ECHELON DATA CENTRES

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Echelon DUB10 Data Centre and Siemens Energy

Ensuring Reliable, Efficient, and Low-Carbon Power for Mission-Critical Infrastructure

ECHELON DUB10, IRELAND

24 MW SST-300 STEAM TURBINE GENERATORS

Overview

Echelon Data Centres is developing the DUB10 facility in Dublin, a hyperscale-grade data centre designed to meet growing digital infrastructure demands in Ireland and beyond. Dublin's restricted grid capacity poses a unique challenge for large-scale data centre development, especially where continuous high-load and highly reliable operations are required. To address this, Echelon partnered with Siemens Energy to implement an innovative on-site power generation solution that enables secure, resilient, and efficient operations while supporting long-term sustainability objectives.

Challenge / Opportunity

1. Limited Grid Capacity in Dublin

Dublin faces significant constraints on available grid connections. Large, high-load facilities such as hyperscale data centres often struggle to secure the reliable, high-capacity power supply needed for 24/7 operations.

2. Need for Continuous, High-Reliability Power

Data centres operate with extremely tight uptime requirements. Any interruption can lead to service disruption, financial impact, and reputational risk. Ensuring constant, uninterrupted power was critical to the DUB10 development.

3. Sustainability and Decarbonization Pressures

The data centre sector is under increasing pressure to reduce emissions, improve energy efficiency, and support Ireland's national climate targets. Echelon required a solution that would deliver both reliability and measurable carbon-reduction benefits.

Siemens Energy Solution

Integrated, Grid-Independent On-Site Power Generation

To ensure DUB10's operational resilience, Siemens Energy delivered two steam turbine generator sets integrated into a combined-cycle power plant for a grid independent on-site power generation.

Key Components

- Two 24 MW SST-300 steam turbine generator sets supplied and integrated by Siemens Energy.
- Combined-cycle power plant configuration that uses waste heat from gas turbines to produce steam for the SST-300 units, significantly improving overall efficiency.
- A special redundancy design that allows the turbine generator sets to operate continuously across various load conditions and during maintenance windows.

This design provides a robust and fault-tolerant power generation backbone for DUB10.

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Benefits to Echelon DUB10

1. Grid-Independent Reliability
The on-site generation plant frees the data centre from dependence on limited regional grid capacity, providing secure, predictable power and stable operational continuity.

2. Maximum Availability
Redundancy across turbine sets supports constant operation, ensuring the reliability required of Tier III and Tier IV-level facilities.

3. Enhanced Efficiency and Lower Operating Costs
The use of steam turbines within a combined-cycle configuration increases fuel efficiency, reduces waste heat, and lowers the operational carbon footprint.

4. Sustainability and Emissions Reduction
By enhancing overall plant efficiency, the solution reduces CO_2 emissions per MWh, lowers fuel consumption, and minimizes total environmental impact.

Contribution to the Energy Transition

Supporting a Low-Carbon Power Strategy
The combined-cycle system delivers substantial carbon reductions compared to open-cycle gas generation. This supports the data centre sector's transition toward cleaner, more efficient power solutions.

Strengthening Critical National Infrastructure
By deploying efficient, resilient, and lower-carbon on-site power, the project eases pressure on the constrained Irish grid, supports the digital economy, and introduces scalable, future-ready infrastructure.

Delivering Sustainable Progress
Echelon and Siemens Energy demonstrate how high-demand digital infrastructure can be delivered responsibly while balancing reliability, security of supply, and environmental performance.

Conclusion

Siemens Energy's steam turbine generator sets integrated in a combined-cycle power plant ensures resilient, efficient, and low-carbon power generation, enabling DUB10 to meet both operational and environmental performance targets.