UNDERGROUND COAL GASIFICATION - FIRST TRIAL IN THE FRAMEWORK OF A COMMUNITY COLLABORATION [PHASE 1]

Fact Sheet

Project Information

Grant agreement ID: SF.-00369-91

Funded under
ENG-THERMIE 1

Start date
1 October 1991
End date
30 September 1995

Overall budget
€ 19 000 000

EU contribution
€ 3 040 000

Coordinated by
UNDERGROUND GASIFICATION EUROPE (AEIE)
Spain

Objective

The aim of the project is to demonstrate the feasibility of Underground Coal Gasification at intermediate depth (500-700 metres) in European coals, as the first trial of a European UCG programme. Deviated and in-seam drilling will be used for gasifier construction. Gasifier ignition is achieved by controlled refraction along the seam and a sophisticated system of analysis provides the data to monitor gas quality and cavity growth.

The first important results were the achievement of directional drilling along the coal seam and the placing of the production well to provide good gas connection. Temperature and corrosion control has been an essential component of the well
completion and a retractable injection and ignition system for the in-seam well has been demonstrated to work well in the first gasification test. The sub-bituminous coal ignites easily and a substantial cavity sweep has been achieved around the first point. Further success will depend on the ability to control and handle water ingress. The project can be divided into three main phases on activities.

1. Preparatory stage
During this stage, the geology of the selected site will be subjected to detailed evaluations, and an analysis of the coal and adjacent strata will be obtained through exploratory boreholes. The major activities of this phase, drilling, linking, completion of the process wells and installation of the surface equipment will only be carried out if these investigations confirm expectations.

2. Gasification activities
The gasification stage will enable the influence of different well configurations to be determined and different gasification scenarios (channel gasification, filtration gasification) to be compared. During the test of long duration, specific parameters, such as reactor lifetime, cavity growth mechanisms, sweep efficiency, energetic efficiency, gas quality, etc., will be determined.

3. Postburn activities
The activities during the postburn stage primarily consist of analysis of the data obtained in order to validate and, if necessary, modify gasification models. These activities will be supported by postburn drilling to verify the cavity shape. Finally, reporting and site restoration will conclude the activities of the field test.

The well layout will include deviated and vertical wells for exploration, for the U.C.G. process and for monitoring. The final layout will depend on the site conditions and will be established by the Project Team.

The proposed layout will include:
- A vertical exploratory well.
- A deviated injection well drilled to achieve a horizontal length of 100 metres in the coal seam
- A vertical production well which be connected to the deviated injection well.
- A second (vertical) injection well drilled at a distance of 50 metres from the in-seam section of the deviated injection well.
- One or two monitoring wells.

This scheme allows the successive realization of two gasification tests:
- a first test along an in-seam channel;
- a second test by filtration, between the lateral injection well and the area already gasified.
Funding Scheme

Coordinator

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