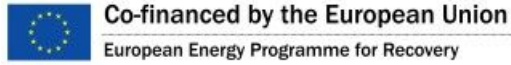


Demonstration plant for carbon dioxide capture, transport and storage (CCS)



In 2009 PGE Elektrownia Bełchatów S.A. initiated works aiming at construction of a demonstration CCS installation. Currently, as a result of the Consolidation Programme of the PGE Group, the works are run by PGE Górnictwo i Energetyka Konwencjonalna SA (PGE GiEK SA). The installation will be integrated with the 858 MW unit which is since September 2011 operated in PGE GiEK SA Oddział Elektrownia Bełchatów (Bełchatów Power Plant) and will comprise the following key components which constitute the full value chain in the validation process of the CCS technology:



- Carbon Capture Plant (CCP) of size equivalent to >250MW and the CO₂ capture efficiency of >85% utilizing the Advanced Amine Process (AAP) & its integration with the 858 MW unit. It means, that the CCP will capture approximately 1,8 million tonnes of CO₂ per annum. The task includes also a modification of the new 858MW unit for the needs of the CCP construction to obtain the status „Capture Ready”
- CO₂ Transportation: this component will consist of a pipeline and the associated infrastructure to transport the compressed CO₂ from the Carbon Capture Plant to the storage site
- CO₂ Storage: this will include the injection of pressurized CO₂ into the ground (deep saline aquifers) for permanent storage.

In the field of solutions concerning the CO₂ capture technology, the „post-combustion” option based on advanced amines has been chosen. A comprehensive FEED study has been prepared for the selected option in the years 2009-2011. As the 858MW unit was originally not designed to be coupled with the CO₂ capture installation, works have been carried out (see photo below) to reach the Capture Ready status. The CO₂ from the CCP installation will be compressed to the supercritical conditions for the needs of pipeline transportation.



Photo showing the flue gas ducts adapted for the need of the CCP (flue gas pick up and return). Lower in the photo part of the cooling water installation for the CCP.

In 2009 three geological structures were identified in the Łódzkie voivodeship for potential storage of the CO₂ leaving the CCP, i.e.: (1) Lutomiersk-Tuszyn-Pabianice-Bełchatow, (2) Budziszewice and (3) Wojszyce.

As a result of the feasibility study for the transport component completed in 2009, routing for three pipelines to the three considered storage sites was preliminarily determined.

Following comprehensive geological works, analyses and examinations carried out in 2009-2011 and based on the experts' recommendation Wojszyce structure (north part of the Łódzkie voivodeship) was selected at the beginning of 2012 as most appropriate from geological point of view for continuation of geological works. The works will be done to

get a detailed characterization of the site and thereby to confirm its suitability for safe CO₂ geological storage in industrial scale.

The above mentioned storage site selection enabled commencement of preparatory works in the transport component in June 2012. The works regard the CO₂ pipeline routing determination, inclusion of the routing in the Local Plan for Spatial Development of relevant communes, preparation of the environmental impact assessment report, obtainment of the environmental decision and preparation of elements of the terms of reference for the public tendering process for selection of the pipeline construction contractor.

The PGE GiEK SA's CCS Project was selected, along with other five European CCS projects, to receive €180 million subsidies that would come from the EU funds in the framework of the European Energy Programme for Recovery (EEPR). Awarding the subsidy and signing the relevant Grant Agreement in May 2010 was essential for the project implementation, especially in its initial phase in years 2009-2011.

Cooperation with other EEPR subsidized projects was begun in 2010 within the CCS Project Network under the auspices of the European Commission. The goal of the network is to share knowledge and experiences from the realization of the CCS demonstration projects.

In addition to the €180 million grant being the subject of the EEPR Agreement, PGE GiEK SA is seeking additional funding from sources such as "NER 300" (New Entrant Reserve) – a mechanism within the EU Emissions Trading System, Norwegian Financial Mechanism and financing in the framework of Domestic Support Mechanism. European Commission released a working document in July 2012 where the Bełchatów CCS Project has been classified in second position in the list of candidates for award decision in the framework of the NER300 programme.

