The Construction Story - High Volts, Hare Hill and Holmside Wind Farms

Owners:	Powergen Renewables Ltd
Developers and Project Managers:	AMEC
Civil Engineering:	Ken Hope Ltd
Electrical Infrastructure:	Agrilek Ltd
Grid Connection:	NEDL/IUS
Wind Turbine Manufacturers:	NEG Micon
Civil Consultants for Foundations:	BT Bell

AMEC's wind energy business successfully developed the High Volts, Hare Hill and Holmside wind farms owned by Powergen Renewables Ltd. The construction of the three sites, in the north east of England, started at the end of July 2003.

A site road, such as this one at High Volts, is required to get components and resources to the construction site.

Foundations are excavated. This photo is of one of the foundation excavations at Holmside.

Foundation piling, such as this taking place at High Volts, is carried out to provide a solid base for the main foundation to be built on where the ground conditions are poor.

The blinding concrete is laid at High Volts. The blinding concrete provides a clean base from which to construct the foundation's steel reinforcement.

The foundation's steel reinforcement is constructed at Holmside.

180m^3 of concrete (equivalent to 30 concrete lorries) was placed in each of the turbine foundations via a concrete pump. This photo is of a foundation at High Volts.

The inner and outer ring of the vertical reinforcement bars can be seen in the centre of the photo. The steel embedment cylinder is placed within these. This photo was taken at High Volts.

Steel embedment cylinder being placed on the previously constructed turbine base. This cylinder is then cast into the concrete plinth. The turbine tower is then bolted on to the top of the cylinder.

This shows the circular plinth shuttering in position prior to the plinth being poured at Holmside. Note the steel embedment cylinder protruding from the top.

Concrete being levelled inside the embedment cylinder. Note the lower tower section is bolted to the embedment cylinder via the holes seen in the foreground.

Single turbine blade on extendable trailer with police outrider escort on A19.

Single blade on site access road. These blades are 38 metres long and weigh approximately 10 tonnes.

Low loader delivering a nacelle. The nacelle is bolted to the top tower section and contains the gearbox and generator. The blade assembly is bolted onto the end of the nacelle to the right of the picture. The nacelle weighs approximately 88 tonnes.

This shows the centre hub of the rotor assembly being delivered. The 3 blades are bolted to this hub on the ground and the complete rotor unit is lifted by crane and attached to the nacelle.

The fully assembled rotor unit. The rotor diameter is 80 metres.

The tower is delivered in 2 sections. The overall length of this vehicle and tower section is approximately 41 metres. The diameter of the base is 4.2 metres.

The bottom tower section being raised into the vertical position prior to being placed on the embedment cylinder. The rotor assembly can be seen in the background.

The nacelle is lifted into position at High Volts.

The two tower sections and nacelle are in place and the rotor assembly is lifted into position.

The rotor assembly is almost in position.

Some erection work carried out at night. The rotor assembly is about to be bolted onto the nacelle.

A completed turbine at High Volts. The tip of the blade when vertical is 100 metres above the ground.

Site Details:

Hare Hill: **2 x 2.75MW NEG Micon turbines (one derated to 2.3MW)**

High Volts: **3 x 2.75MW NEG Micon turbines (one derated to 2.3MW)**

Holmside: **2 x 2.75MW NEG Micon turbines (one derated to 2.3MW)**