Re: Low cost hydrogen today

Source: http://sci.tech−archive.net/Archive/sci.energy.hydrogen/2009−01/msg00007.html

- *From*: william.mook@xxxxxxxxx
- *Date*: Fri, 2 Jan 2009 07:26:25 −0800 (PST)

On Dec 23 2008, 3:28 pm, Fred Kasner <fkas...@xxxxxxxxxxxxx> wrote:

> Bill Ward wrote:
>
> > On Thu, 18 Dec 2008 17:24:12 −0800, willie.mookie wrote:
> >
> > > On Dec 9, 3:15 pm, Bill Ward
> > > <bw...@xxxxxxxxxxxxxxxxxxxxxxx> wrote:
> > >
> > > > On Tue, 09 Dec 2008 10:55:45 −0800,
> > > > william.mookwrote:
> > > >
> > > > > On Dec 8, 11:46 am, Eeyore
> > > > > <rabbitsfriendsandrelati...@xxxxxxxxxxx>
> > > > > wrote:
> > > > >
> > > > > > Don
> > > > > > Lancaster
> > > > > > wrote:
> > > > > >
> > > > > > > Volumetric
> > > > > > > energy
> > > > > > > density
> > > > > > > is
> > > > > > > the
> > > > > > > overwhelming
> > > > > > > consideration
> > > > > > > for
> > > > > > > vehicular
> > > > > > > apps.
> > > > > >
> > > > > > Something
> > > > > > Mookie will
> > > > > > deny to his
> > > > > > dying days.
> > > > > > Graham

> Nonsense. Hydrogen has a slightly lower density than gasoline.
> So, it is an important factor in designing workable systems. Where you and your buddy err is believing that these minor factors are show stoppers! This might have gotten traction 20 years ago − it is laughable today!
> Actual data from actual hydrogen powered vehicles using modern hydrogen tanks show that for real vehicles − even with direct substitution of hydrogen tank for gasoline tanks − perfectly useful hydrogen vehicles are possible today. AT $250 per ton for hydrogen using my solar process, we get $0.20 per gallon of gasoline equivalent anywhere in North America − with ZERO carbon footprint!!

Why don't you update us on your Indonesian endeavors?

How much hydrogen are you producing?−
Hide quoted text −

− Show quoted text −

There are two facilities under construction. One in Sumatra, one in
Borneo. When completed each facility produces initially 200,000 b/d at
start−up growing to 700,000 b/d over 5 years. When combined with
conventional oil production this facility restores Indonesia to

oil
exporting status which they lost in 2007.

Each facility requires the direct hydrogenation of 32,300 tons per day of
coal No emissions are produced by this process. This requires the
delivery of 2,940 tons per day to each facility. Each facility also uses
350 tons per day to clean, dry and process the coal and provide power to
the facility.

Each facility produces 200,000 b/d of refined liquid fuel products that
meet ASTM specs (save the ASTM requirement that fuels not be derived from
coal) and 4,840 tons per day of asphalt. At $30 per barrel for the oil
and $180 per ton for the asphalt, $6,872,100 per day of revenues are
produced. This is an annual total of $2.51 billion. At typical valuation
rates each facility is worth $57.73 billion. Cost of construction is $6.8
billion. This assumes a $30 per barrel price point. At $60 per barrel
vauation rises to over $115 billion, at $90 per barrel, $170 billion, at
$120 per barrel $230 billion − per facility.

With 2 billion tons of carbon at each site, this translates to 12.4
billion barrels of oil equivalent of prove reserves and $28 per ton in the
ground to over $100 per ton in the ground.

Since this carbon is treated as overburden in this field, not worth the
cost of export, this adds tremendous value to the field. We basically buy
12 billion barrels equivalent of oil reserves for less than 2.5 billion

barrels and the $6.8 billion investment at each site!!

Liquid fuels are shipped from the same ports that ship coal frim each of
these sites from the active mines. Oil pipelines run alongside the train
tracks that service these sites.

The Natuna gas fields are also interesting. Their value is compromised
due to the high carbon dioxide content.

http://www.oilandgasnewsworldwide.com/bkArticlesF.asp?Article=24867&S....

Methods have been developed to use this carbon content in a variety of
ways;

http://www.springerlink.com/content/l033mm8011526273/

Sequestration hasn't worked. That's because CO2 turns to carbolic acid
when exposed to rock and moisture, which dissolves the rock, and releases
the CO2 over time. For this reason, many sequestration projects have been
stalled.

http://www.springerlink.com/content/l033mm8011526273/

We are currently exploring the use of hydrogen along with the Sabatier
process to convert hydrogen to methane and clean water;

http://en.wikipedia.org/wiki/Sabatier_process

The methane is mixed with the natural gas from the field. Each ton of
hydrogen converts 5.5 tons of carbon dioxide into 2 tons of methane and
4.5 tons of water.

In this way the 97 trillion cubic feet of natural gas is increased to over
200 trillion cubic feet of natural gas.

Ready demand for this gas is provided by South Korea, China and Japan.

http://www.eia.doe.gov/cabs/South_Korea/Background.html
http://energy.einnews.com/news/japan−natural−gas−prices

Which are eager to provide the capital needed for this project.

At $8 per mcf (thousand cubic feet) over $800 billion value is added to
those fields. Since the feilds have a very low value today due to low
production arisnig from problems with CO2, this is an interesting approach
to creating value in those fields.

Very large arrays of solar panels are needed. The are provided by using
the spent surface mines in Borneo and Sumatra, along with reclaiming vast
tracts of burnt out jungle lands that remain after horrific fires there in
years past

http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=17467&old....

