Cape town hospital energy storage

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"In a design that suited the hospital"s severe space constraints, Zest WEG built the generator, transformer and remote radiator into special ISO shipping containers in a double-stack configuration," explained Johannes Nel, operations manager - production at Zest WEG. "The contract also included the refurbishment of the client"s existing 1 000 kVA 400V MTU open-type generator which was included in the solution."

The new genset expands the hospital"s standby generating capacity to 1 MVA continuous rating, allowing 100% of the institution"s functions to continue as normal during periods of load-shedding. Nel also highlights that reliable supply was key to the hospital"s safe and efficient operation, whether from mains or back-up supply.

To reduce the project lead time as much as possible, the delivery of certain imported components was arranged well in advance. The containerised solution was constructed and extensively tested at the Zest WEG genset manufacturing facility in Epping, saving time during installation.

"It was critical that any downtime be kept to an absolute minimum, as hospitals need to run continuously," Nel says. "With our expertise, product range and experience in the health sector, our design, installation and commissioning strategy was able to align closely with this priority."

A dry-type step-up transformer allows the generator to connect to the 11 kV council electricity supply council supply, which will reduce hospital downtime during commissioning. The resin-sealed transformer also provides a long-lasting solution with low maintenance and a high safety factor due to the absence of oil as a coolant.

Nel explains that another vital concern was the hospital"s proximity to a residential area, demanding that the noise level of the generator be kept within strict limits. This requirement was successfully achieved during testing, with the noise level kept within 65 decibels at a distance of seven metres.

In addition to conducting a complete engine rewiring, Zest WEG also upgraded the generator controller, giving the customer improved ability to monitor the generator"s operation during load-shedding. The modern controls help protect the generator and optimise the lifespan of critical equipment.

Seventeen storeys and 30 000m2 floor space, the new Netcare Christiaan Barnard Memorial Hospital boasts a range of green design principles and technology which are in line with global standards -setting the benchmark for environmentally friendly hospitals in South Africa. Some of the solutions implemented include a special double-skin fa?ade, which is expected to save around R120 000 annually, and efficient lighting instalments, which will see a 40% reduction in electricity used for lighting. Read on and see for yourself!

The building"s "intelligent" exterior fa?ade comprises an external glass skin, with a void separating it from the building"s internal glass windows. This means that together, the internal glass windows and the exterior of the building act as a double skin, offering outstanding insulation to the interior hospital environment. The void within the two walls can be ventilated when the building needs to be cooled down, or closed to warm it up by means of louvres positioned between the two skins on roof level, which can either be opened or closed.

"The fa?ade is also connected to wind driven extractors and motorised dampers which, in turn, are connected to the building management system. An intelligent and automatically controlled insulation layer enhances the energy efficient heating, cooling and ventilation technology installed in the building," says Dr Friedland.

"It works like a giant Thermos flask; with the fa?ade forming an insulation barrier which ensures significantly less dependence on the air conditioning units in the hospital for maintaining ideal internal environmental conditions. At the same time, the glass fa?ade has an attractive visual effect and patients and visitors are able to enjoy the magnificent views of the harbour, mountain or city scape, depending on where they are in the hospital," he explains.

Netcare"s environmental sustainability manager, Johan Durand says the building"s "intelligent" exterior fa?ade is expected to save Netcare Christiaan Barnard Memorial Hospital some 105 000 kWh of electricity annually (about R120 000 per year in energy bills!)