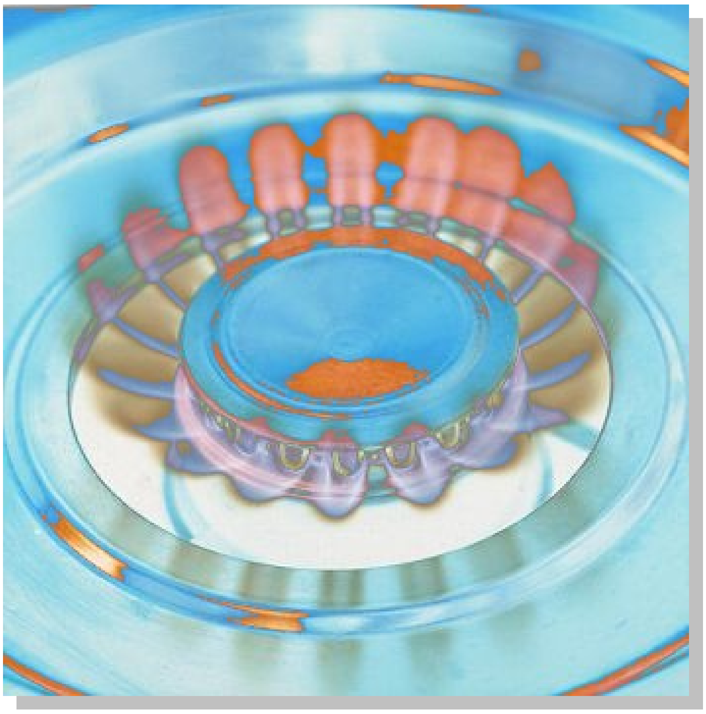
EGF, NATURAL GAS & GLOBAL GAS RESERVES

The combustion of natural gas produces 50% less carbon dioxide emissions when utilised in the generation of electrical power. The graph below provides information confirming global natural gas reserves now utilised.



The utilization of natural gas as an electrical power source for the production of Solanol is completely compatible due to the necessity of cheap electricity and access to the exhausted flue gases from the Natural gas turbine generators.

The introduction of the enviro-oxygen, a by-product of the hydroxy electrolysis process, in closed loop combustion of Natural Gas produces all the necessary carbon dioxide output from the Natural Gas combustion turbine generating system. To facilitate the necessary carbon dioxide to be catalytically converted into carbon monoxide for the total input requirements of the ethanol catalyst for the production of Solanol. Therefore, the carbon dioxide flue gas emissions are totally converted by the catalyst to produce Solanol.

The benign non-polluting nature of a Solanol carbon neutral refinery that will initially use normally vented carbon dioxide, as the feed stock to create a carbon neutral fuel matrix. The normally vented carbon dioxide from the Natural Gas turbine generating system is utilised to produce Solanol fuel in a closed looped system and when combusted via the emissions, the same absorbed carbon dioxide is released into the atmosphere and does not increase the carbon dioxide levels, which does not attract any “carbon tax”.

“2. Literature Review

According to Bisio et al., 2002, the barrier to couple the oxygen in the power cycles continues to be the high cost of oxygen production in cryogenic plants, but the use of membranes technology to obtain air enriched with 30-45% oxygen may offset the costs of oxygen implementation with the fuel saving obtained.

Poola et al., 1996, carried out studies of OEC in internal combustion engines for locomotives, and reported a 13% increase in thermal efficiency for naturally-aspirated engines and a 4% increase for turbocharged engines. Wu et al., 2010, studied the influence of oxygen concentration from 21 to 30% in the combustion of natural gas in the heating and furnace-temperature fixing tests. The most attractive gain is that the fuel consumption at 30% O2 was reduced by 26.1% if compared to atmospheric concentrations (21% O2) when the furnace temperature was at 1220°C”.

http://www.ieaghg.org/docs/General_Docs/OCC2/Abstracts/Abstract/occ2Final00119.pdf

As proven by the above study this will greatly improve the energy produced in the form of electricity from a gas turbine generating system at high efficiency due to the **higher temperatures** with minimal changes to the turbine configuration when burning **with oxygen input only**, for the total combustion of natural gas, which should increase the overall efficiency from 20% to 60%.

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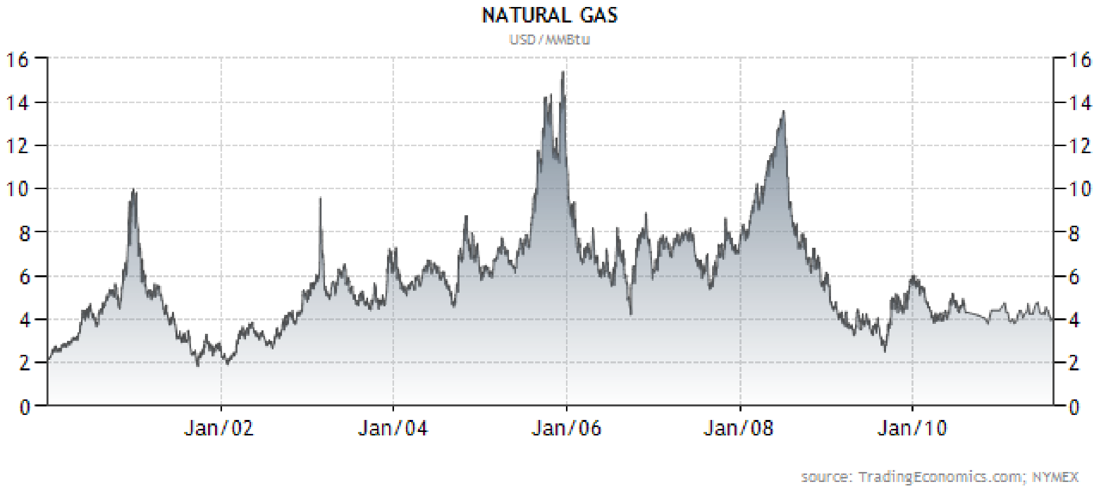
World natural gas reserves by geographic region as at January 2, 2010
(trillion cubic feet or 0.028 trillion cubic meters).

The world's largest gas field is Qatar's offshore North Field, estimated to have 25 trillion cubic meters (9.0×10^{14} cubic feet) of gas in place—enough to last more than 420 years at optimum extraction levels. Therefore, world reserves based on the above chart are estimated at 1,000 years of natural gas reserves globally.



Additionally, Natural Gas cost per GJ has only doubled in the last 10 years which is marginal when compared to petroleum products.

Cost of Natural Gas increases by approx $0.2 per annum
= **$2 in 10 years to $4.50 per GJ currently.**

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