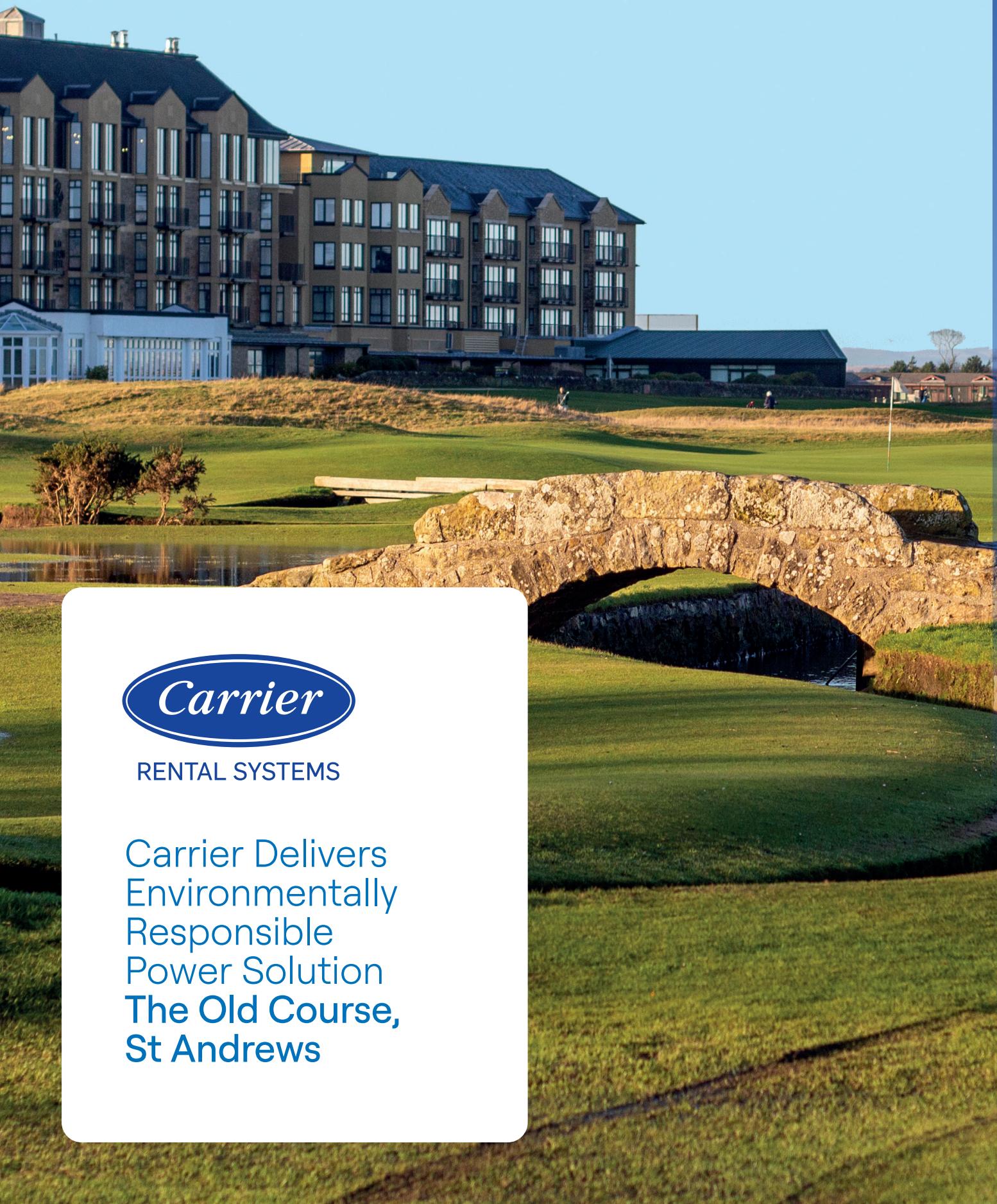


# Case Study



RENTAL SYSTEMS

Carrier Delivers  
Environmentally  
Responsible  
Power Solution  
The Old Course,  
St Andrews



## The Client

Founded in 1754, The Royal and Ancient Golf Club of St Andrews, Fife, is among the world's most prestigious and historic golf institutions. Its renowned Old Course, with records dating back to 1552, is widely regarded as [HYPERLINK "https://www.guinnessworldrecords.com/world-records/oldest-golf-course"](https://www.guinnessworldrecords.com/world-records/oldest-golf-course) the oldest golf course in the world. As the 'Home of Golf', the course is deeply revered, making environmental considerations essential for any project undertaken on its grounds.

