

## Ballylumford Power Station

Ballylumford power station is a natural gas-fired power station in County Antrim, Northern Ireland, owned and operated by AES Ballylumford Limited. With its main plant generating 600 megawatts of electricity, it is Northern Ireland's largest power station and provides half of the country's power. Overall the station produces 1316 megawatts and is located at the tip of the Islandmagee peninsula, which separates Larne Lough from the Irish Sea.

In preparation for a major machine overhaul in the summer of 2010, AES Ballylumford Limited identified that 400V, 230V, 110V and 24V supplies would all be required at different stages of the outage. It was further identified that providing this array of voltages through the provision of portable transformers and distribution assemblies had the potential for creating Logistical and Health & Safety risks and the decision was made to install purpose built, multi-voltage socket assemblies in strategic locations around the worksite. It was also identified that the assemblies should remain in-situ after the outage, to provide a permanent source of power for both planned and unplanned maintenance.

### Power Cluster Specification

Following discussions with Blakley Electrics, a range of Power Clusters was designed to meet the short term and long term requirements of the site. Due to the exposed location, the permanent nature of the installation and specific user requirements, all enclosures were purpose designed and fabricated from 2.5mm thickness grade 316L stainless steel, providing protection to IP66. The enclosures were painted Poppy Red to make them easily identifiable to the contractors on site. The assemblies also incorporated thermostatically controlled heaters, to protect the switchgear from condensation and low temperatures.



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## ***Electrical Specification***

### **Main Incomer**

All of the assemblies incorporated 125A incoming switch disconnectors, supplied by SWA cable.

### **400V Sockets**

The Power Clusters were fitted with one or two 63A 5P 400V socket outlets to BS EN 60309-2. Due to concerns about making and breaking high current sockets on-load, the 400V sockets were of the switched and interlocked type. The sockets were individually protected by MCBs and RCDs (30mA).

### **230V Sockets**

All Power Clusters were fitted with a general purpose 16A 3P 230V socket outlet to BS EN 60309-2, protected by an MCB and RCD.

### **110V Sockets**

Depending on the location, the Power Clusters incorporated 3.5 kVA or 5 kVA continuously rated double-wound transformers to BS EN 61558 parts 1, 4 and 23, which transformed 230V mains to 110V Reduced Low Voltage. The transformers supplied 16A and 32A, 110V, 3P sockets to BS EN 60309-2, individually protected by DP MCBs.

### **24V Sockets**

Depending on the location, the Power Clusters incorporated 0.5 kVA or 1 kVA continuously rated double-wound transformers to BS EN 61558 parts 1 and 6, which transformed 230V mains to 24V Separated Extra Low Voltage. The transformers supplied up to 6 no. 16A 2P sockets to BS EN 60309-2, individually protected by DP MCBs.

Depending on the installation location, some sockets were of the watertight pattern (IP67) and some were splash proof (IP44).

The outage was completed successfully in 2010 and AES are confident that the installation of Power Clusters significantly reduced the risks commonly associated with long trailing leads i.e. tripping hazards and volts drop. In addition, they have permanent sources of power for future outages and routine maintenance.