercial-scale CO₂ capture and storage has not been demonstrated. Help me figure this out please. If the technology won't be available until 2015 at the latest, how is Hyperion going to be able to have a plant

up and running by 2014? I know construction can be fast, but come on now. Hyperion's own timeline puts construction at 4 years. Does this mean 4 years for the power plant AND the refinery or for each individually?

Now, let's get back to what I was talking about here. The DOE (Department of Energy) is on record that IGCC is seen as too risky for private investors, and requires large subsidies from the federal, state and local governments. In other words, the federal government is going to guarantee the loan to build the IGCC energy plant. The Bush Administration's Energy Policy Act of 2005 included \$1.8 billion for "clean coal" plus billions in federally guaranteed loans for IGCC. The GAO (Government Accounting Office) found that of the 13 "clean" coal projects examined, 8 had serious delays or financial problems, 6 were behind schedule by 2-7 years, and 2 went bankrupt and were abandon. Do you think Hyperion will be able to find companies that are willing to put investment capital in this refinery with such great risk on their money? I don't think so.

Now for some more of my theory about the refinery. The application does not say anything about using a coal fired plant to provide electricity for the refinery. It is going to be IGCC or nothing. Before the plant can start burning coke, it has to be in operation. In order to be in operation the power plant has to be up and running. In order for the power plant can be up and running the damn thing has to be built and here again lays the problem.

IGCC is being promoted by the coal industry as having the potential to "Capture CO₂ however, studies show that capturing CO₂ reduces plant efficiency and increases water use. According to the Electric Power Research Institute, installation of CO₂ capture equipment has been found to decrease plant output by at least 25% while at the same time increases water consumption approximately 23%.

One indisputable fact about IGCC is that the carbon must be sequestered for thousands of years without leaking. I don't believe Hyperion is able to do this. Remember, they are going to be sequestering millions of cubic feet of CO₂.

Now let's put all this information together and see what we come up with. Hyperion can't build a working power plant using IGCC methods. There are no provisions in the application to build a coal fired power plant. Without a power plant there is no refinery. There is nothing I can see in the application that says if they can't get IGCC to work they can switch over to coal fired. This would no longer be a "Green" refinery. It would also violate the terms of the application because their clean air permit is

based on IGCC. The power plant must be built before the refinery because the refinery is going to burn coke, which is a by-product of the refined oil. It is Catch 22. I kind of like the sound of this last sentence. No Power Plant, No refinery.

Til next week.