



## **Bronglase Hospital - Aberystwyth**

The Ceredigion and Mid Wales NHS Trust provides integrated acute and community health care services for an estimated 120,000 people – a figure which is swollen by students at the University of Wales, Aberystwyth is also the principal holiday resort and administrative centre of the west coast of Wales. The Trust provides its acute services via Bronglais District General Hospital in Aberystwyth - supported by community hospitals in Aberaeron, Cardigan and Tregaron. The electrical intake to Bronglase Hospital was not adequate for the projected load growth of the hospital so the Trust embarked on a project to enhance the capacity and resilience of the electrical distribution. This included the provision of new 11kVA connections, transformers, standby diesel generator and switchboards.

Power Electrics, (PE) working through SWALEC of Cardiff, provided the 'high spec' standby diesel generator to back up this critical installation. Working closely with the consultant (JMK Consultancy Ltd) and the contractor (SWALEC) from early on in the project design stage enabled the PE team to fully understand the project requirements. Using their wide range of product and applications knowledge, they were able to find practical solutions to all the design and integration concerns involved in installing a new diesel generator system into a fully functional building. This was vital as the acute service operates 24/7

The integrated standby generator solution included as 1500kVA prime rated FG Wilson (Engineering) Ltd diesel generator housed in a sound reduced container rated at 75dBA@1m. The 68,000 litre double skinned underground fuel tank was connected to the day tank and generator set via double skin fuel pipes, with fuel pumped to the set using a fully automated duty / standby pumping system. The prime rated generator was compliant with the Health Technical Memorandum HTM2001, Model Engineering Specification C44 (Diesel Engine Driven Automatic Standby Sets), TA Luft requirements, BSEN 60947-6-1 and G59 short term mains paralleling to name but a few.

The hospital is located on a town centre site with fixed boundaries space for new developments are at a premium. The silenced container design team needed to optimise the dimensions of the container solution. Using the very latest product and manufacturing innovations PE provided an F G Wilson packaged 70dBA @1m solution in a container just 12m long and 3m wide. An additional benefit of such a compact solution was that it could be brought to site on a standard low loading vehicle, eliminating the need for a splitting the package for delivery or expensive specialised road transportation.

Aberystwyth's coastal location meant that the enclosure had to meet some additional exacting construction and protection requirements. The consultant needed to be satisfied that the 125 micro dry film thickness of the paint system used complied with BS 3900 F2 for 1000 hours and would with stand a continuous salt spray for 700 hours without showing any sign of corrosion. The paint system used significantly exceeded the specification requirement - no mean task on such a sizable and in places flexible steel structure.



The Trust has a very clear and well defined environmental management policy which ensures proficient management of environmental issues. The Environmental Policy establishes the aim of the Trust to gain Level 3 certification to the Green Dragon Standard. This policy played an important part in driving the specification of the standby generator solution. As the hospital is centrally located in the town and adjacent to one of the University halls of residence this also added to the importance on ensuring very low level of potentially unsafe emissions.

To minimise the emission of CO (carbon monoxides) and HC (hydro carbons) a combination exhaust system was developed which deployed the use of latest catalysation and soot entrapment technologies. The catalytic converter utilised a highly active base metal washcoat system with a specially formulated precious metal coating. In series with the catalytic converter was a soot filter section which, by lowering the light off temperature at which the soot particles combust significantly reduces total soot emissions.



The entire 4000Kg, emissions reduction system, which was mounted on the roof of the container, needs periodical inspection and maintenance. To this end a number of special features were designed. The entire emission reduction system can be split to permit the 10 x 50Kg soot pots to be viewed and rotated. To achieve this special track and roller system was installed on the container roof. To ensure the noise emitted from the exhaust was minimised the roof mounted unit was lagged with a heat insulation material and cladding for weather protection. A modular lagging and cladding system ensured that all maintenance functions could be performed without the need for continuously replacement.

Before the diesel generator system was delivered to site, representatives from the consultant and contractor witnessed a comprehensive series of tests at the huge F.G Wilson manufacturing facility in Larne Northern Ireland. Factory testing included a rigorous three hour run at 100% load followed by a further one hour at 110%.

Lifting the 25,000 Kg generator package into its site location was very straight forward. Being involved at the early stages of the project enabled the PE team to deploy their extensive applications and product knowledge to make sure that the available site space was not only optimised but all potential delivery and positioning difficulties were considered and alleviated. All aspects of the delivery, positioning and mechanical installation were undertaken by the Power Electrics installations team. Project manager Leon Shackleton said that “having our own installation guys means that we have complete control over the programme and most importantly over the quality of work that we do”.



High-level technical interaction with the project consultant, contractor, quality FG Wilson products and the ability project manage complex installations were major factors in The Trust and SWALEC choosing Power Electrics for this project.

