

## CLIENT CASE

# IMPROVING STADIUM SAFETY WHILST BENEFITTING THE ENVIRONMENT

INFRASTRUCTURE UNITED KINGDOM



- UPS type: Dynamic UPS - PowerPRO2700
- Power module: 2100 kVA per unit
- UPS rating: 1680 kW per unit, system total = 3360kW
- Engine rating: Standby rated at 2100 kVA
- Phase 1 install: 2 modules
- Total install: 2 modules in total
- Operating voltage: 11,000 V/50 Hz
- Configuration: Parallel system
- Location: Plant room

The Principality Stadium in Cardiff, UK, is the home of the Wales national rugby union team. With a seating capacity of 74,000 the stadium welcomes, on average, over 1.3 million visitors per year. The venue is at the leading edge as a multi-purpose, multi-faceted event venue. It has a UEFA 5-star rating and a fully retractable roof,

the only such arena in the UK. In addition to rugby, it hosts a variety of sports including football, cricket, boxing, equestrian and motorsports. Outside of sports, it is a popular venue for staging major music concerts, exhibitions and events. It is one of the most modern and safe stadiums in the world.

## Project Challenge

Following a major redevelopment of Cardiff city centre, the Stadium's utility supply also required a major upgrade, needing a secure power supply not only to ensure the safety of its visitors, but also to allow continuous and uninterrupted TV broadcast coverage of its events. The Stadium had previously achieved this by hiring temporary diesel generators and running these to support its electrical load - which was both extremely costly and detrimental to the local environment. Therefore, the Stadium

looked at other ways its electrical load could be securely supplied without continuously running diesel engines. The site had a mixture of stadium lighting, pumps, fans, and general lighting and power. While some of this was not critical, the equipment and systems that were critical were distributed across the four 11 kV/400 V substations on the site. Therefore, the most cost effective way to supply these was to implement a power protection system at 11 kV to support the entire site.

## Project Solution

The Principality Stadium engaged with Evans Electrical and HITEC Power Protection to design and implement a total solution package. Evans Electrical is experienced in providing dynamic UPS solutions, and all three parties worked with a spirit of openness and resolve to provide the best project possible. The HITEC deliverables were limited not just to the dynamic UPS units from its

factory but also included the 11 kV switchgear, fuel storage tanks, radiators, exhaust silencers, airflow attenuators, as well as the mechanical and electrical installation of these. As part of the final commissioning, HITEC, Evans, and the Principality Stadium ran an "event day" simulation using all the available stadium load while enacting various utility failure and restoration scenarios.



## Customer Experience

The project sponsor at the Principality Stadium commented: "As the project and environment was managed and designed by engineers, the space, building envelope, and delivery schedules all ran smoothly, with WPD (the utility network provider),

installers Evans Electrical, and HITEC cooperating in a seamless operation. The final delivery is a robust system that allows the stadium to reduce the risk of a power failure and generate confidence in the internal infrastructure."



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