

ABB provides key to public transport sustainability

Turnkey feeder station solution powers overhead line in WA train system extension.

ABB Australia has played an integral role in helping the Public Transport Authority (PTA) prepare for the future, through the provision of a high-tech feeder station solution for the Butler Extension Project.

Delivered for \$221 million, the Butler Extension Project extends Perth's Joondalup train line to the suburb of Butler.

Crucial to the rail extension is a new feeder station – constructed at the Nowergup Depot – which will allow the 132kV Western Power supply to be stepped down to the 25kV power used by the railcars.

A massive undertaking, the project started in June 2012. One of the final stages, the feeder station, was commissioned in March this year; in May, power to the rail extension was turned on and 25,000 volts of electricity began travelling through the overhead wires.

PTA's Butler Extension Project

In 2010, the WA State Government announced plans to better-service the people of Perth's rapidly-growing north-west suburbs by extending the Joondalup line to Butler.

The mammoth project includes a park 'n' ride station with approximately 900 car bays, 11 new buses to provide feeder services into Butler and Clarkson stations, four additional railcars to accommodate the extra passengers, and three

road-over-rail bridges.

The 7.5km rail extension north of the existing Clarkson Station will be operational from September. More than 2,000 passengers are expected to board at Butler station every day, with the project also expected to help ease pressure on the Mitchell Freeway and major road corridors.

The first passenger trains will leave the Butler Station on September 21, 2014.

ABB's feeder station solution

The team at ABB Australia worked with engineering and infrastructure manage-

ment services company Downer EDI Limited (Downer) to supply a turnkey 132/25kV rail feeder station to cater for the electrical needs of the rail expansion.

ABB was responsible for providing: the feeder station design; feeder station equipment including primary plant equipment, switch-room building, auxiliary equipment, system control, and booster transformers; along with site testing and commissioning.

According to ABB Australia electrical engineer and project manager, Johnson Luu, Downer chose to partner with ABB for this project due to the supplier's commitment to providing the very latest tech-

This clips shows how the team triumphs over logistical challenges during the Butler Extension Project Feeder Station Installation





The new feeder station will enable passengers to start their 37 minute journey to the Perth CBD from the eye-catching Butler Station. The station will open three months ahead of schedule in spring 2014.

nology and associated customer service.

“In this project, we supplied 25kV magnetic actuated vacuum-type circuit breakers for the Medium Voltage UniGear R40 switchgear. The magnetic actuated technology is an improvement to the spring-charge mechanisms traditionally used in the PTA medium voltage switchgear, providing benefits such as reduced maintenance duties, increased reliability of operation due to the reduced number of components and related settings, and fast and simple exchange of any main components,” Luu explained.

“Of course, safety has been a real consideration with the UniGear R40 switchgear being arc-protected in accordance with IEC 62271-200 standards for protection of operators.

“ABB also supplied the latest in arc detection technology, the TVOC-2 Arc Guard System, for early detection of any dangerous arc faults forming in the medium voltage switchgear chambers. The TVOC-2 Arc Guard System is a state-of-the-art solution for arc fault protection, protecting people and equipment.”

According to Johnson, ABB was able to

offer a complete technology package, as well as manage the large number of stakeholders involved in supplying the various pieces of equipment required to complete the job on time.

“ABB’s turnkey feederstation package is a good solution for the customer as ABB handles the complex project management, coordinating the various departments supplying differing equipment and ensuring they come together to meet the overall project objective,” he said.

“Equipment supplied has come from various parts of the world and the project team has managed the delivery of equipment in accordance with the project timelines and site construction works from Downers, in order to allow a continuous flow in project execution.”

Managing the project

According to Downer project manager, Caleb McCully, Downer and ABB worked together closely throughout all stages of the project.

“Downer was the main contractor to design, construct and commission the feederstation and ABB is the Downer-

direct subcontractor for design, major equipment supply and commissioning,” he explained.

“Downer worked very closely with ABB, as design is a critical portion of works which directly affects construction and follows right through to commissioning.”

Caleb said ABB’s turnkey system was essential to the success of the Butler Extension Project.

“The success of the ABB scope of work was – and is – critical. As the existing infrastructure could not supply the extension, the Butler Extension Project could not have been completed without the Nowergup feeder station, along with the design, equipment supply, and construction and commissioning,” Caleb said.

In short, ABB fulfilled a major task in providing a reliable and low maintenance design which ensures years of reliable supply to the Butler extension line with ability to back up PTA’s existing Edgewater substation.

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