

LIQUEFACTION OF COAL

**2nd INDO-US COAL
WORKING GROUP MEETING
WASHINGTON
NOVEMBER 2005**

Feasibility Study Report under UNDP

- ✓ In 1985, a Techno-Economic report was prepared by Fluor Engineers Inc., California, under UNDP/UNIDO project for a plant size of 1 million tonne/year of liquid product based on indirect coal liquefaction technologies.
- ✓ Two coal sources from Raniganj and Singrauli were found to be suitable. The feed coal analysis indicated in the report is as follows:
 - Moisture: 6%,
 - Ash: 25%;
 - VM: 30%;
 - FC: 39%;
 - Hydrogen: 3.97%
- ✓ As per this report, about 6.6 tonnes of coal is required for production of 1.0 tonne of liquid fuel

Direct Coal Liquefaction Technology: R&D Effort of Oil India Limited

- ✓ Oil India Limited (OIL), in pursuit of alternate sources of energy commissioned in 1999 its 25 kg/day processing capacity coal conversion pilot plant at Duliajan, Assam in collaboration with Axens NA of USA.
- ✓ As per the study carried out by Axens NA , about 1.5 tonne of Assam coal shall be required to produce 1.0 tonne of liquid fuel.
- ✓ Though results of the pilot plant studies with Axens NA's Technology have been found very promising, it is considered necessary to carry out studies with other contemporary technology more suitable to the North East coal with better economics.

Direct Coal Liquefaction Technology: R&D Effort of Oil India Limited

- ✓ Accordingly, OIL is also considering taking up Techno-Economic Feasibility Studies for a commercial plant for converting Assam coal to liquid fuels based on technology of M/s HTI (Hydrocarbon Technologies Inc.), USA.
- ✓ For this purpose, desired coal quality is indicated as:
 - Ash: 5-10%;
 - VM: 40-45%;
 - Moisture: 2-3%;
 - Sulphur: 1.5-6%;
 - FC: 47% (approx).
 - Such type of coal generally contains Hydrogen in the range of 5.4- 6.3%.

Efforts made by Ministry of Coal/CIL

Consequent to the visit of an Indian delegation to South Africa in January 2000, and in order to explore the possibility of setting up Coal Liquefaction Plant in India, a global tender was floated in 2001 by CMPDI for setting up a coal liquefaction plant in India based on high ash Indian coals for a nominal capacity of one million tonne of liquid and gaseous products per year. No response was received consequent to the global tender.

Efforts made by Ministry of Coal/CIL

- On a separate enquiry with M/s SASOL Technology (Pty.), South Africa, it could be ascertained that they are interested to consider possible cooperation on joint venture or equity participation basis.
- On further interaction, SASOL agreed to test a sample only for its suitability for gasification, which was not considered sufficient to evaluate the coal for conversion to liquid fuels.

Efforts made by Ministry of Coal/CIL

- On the request of Oil India Ltd (OIL), a study was taken up by Coal India Ltd (CIL) for assessing the availability of coal from North Eastern Coalfields to meet the likely requirement of coal for commercial direct liquefaction project to be set up by OIL.
- CIL assessed coal availability of 3.50 Mt against OIL's requirement of 4 to 5 Mt.
- Further interaction between CIL and OIL is going on the business initiatives of coal liquefaction project through 'Joint Task Force'.

Co-Operation Required

- ✓ **In view of rising Oil prices, conversion of coal to oil of North East Coal of India will remain a viable proposition and will also go a long way for supplying alternate fuel source to the country.**
- ✓ **The technology transfer for direct coal liquefaction as has been developed in the USA**

THANK YOU

