

Relion[®] IEDs from ABB monitor, manage and maintain power supply for the Olympic Park at Barra da Tijuca, Rio de Janeiro



On August 5th 2016, the eyes of the world will turn to Brazil, host of the thirty-first international Olympiad, where more than ten thousand athletes from around the world will gather to prove themselves Olympians. More specifically all those eyes will be fixed on Rio's Barra da Tijuca, and the floodlit stage where ABB will be playing its own small part to ensure that the 2016 Olympic opening ceremony is as spectacular as ever.

The Olympic Park, at Barra da Tijuca, covers more than a square kilometer encompassing the Olympic Village, where the contestants will live throughout the event, the sports grounds, where they will compete, and the myriad of facilities that will be needed by the 7.5 million spectators expected to visit over the course of the games. The site is costing more than 1.5 billion US dollars to build, and will host nine of the biggest sporting events, but few of those taking part, or watching the side lines, will know that the power being delivered to the site is monitored, managed, and maintained, by Relion IEDs from ABB.

The Olympic Park is powered from a Gas Insulated Substation which will deliver 138kV through three 40MVA transformers. The power flowing from that installation will be carefully measured and monitored by IEDs from ABB, and controlled with the use of ABB relays. The Intelligent Electronic Devices, Relion 670, were selected for their size and functionality, as well as the integration with ABB's common configuration tools which simplify both deployment and use. The Relion range come pre-configured, or customized, but for this installation the flexibility of the hardware was a key feature – standard units shipped to site can be modified to fit the installed location and function.

ABB COMBIFLEX relays were used, by customer preference, but the core of the design is based around the scalability of the Relion 670 platform. With each Relion IED providing control to a range of systems fewer units are needed, as each takes on multiple roles, and thanks to the application of Parallel Redundancy Protocol (PRP) the user can have complete confidence in the resilience of the system.



Parallel Redundancy Protocol provides two, separated, network connections to each relay. The connections are linked to networks which differ in topology as well as routing, to be certain there's no single point of failure in the reporting chain. With PRP a relay will always get the message, even in the case of network failure.

ABB offers the power of one solution for protection and control and the Relion 670s are flexible enough to fill multiple roles, with enough connectivity and local processing to manage them simultaneously. That not only means fewer units are needed, but with each device being so flexible there's no reason to use different models for different applications, and that helps with both the deployment, and the long-term maintenance of the system. With only one model in use there's less need for spares to be kept on site, and with ABB's intuitive configuration tools the new relays can be quickly adapted to their allocated task.

In total ABB is supplying around a hundred devices to the Olympic Park, so Common Configuration software was another important feature. The ability to quickly configure, and manage, dispersed devices is vital to such a high-profile operation.

Most of the units are being manufactured at ABB's Regional Feeder Factory in South America, simplifying the shipping and delivery of the system. That helps a lot because there's a good deal of pressure to ensure everything is installed, and working, on schedule – the Olympics will wait for no man. Substation Automation has been working closely with the Front-End Sales, and with the support of the experienced Brazilian technical support team on site, to ensure that the installation won't be allowed to slip.

The Olympics, and Paralympics, last less than two months, so by the end of September the games will be over, but the equipment being installed in Rio is expected to last a lot longer. Once the crowds have gone home parts of the venue will be dismantled, turned in to parks and retail areas, while others are converted into housing and Brazil's first Olympic Training Centre. The site will continue to be a vibrant part of the city of Rio, and need power, long after the 2016 games are over.

That means the installed equipment needs to be future proofed, and flexible, fortunately ABB excels in both areas. ABB has more than 10 years experience working with IEC 61850, and both the Relion 670 and COMBIFLEX relays implement the core values of that standard to ensure compatibility with whatever the future may bring. Further extensions or modifications can be confident that new equipment will integrate smoothly with the existing infrastructure, while the customization options available in the ABB equipment ensure that it can manage the power delivery no matter how much the venue changes over the coming years.

For further information visit:

<http://www.abb.com/protection-control>