## The Challenge

Morrison Construction, undertaking drainage works on the Old Course on behalf of Scottish Water, required a reliable and low-emission power solution to support operations. Morrison Construction were renewing a water pipe running from the Royal and Ancient Golf Club building to directly underneath the first tee and tenth green. The project was highly time-sensitive, as site installation began on the 15<sup>th</sup> of November 2024 and excavation and repairs needed to be completed before the start of the golfing season, which is traditionally in early April. The presence of the first tee and tenth green of the Old Course added an extra layer of complexity, requiring minimal noise disruption for golfers and residents and strict environmental safeguarding measures.

## The Solution

Morrison Construction sought a more sustainable alternative to traditional diesel-powered generators and had previously been impressed by the range of advanced rental equipment showcased at a Carrier Innovation Day in Aberdeen.

As a solution, SLD Pumps and Power, a Carrier company, provided an LPG generator paired with the X-45 battery storage unit to reduce emissions and noise levels. An EV charger was also supplied to support the site's transition towards sustainable energy use.

### What did we do?

LPG Generators are a cleaner-burning alternative to diesel with EV charging, reducing CO<sub>2</sub> emissions by 33% less than coal and 12% less than oil. They further minimise environmental impact by emitting almost no black carbon (< 0.1 mg/MJ).

The X-45 Battery Storage unit optimised fuel consumption on this project by 63% and reduced generator runtime and fuel dependency by working in conjunction with the LPG generator. Instead of the generator running continuously, the X-45 battery stored surplus energy when demand was low and supplied power when demand increased. This process allowed the generator to operate only when necessary, significantly reducing runtime, fuel usage and emissions, while ensuring the site always had access to power.

A Panorama Monitoring System ensured optimal operational efficiency by providing real-time data on CO<sub>2</sub> savings, fuel and power consumption and battery performance, allowing for fine-tuning of energy usage.

The LPG generators reduced noise by operating at lower decibel levels of 50-60 dB. This is compared to standard diesel units, which operate at 97 dB and are traditionally used to support complex site setups of this size.

Gas-based fuel eliminates the risk of spills and contamination, helping to preserve the course's environment and pristine condition.



## Results

The solution was successfully delivered in November 2024 and completed ahead of the start of the golf season at the end of March 2025. Carrier, through SLD Pumps and Power, contributed toward Morrison Construction's sustainability targets within a tight timeframe while maintaining operational efficiency. By reducing CO<sub>2</sub> emissions compared to diesel-powered alternatives, the system significantly lowered the project's carbon footprint and achieved a weekly carbon avoidance of 2.6 tonnes. Smart battery integration optimised fuel usage, enhancing overall efficiency, while lower noise output and reduced generator runtime contributed to a quieter, less intrusive operation. Additionally, the absence of fuel on site eliminated the risk of spills, helping to safeguard the environmental integrity of the historic golf course.

### Testimonials

*"We were impressed with the equipment on offer at a Carrier Innovation Day, so they immediately came to mind for this project. Their array of equipment, combined with their ability to find solutions for complex projects, made them the ideal choice. The ability to reduce fuel consumption and emissions while ensuring reliable power at such a prestigious location was invaluable."*

Jennifer Craig, Senior Buyer, Morrison Construction

*"Any project carried out on The Old Course demands the highest environmental standards. Our LPG generator and battery storage technology provided a clean, efficient and reliable power source that perfectly suited the site's requirements. It was our pleasure to partner with Morrison Construction to find the right solution and ensure seamless delivery for such a historic site."*

John Gallagher-Worthington, Sales Director, SLD Pumps & Power, a Carrier company.

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