Gaining public acceptance especially regarding the CO₂ storage and for transportation of compressed CO₂ is of fundamental importance for the implementation and dissemination of the CCS technology. To that end, strategic activities are conducted in that area from the beginning of the project realization. Public engagement and information campaigns are run which are dedicated to the implementation of the CCS technology. A base for the campaigns is a strategy which includes identification and characterization of stakeholders, the scope of planned activities and appropriate tools to conduct these activities, based on proved experiences from similar campaigns dedicated to novel projects.

Events

July 14th, 2009	Submission of the application to obtain funding in the framework of the European Economic Plan for Recovery in the field of energy (EEPR)
October 23rd, 2009	Submission of the application for issuing a decision on the environmental impact of the CCP installation integrated with the new-built 858MW unit in the PGE Elektrownia Bełchatów S.A.
November 2nd, 2009	Signing of the Front-End Engineering and Design (FEED) Services Agreement for Carbon Dioxide Capture Plant (CCP) with Alstom Carbon Capture having as a goal development of documents required for obtaining a building permit for the CCP installation, preparation of technical specifications and estimation of the investment cost
December 2nd-3rd, 2009	meeting of the CCS Network group (in Oslo) the latter initiated by the European Commission for the needs of knowledge sharing within the EEPR
December 11th, 2009	commune Kleszczów issued a decision on environmental impact of the demonstration CCP installation integrated with the new-built 858MW unit in the PGE Elektrownia Bełchatów S.A.
December 31st, 2009	civil project of the demonstration CCP installation elaborated by Alstom Carbon Capture submitted to the county office of Bełchatów in order to obtain the building permit
January 26th, 2010	the Starost of Bełchatów issued the building permit for The demonstration CCP installation fully integrated with the new-built 858MW unit in PGE Elektrownia Bełchatów SA. The building permit will validate on February 22nd, 2010
April 28th-29th, 2010	meeting of the CCS Network group in Bilthoven
May 5th, 2010	EEPR Grant was signed allowing EU funding of the CCS project with the amount of 180 mio EURO
June 30th, 2010	meeting of the CCS Network group in Brussels
August 18th, 2010	the European CCS Demonstration Project Network Membership Agreement was signed
August 23th, 2010 – September 30th, 2010	external public engagement campaign dedicated to the I phase of the site examination works
Septembet 1st, 2010	as a result of the Consolidation Programme of the PGE Group, PGE Górnictwo i Energetyka Konwencjonalna SA was founded which will run the CCS project
October 6th-7th, 2010	meeting of the CCS Network group in Hamburg
October 22th, 2010	CCS Project presentation in Climate Change and Energy conference in Sofia, Bulgaria
February 9th, 2011	submission of the application to obtain funding in the framework of the NER300 programme
February 16th-17th, 2011	meeting of the CCS Network group in Brindisi
June 8th-9th, 2011	meeting of the CCS Network group in Ponferrada
September 28th-29th, 2011	meeting of the CCS Network group in Łódź
February 7th, 2012	the Wojszyce structure was selected for continuation of detailed geological works
February 2012	Announcement of a tender for selection of contractor of preparatory works in the process of CO2 pipeline construction
March 2012	Announcement of a tender for selection of 2nd phase coordinator for the storage component
March 2012	A series of briefings with representatives of local administration aiming at spreading information about the CCS Project actions planned in 2012
May 23rd-24th, 2012	meeting of the CCS Network group in Cottbus
July – September 2012	A series of briefings with representatives of Commune Councils from the area of the CO2pipeline routing.

File to download

[CCS | Questions and answers](#)

(/content/download/8562/file/FAQ_CCS_A5_dodruk_2011_eng_ekran%20%281%29.pdf)

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