



PROTECTING IRELAND'S TELECOMS INFRASTRUCTURE

When eir, Ireland's largest telecommunications operator (formerly eircom) embarked on a project to repurpose existing space into a brand new data centre to support its current and future business enterprise, resiliency was a key factor.

Built on a strong reputation for delivering a range of services across the whole spectrum, from fixed line voice and mobile to broadband and television, eir is now investing heavily in its network, having been the first to launch 4G and being the only current provider of 'quad play' in the Irish market. This service allows customers to get their broadband, mobile, TV service (eVision) and home phone in one package. Strong fibre connectivity is integral to ensuring that customers receive superfast services.

eir required a power solution for a highly critical environment that would effectively support its core business functions including management information systems and general business enterprise but also covering customer care, TV services and other business critical services.

The **€6.7m** project was part of an overall plan to consolidate five operational and enterprise data centres into two, driving efficiencies and giving the company the ability to expand. All of the mechanical and electrical engineering design for the project, including the scope and design intent for the UPS provision, was by Dervan Engineering Consultants who have worked with eir for over 12 years.

- **3000 sq ft of white space**
- **Modular design**
- **850 kW of IT load**
- **100 cabinets set in high density racking**
- **Plant rooms and cooling equipment on roof and under floor pipes**
- **Low voltage and medium voltage distribution**
- **2.2 MW supply into site**
- **Two A and B 10,000V transformers**
- **Equivalent of Tier 3 Uptime Institute classification (not certified)**
- **Nine month project**



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Building on a legacy data centre

Early in 2014, eir signed contracts to build a new data centre at an existing site on brownfield land in Blanchardstown. The site was already home to the company's telephone exchange, television service and a legacy data centre - the new data centre was to be developed within old office space at this site. As a core site for eir, the location offered the best fibre connectivity to ensure that the data centre would operate at high speeds whilst maintaining high levels of resiliency and reliability. Additionally, as a freehold site, the cost overheads were more attractive both for capital and operational expenditure purposes.

Owen Wynne, contracts manager at eir, said: "For us, this data centre was about future readying ourselves to allow for the company's growth over the next five or six years. Resilient power was a key driver for this project - even though we built two power plants they're only as good as the uninterruptible power supplies (UPS) protecting them."

Speaking about the importance of having UPS in place, Owen said: "The UPS is absolutely essential to our business operations. Each time power is switched over from the mains supply to the generator supply, such as in the event of a power cut or a monthly test, the UPS prevents a breakage in power

by taking the load for the few seconds between the mains and generators starting up. It is an absolutely essential piece of our infrastructure."

Introducing Pure Power Systems

Pure Power Systems is the Irish distributor of Riello UPS equipment and was appointed to provide the ultimate solution for eir's backup power requirements in the data centre following a competitive tender process.

Ian Jackson, managing director of Pure Power Systems, which has been exclusively selling Riello UPS in Ireland since 2004, said: "The UPS specification we were working to was a 1200kVA N+1 system configured as a 2N arrangement, therefore there were a total of eight 400kVA standalone systems. The three major driving factors in this €573k project were to ensure resiliency, efficiency and maintainability, whilst we had a very small footprint to work with in respect of the room layout of both the UPS and batteries. Our comprehensive solution ensured this highly critical environment had the required level of availability and redundancy."

Pure Power Systems selected the **Riello Master High Efficiency (HE)**, a product known for its premium protection, power quality and green energy.

The project included:

- **8 x Riello Master HE 400kVA**
- **Configured in a 2N system (four UPS on each side)**
- **5 x strings of batteries per UPS (210 batteries per UPS)**
- **Total batteries = 1680**



Pure Power Systems delivered, positioned and commissioned the UPS systems as well as liaising with switchgear and control companies whose equipment would be interfacing with the UPS systems. They also built an ultra-resilient battery system with each UPS

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having five strings of batteries in order to achieve the desired autonomy, as well as offer another level of redundancy. One of the major challenges on the project was transporting and installing 60 tonnes of batteries into the data centre by hand. "Our staff worked incredibly hard to ensure the project was completed in time and to the highest standard," added Ian.

Driving Efficiencies

The data centre sits on a floor which is elevated 82cm off the ground allowing for cooling pipes to run beneath. "We have the same level of redundancy on cooling as power," explained Owen, "Cooling is an essential part of the operation and we need to make sure it is working at all times or the data centre overheats." Driving levels of efficiency in the modular

data centre, there is a hot aisle configuration with a roof over it to contain the warm air. Cool air (around 22 -23 Degrees Celsius) is drawn in at the front of the racks and then dissipated into the back of the cabinets in a loop. Another way of boosting efficiency levels is having the data centre configured in a modular design, ensuring that only the required load is used.

The three Rs – resilience, redundancy and right-sizing

Ian said: "Resilience was a key consideration which is why the UPS' were arranged in this configuration. If one UPS was to fail there would still be the required 1200kVA of capacity. This level of redundancy was also increased by mirroring the system in a 2N arrangement. It's the same with the batteries - by having five strings per UPS, if one battery

fails, there is inherent redundancy within each UPS module." Owen said: "The multi-module redundant installation using standalone systems offered the perfect solution for us because it presented the most efficient and cost effective solution but with the additional redundancy. The Riello product gave us the necessary resilience and allowed us flexibility in how we use it. We can tap into this power resource and grow according to the business needs because it is a modular design data centre. Every piece of redundancy we can think of has also been put in but in such a way that it has been optimised."

Reliability with Riello UPS

Pure Power Systems has a strong relationship with Riello UPS as its single Irish distributor of UPS



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products and services. Speaking about this, Ian said: "We place a particular emphasis on the service capabilities of our skilled engineers. We learn from the best and Riello pride themselves in offering top class training to ensure resellers have a thorough understanding of the products and exactly how to run and maintain them properly.

"The Riello systems are very well designed with a user friendly parallel hardware/control system. This makes the difficult job of commissioning the UPS somewhat easier as we can trust this tested design when doing our on-site testing. We also had to carry out stringent load acceptance tests through a set of detailed load bank autonomy procedures to verify the UPS' and batteries were capable of supporting the load for the specified time of 20 minutes," Ian continued.

Engineers of Riello Authorised Resellers are invited to carry out training on the commissioning, maintenance and servicing of Riello UPS. Once the engineer has completed and passed the Certified Engineers training programme, they are allocated an Engineers ID card which has a unique reference number which customers can verify via a dedicated website www.riello-engineer.co.uk.

Pure Power Systems also works closely with eir to provide ongoing service and maintenance, and to carry out UPS hardware and battery checks every six months. "This includes visual checks as well as load discharge tests on batteries," explained Ian. Working to response times between four and six hours, Pure Power Systems is also on hand as and when maintenance is required.

Working with Pure Power Systems

"You need a provider you can absolutely rely on who will always look after the needs of your business and that is Pure Power Systems in a nutshell," said Owen. "Pure Power Systems, just like any of our regular and trusted vendors, has helped eir in difficult circumstances on numerous occasions. These types of relationships are essential when running critical infrastructure. "The team is always there when we need help and respond to any queries quickly and efficiently. We're very happy with the service and it's that kind of trusted relationship and strong partnership approach that money can't buy. With regard to this project, we were very happy with the efficiency of the systems proposed, they met all of our specifications and the price was good - we knew it was a trusted provider."

