



TILN FARM CASE STUDY: POWERING THE UK'S CLEAN ENERGY TRANSITION

Retford Nottinghamshire UK

25MW | 50MWh BESS



Introduction

In a world where the race to achieve net-zero emissions is more urgent than ever, Battery Energy Storage Systems (BESS) have become indispensable for the clean energy transition. At the heart of this progress lies the Tiln Farm BESS project, a groundbreaking initiative located in Retford, Nottinghamshire. It showcases how collaboration, innovation, and world-class technology can redefine the UK's energy landscape.

This project, a collaborative effort between Schroder's Greencoat (asset owner), and METLEN Energy & Metals (EPC partner), integrates 26 containers of Trina Storage's flagship Elementa solution into a 25MW/50MWh BESS with a two-hour duration. Tiln Farm marks a significant milestone for Trina Storage in Europe, demonstrating the strength of partnerships and the impact of advanced energy storage technology.



The Vision Behind Tiln Farm

With the UK government setting ambitious goals to achieve net-zero emissions by 2050, energy storage is a critical component of future energy strategies. The Tiln Farm project addresses key challenges such as grid stability, renewable integration, and optimised energy use.

Strategically located adjacent to a solar farm, the project maximises synergies between solar power generation and energy storage, creating an efficient PV+Storage colocation model. This approach ensures that renewable energy is effectively captured, stored, and dispatched when needed most, reducing reliance on fossil fuels and supporting the decarbonisation of the grid.

Technical Features of the Tiln Farm BESS

The Tiln Farm BESS project leverages 26 Trina Storage Elementa containers, designed to deliver reliable and scalable energy storage solutions. Key technical features include:

- **50MWh Storage Capacity:** Ensures sufficient energy reserve to stabilise grid fluctuations.
- **Advanced Battery Management Systems (BMS):** Monitors key parameters, including voltage, current, and temperature, for around-the-clock performance and safety.
- **Robust Safety Mechanisms:** Smoke, gas, and heat detection systems continuously monitor conditions within the containers, with fire suppression systems providing additional protection.
- **Seamless Grid Integration:** The BESS is connected to a 132kV substation on-site, ensuring smooth integration with the grid and enhanced reliability.



Services Delivered and Market Impact

Tiln Farm provides critical services to the UK's electricity grid, contributing to grid stability, flexibility, and efficiency. These services include:

- **Frequency Response Services:** Tiln Farm supports Dynamic Containment (DC), Dynamic Moderation (DM), and Dynamic Regulation (DR), which are essential for maintaining grid frequency and preventing blackouts.
- **Balancing Mechanism and Wholesale Market Arbitrage:** The project participates in energy trading, optimising energy use and generating revenue by storing and dispatching power during peak demand periods.
- **Enhanced Grid Reliability:** By reducing fluctuations in grid frequency and enabling better integration of intermittent renewable energy sources, Tiln Farm supports the UK's clean energy goals.

Collaboration Driving Success

The successful deployment of the Tiln Farm BESS project highlights the importance of collaboration between key industry players. Schroder's Greencoat, METLEN Energy & Metals, and Trina Storage worked closely to ensure the project's seamless execution.

"Working with Trina Storage allowed us to smoothly integrate energy storage on-site, showcasing the potential of colocated solar and storage systems." - Özer Erdoğan, Project Director, METLEN Energy & Metals.

Trina Storage's vertically integrated approach was instrumental in streamlining the project's development—from manufacturing the Elementa containers to managing their installation and commissioning. This holistic involvement minimised the need for third-party interventions, ensuring the project was completed efficiently.





The Trina Storage Elementa Solution

At the core of the Tiln Farm project is the Trina Storage Elementa, a flagship BESS solution designed for grid-scale applications. Engineered with performance and safety in mind, Elementa provides:

- Scalability and Flexibility: Ideal for both small-scale and large-scale deployments.
- Advanced Liquid Cooling: Optimises thermal management, extending the life and efficiency of battery cells.
- Proven Safety Standards: Compliance with global standards and robust safety mechanisms to minimise operational risks.

The success of Tiln Farm further validates Elementa's role as a key enabler in driving large-scale energy storage deployments globally.

Solar + Storage Synergy

One of the unique aspects of the Tiln Farm project is its colocation with its solar farm. This configuration allows for:

- Optimised Energy Generation and Storage: Solar energy generated during the day can be stored and dispatched when demand is high or when sunlight is unavailable.
- Reduced Curtailment: By storing excess solar energy, the project minimises curtailment, ensuring maximum utilisation of renewable resources.
- Increased Energy Independence: By combining solar and storage, the project reduces reliance on external energy sources, making it a model for future sustainable developments.



Conclusion



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