Natural gas exports, combined with expanded oil exports, are the first step to transforming Indonesia into a world class economic power with per capita incomes exceeding that of the USA. The addition of direct hydrogen sales to augment, and then later to displace oil and natural gas and coal, allow Indonesia to take a leading role as a world energy supplier in the 21st century.

http://www.japanfs.org/en/pages/025915.html
http://www.enaa.or.jp/WE−NET/ronbun/1996/e1/ishikawa1996.html

And Mok is playing an important part in it

http://www.bni.co.id/Portals/0/Document/Coal.pdf
http://yosef−ardi.blogspot.com/2006/08/energy−highlights.html
http://engdic.daum.net/dicen/contents.do?t=exam&&query1=E151170
http://handriirawan.wordpress.com/ore−dressing−atau−pengolahan−emas/

The sad thing is, I presented an integrated plan to the White House OSTP on December 10, 2004 where I convert the nation's 1,032 coal fired power plants to hydrogen power. Then, use additional hydrogen to convert 1.14 billion tons of coal each year to 7.1 billion barrels of liquid fuels each year, at the power plants while eliminating ALL CO2 emissions from these plants . Since the USA uses only 6.8 billion barrels of liquid fuels the USA would like Indonesia turn from the world's largest oil importer to the world's largest oil exporter, all the while, cutting its total

carbon
footprint by half!

Despite the intransigence of the current Bush Administration, I have
recieved a warmer welcome in my home State of Ohio

http://www.ohiochamber.com/governmental/pdfs/William%20Mook_021308.pdf

so, things are progressing in the USA as well as Asia − which gives me
hope for my homeland.

Since the USA's economic problems derive ultimately from our energy
problems, this is a path to restore strength to the US economy and banking
system.

As in Indonesia, there are a plethora of other uses of low cost hydrogen
than making oil. Not the least of which is the development of hydrogen
alterantives to fossil fuels. The beauty is, the transition to a hydrogen
economy is paid for by the sale of low cost fossil fuels made by combining
low cost hydrogen with carbon.

The USA has over 500,000 sq miles of abandoned surface mines. The
conversion of 210,000 sq miles of surface mines to solar panels allows the
production of enough hydrogen to provide for ALL the world's energy needs.
So, while Indonesia can become rich usnig my system, the USA can come to
dominate the world's future energy needs, and maintain its superpower

status, not by military means that destroy wealth, but by economic means
that create wealth. This allows the next generation of Americans to live
better than today, while creating conditions that allow ALL people
everywhere to live better than today − through the power of lower cost
energy.

From 1850 to 1970 the world saw a steady 5% decline in the real price of
energy. This long term decline in energy costs, spurred the expansion of
industrial processes throughout the global economy and lead to massive
increases in the creation of real wealth. All the social advances over
this period from the elimination of slavery, to reduction of the work week
and universal education, medical care and retirement, all stem from this
fundamental economic growth brought about by low cost energy.

When the output of oil in the USA peaked in 1970, the price of energy
began an inexorable rise at 8% per year through today. As a result, huge
advances in productivity wrought by mechanisation and automation of work
brought only modest improvements in economic output, while social progress
stalled, and wealth transferred on a massive scale from early leaders like
the USA and Europe, to energy suppliers like Saudi Arabia. When the world
output of conventional oil peaks after 2010, future generations will not
live as well as we live today, despite huge advances in automation.
Therefore, expect social progress to unravel, and see universal education,
health care, retirement to go away fro ever larger numbers of people,
while wages decline and work weeks expand. Look also for greater social

> unrest.
>
> The development of primary energy sources that are fundamentally less
> costly than conventinoal primary sources and essentially of unlimited
> capacity, when compared to today's supplies, will re−establish the trends
> of the beginning of the modern industrial revolution, and restore the
> ascendancy of social progress on the back of low cost energy while ridding
> the world of deadly carbon emissions altogether.
>
> So it's still big dreams but no actual hydrogen production. What's different from last summer?
>
> Carbolic acid is known, by chemists, as the substance called phenol [C6H5OH]. This is NOT the same as carbonic acid, otherwise known to those who have studied a little chemistry as a water solution of carbon dioxide. The evidence for the existence of H2CO3 is very sketchy.
> FK

Did I mis−spell the acid produced? Is that what you're going on about? haha..

Mis−spellings don't change the fact that CO2 injected into the Natuna gas wells by Esso caused a reaction with the moisture in the soil dissolving the surrounding rock releasing CO2 rather quickly.

They were lucky things failed so quickly had they not, considerably more CO2 would have been accumulated underground. If this would have happened more slowly after considerable CO2 pressure had built up in the reserve, the release of CO2 would have been as more dealy than the release of CO2 from volcanoes − as in Cameroon's Lake Nyos eruption

http://en.wikipedia.org/wiki/Lake_Nyos

SEQUESTRATION DOESN'T WORK!!

Even in a nearly ideal situation − extracting it from natural gas by cryogenic separation very efficiently, and injecting it in spent gas reserves nearby, failed miserably after only months of operation.
In more complex situations, involving capture of coal emissions, and injection in wells that are less stable, and nearby large population

centers, the risks both technical and safety − are unacceptable as are the costs.

It is far more effective to use hydrogen derived from solar electrolysis or nuclear thermolysis directly in stationary power plants, in mobile applications, in smelting operations, and in chemical processes − instead of carbon based chemicals.

THE AGE OF CARBON IS OVER!

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