

SUCCESS STORY

UniGear Digital and Relion® relays to Sasol petrochemical plant Mpumalanga, South Africa



Flexible and compact E-house offers a stand-by power distribution solution to minimize production downtime and increase maintenance efficiency.

Project at a glance

Customer: Sasol

Segment: Petrochemical industry

ABB products: UniGear ZS1 Digital switchgear, Relion® 615 series protection relays, Remote I/O unit RIO600, Vacuum circuit breaker VD4, Indoor current sensors KECA C, Indoor voltage sensors KEVA B, Arc fault detection system REA, truck trailer mounted E-house

Customer challenge

The customer identified the need for a robust, yet flexible, substation solution that would ensure safety for the personnel and avoid damage to equipment during substation renewals and while performing routine substation maintenance activities.

To ensure plant and process continuity complete substations needed to be replaced within a limited time frame. To meet the short plant shutdown time requirement the customer was looking for an alternative solution.

ABB solution

To meet the requirements set, ABB offered a flexible mobile substation, built on the UniGear Digital solution and the flexibility and power of Relion protection relays and the IEC 61850 standard.

The backbone of this solution is the UniGear ZS1 switchgear fitted with Relion 615 series protection relays and ABB's advanced sensor technology. This equipment was placed in an E-house (a pre-fabricated metal outdoor enclosure to house switchgear as well as auxiliary electrical equipment) and installed on a mobile truck trailer.

The mobile substation provided the flexible power supply solution Sasol was looking for. The mobile substation can be relocated to wherever it is needed with a short turnaround time.

A cost-effective solution was obtained by cutting down on the amount of relays and the associated engineering time. The flexibility of the Relion protection relays proved to be paramount as a single relay type is used as needed for both feeder and motor protection applications. The protection relays' arc fault detection capability was utilized to add selectivity to the complete arc fault protection scheme.

In this solution, current and voltage sensors almost completely replaced the conventional CTs and VTs to construct the perfect lightweight solution for this E-house. Further, to increase measurement accuracy, sensor technology is ideally suited, as saturation of the measuring equipment is avoided.



Customer benefits

- Reduced production downtime during substation maintenance with a compact, light and mobile substation solution
- Ground-breaking design of the mobile substation and utilization of the protection relays and the IEC 61850 communication protocol to reduce time spent on engineering, commissioning and testing to minimize all related costs
- Flexibility in design and operation of the switchgear with on-site customization of the protection relays for multiple applications and the utilization of current and voltage sensors with increased rating standardization
- Innovative design and placement of termination boxes on the E-house creates easy access to connect high voltage cables
- Arc flash protection installed in the switchgear and also in the termination boxes for additional safety for substation personnel and equipment



About the project

The mobile substation was delivered in 2015. It was transported by road to the Secunda site fully equipped and pre-tested. Upon arrival it was swiftly commissioned and put into operation.

The combination of the UniGear switchgear with Relion protection relays and ABB's sensor technology form the essence of the UniGear Digital solution. The solution can also be used in more conventional applications to build reliable and efficient electrical networks.

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