61° Congresso Nazionale ATI

Perugia (Italy), September 12-15, 2006

Carbon capture and sequestration (CCS): a scenary for application of CCS technologies on power generation plants located in South-West Sardinia

Cristina Puddu, Alberto Pettinau(*)

Sotacarbo S.p.A. – Grande Miniera di Serbariu, 09013 Carbonia, ITALY

Abstract

The increasing interest on the environmental protection and the implementation of Kyoto protocol are making more and more interesting the development of CCS technologies for their application in power generation processes. In particular, the presence in Italy of a large coal basin, located in the Sulcis area (South-West Sardinia), suggests the application of the ECBM (Enhanced Coal-Bed Methane) technology for CO_2 geological sequestration.

This paper reports a preliminary economic analysis on the introduction of CCS technologies at the power generation plants located and likely to be located in the Sulcis area. In particular, four plants have been considered: two existing coal-based pants, an existing tar-fuelled IGCC and an advanced coal-based ultrasupercritical plant which is expect to come into operation in 2012. The analysis considers an amine-based CO_2 capture system and the carbon sequestration through ECBM technology.

The analysis shows the convenience to invest in CCS systems for three of the four considered plants; the global profit and the pay-back time are strongly influenced by the cost of CO_2 emission licenses and the specific amount of extracted methane.

In any case, the analysis show the need of a more detailed experimental study on the application of ECBM technology at the Sulcis coal basin, due to evaluate the main process parameters.

* Corresponding author: email: apettinau@sotacarbo.it
phone: +39 0781 670444
fax: +39 8781 670552