Severn Power CCGT Project: Newport

Aerial visualisation model of Severn Power Station on the river Usk in Newport, South Wales, UK

Welsh Power is constructing a new 850MW gas-fired power generation station, to be known as Severn Power CCGT. It is being built next to the existing Uskmouth Power Station in Newport, South Wales. Permissions were gained for the development of this project in 2010. SIEMENS is executing the EPC (engineering, procurement and construction) contract. The owner is represented by consultants Mott McDonald.

BAUER Technologies Ltd tendered for and won the £15 million contract for the piled foundation of the new structure. The Power Station consists of two power generating units, each comprising a variety of sub-structures, covering an area of 60,000sqm. The scope of the piling contract involved the construction of the piling platform, a preliminary pile testing regime, the erection of an on-site concrete batching plant, the installation of the piled foundations, comprising 439nr 620mm diameter bored piles, 426nr 800mm diameter bored piles and 711nr driven cast iron ductile piles and all piling attendances.

The foundation design was carried out by SIEMENS. The bored piles are designed to extend through 8m of Made Ground, 13m of very soft to soft peaty/organic Alluvium, 2m of dense to very dense River Terrace Gravels, and into bearing layer of very weak to weak Mercia Mudstone. All bored piles were installed using up to 27m of segmental casing and extend to a designated minimum toe level. The average total bored length of the piles was 31m. The ductile piles were designed to be driven to refusal either into the River Terrace Gravel layer or the Mercia Mudstone. The preliminary pile testing regime confirmed the initial design.

Technical challenges involved drilling through existing obstructions of varying nature, i.e. brick walls, reinforced concrete slabs, existing old driven piles etc., and installing piles with cut off levels up to 7m below piling platform level. Due to the proximity of some cut off levels the reinforcement design had to be changed to allow for couplers at the top of the cage.

Piling commenced in August 2008 with three BAUER BG piling rigs working simultaneously. The rigs on site were soon joined by another three additional BAUER BG rigs, giving a total of six piling rigs at the project's peak time (4nr BG28, 1nr BG25 and 1nr BG24). Up to 85 people were working for BAUER at the peak of the project.

The project was completed under budget and ahead of schedule.

Pile installation with one of the BG28 drilling rigs

Client:	Welsh Power/Severn Power, represented by Mott McDonald
EPC Contractor:	SIEMENS Power Generation
Piling Contractor:	BAUER Technologies Ltd
Contract Period:	May 2008 to March 2009
Scope of Works:	- 60,000m² piling platform - preliminary pile testing - 439nr. 620mm diameter bored piles - 426nr. 800mm diameter bored piles - 711nr driven ductile piles
Turnover:	£12.5 million
Equipment:	4nr. BG28, 1nr. BG25, 1nr. BG24 ductile piling rigs