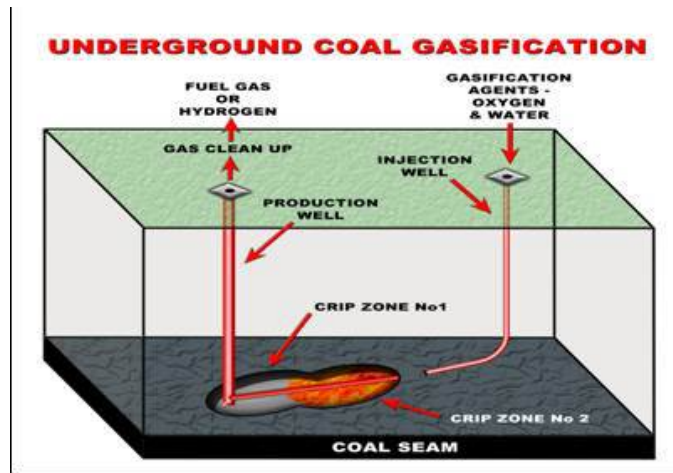


UNDERGROUND COAL GASIFICATION (UCG) - I



1. Introduction: Worldwide, coal reserves are quite vast – over 10 trillion tonnes. However, unless cleaner and cheaper ways can be found to convert coal to gas or liquid fuels, coal is unlikely to become an acceptable replacement for dwindling and uncertain supplies of oil and natural gas. Mining coal is dangerous work. Coal is dirty to burn and much of the coal in the ground is too deep or too low in quality to be mined economically. Today, less than one sixth of the world's coal is economically accessible. However, there is a renewed interest world over to revive the old technology that offers promise to substantially increase usable coal reserves and make coal a clean and economic alternative fuel. Known as underground coal gasification (UCG), this technology converts coal to a combustible gas underground.

Underground Coal Gasification (UCG) is the process by which coal is converted in situ into a combustible gas that can be used as a fuel or chemical feedstock. It is a process to convert unminable underground coal/lignite into combustible gases (i.e., combustible syngas – a combination of hydrogen and carbon monoxide) by gasifying. UCG uses a similar process to surface gasification. The main difference between both gasification processes is that in UCG the cavity itself becomes the reactor so that the gasification of the coal takes place underground instead of at the surface.

Despite considerable research and testing, no commercially viable project has yet been demonstrated anywhere. Research has been conducted principally in Western Europe, USA, China, the former Soviet Union and Australia.

2. Benefits of UCG - As a method of exploiting coal, UCG represents an environmental improvement on the combination of coal mining and surface combustion of coal. It is also safer and intuitively more efficient.

Environmental benefits of UCG over underground coal mining for fuelling power generation include:

(i) Lower fugitive dust, noise and visual impact on the surface

(ii) Lower water consumption

(iii) Low risk of surface water pollution

(iv) Reduced methane emissions

(v) No dirt handling and disposal at mine sites

(vi) No coal washing and fines disposal at mine sites

(vii) No ash handling and disposal at power station sites

(viii) No coal stocking and transport

(ix) Smaller surface footprints at power stations

(x) No mine water recovery and significant surface hazard liabilities on abandonment.

Additional benefits include:

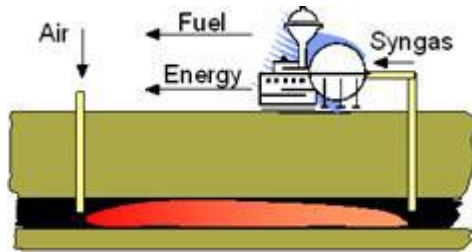
(i) Health and safety

(ii) Potentially lower overall capital and operating costs

(iii) Flexibility of access to mineral

(iv) Larger coal resource exploitable

Note: At present, natural gas offers attractions as a clean fuel that UCG may find difficult to compete.



Source : <http://saferenvironment.wordpress.com/2008/10/15/underground-coal-gasification-ucg-potential-to-increase-coal-reserve-worldwide-in-environment-friendly-manner/>