

marlec 

Grenville Lake Hybrid Off-grid System

Case Study





Marlec Engineering is the UK's longest-established renewable energy company, manufacturing wind and solar solutions for off-grid power.

Since 1978, our systems have provided reliable, sustainable energy for Railways, Highways, Telecoms, Marine, Leisure industries, Town & Parish Councils. Our solar solutions are designed for durability, efficiency, and easy installation.

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Grenville Lake is a world-renowned 72-acre carp fishery, home to specimen fish exceeding 60 pounds. Maintaining optimal water quality is essential to protect valuable stock and ensure a safe, thriving environment throughout the year.

With fish welfare dependent on continuous aeration, the lake required a dependable off-grid power solution to support its CO₂ pump system.

Client need

- Independent review of existing solar system safety
- Reliable and maintenance-free CO₂ pump operation
- Year-round performance in summer and winter
- Critical system reliability to protect fish stock
- Simple installation with minimal site disruption

The Challenge

- Highest energy demand occurring overnight without solar generation
- Exposure to high winds requiring intelligent battery protection
- Continuous year-round operation regardless of weather
- Critical infrastructure where downtime was not an option

Solution

Marlec designed and delivered a fully off-grid hybrid wind and solar system to ensure uninterrupted operation of the CO₂ pump system.

The installation included:

- **Full system review** with safety improvements implemented
- **Rutland 1200 Windcharger** to support night-time generation
- **High-quality AGM batteries** for secure and stable energy storage
- **Detailed schematic drawings** provided for installation clarity
- **Pre-configured plug-and-play cabling** for efficient deployment

By combining wind and solar generation, the system balances energy production across day and night conditions, removing reliance on grid infrastructure while ensuring operational resilience.



The Results

- Fully balanced hybrid system delivering nine days of autonomy
- Reliable protection of fish stock through continuous aeration
- Reduced operational risk during extreme weather periods
- Scalable off-grid solution adaptable to wider site applications

The lake now benefits from consistent, worry-free management of its critical systems, providing confidence during both peak summer temperatures and challenging winter conditions.



Marlec Services

Marlec's team specialises in off-grid renewable energy solutions across multiple industries, including transport, utilities, and signage.

With thousands of installations worldwide, we provide expert system design, technical guidance, and long-term support.

If you operate a fishery or remote site requiring dependable off-grid power, speak with our team to explore the right solution for your needs.



Discover how Marlec's renewable solutions can enhance your sustainability efforts.

Get in touch today

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