HYBRID PROJECTS: THE KEY TO ENHANCED RETURNS

As renewable technologies continue to penetrate global energy markets, one of the pressing challenges is how to best compliment these sources of variable generation, maximise the use of grid connections and reduce infrastructure costs.

KEY CO-LOCATION SERVICES

Our team can support you across key stages of your project lifecycle, or discrete packages of work as required.

Increasingly, hybrid projects involving multiple renewable energy technologies and/or energy storage are viewed as an effective method of optimising Levelized Cost of Energy (LCOE) and managing peaks and troughs in supply and demand. Selecting the right combination of technologies and sizing them appropriately is key to maximising the benefit of co-location.

Our experts can advise across the following areas:

DEVELOPING

- Site selection
- Feasibility
- Land/lease agreements
- Environmental Assessment
- Planning application & consent management
- Procurement
- Electrical and grid engineering services
- Energy yield analysis

CONSTRUCTING

- CDM compliance
- Safety reviews
- Design & advisory
- Grid & earthing Studies
- Client representative/owners engineer
- Planning discharge
- Community liaison
- Project management

OPERATING

- H&S management
- Aggregation services
- Inspections & maintenance
- Management of grid outages and constraints
- Advanced performance engineering

// we take a considered approach from the outset, therefore we can advise our clients on the best way to achieve their project goals while flagging any potential risks //

LAUREN WHEATLEY DIRECTOR OF ADVISORY & ANALYTICS

RAY WIND FARM BATTERY STORAGE CO-LOCATION PROJECT – 5MW

01

CLIENT VATTENFALL

PROJECT DESCRIPTION Planning application and consent management.

SERVICES PROVIDIED Natural Power delivered planning application and consent management services for the Pen Y Cymoedd and Ray projects. Careful design and site assessment combined with detailed stakeholder engagement ensured both projects gained consent within tight timescales.

WIND/SOLAR SIZING OPTIMISATION

02

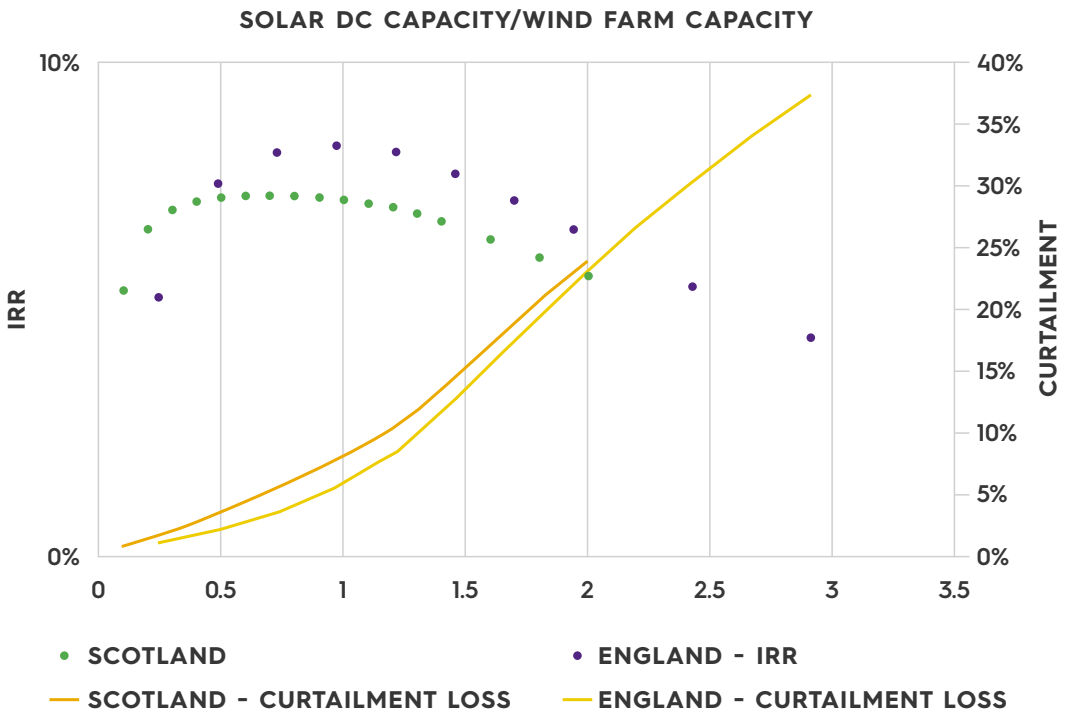
CLIENT INTERNAL R&D

PROJECT DESCRIPTION Energy yield analysis and LCOE optimisation.

SERVICES PROVIDIED Natural Power assessed the viability of adding solar PV capacity to existing wind farms for a representative range of projects across the UK.

By combining time series of historic wind farm output with modelled solar generation and curtailing the solar output when the existing grid export limit was reached, Natural Power was able to show that significant solar capacity can be added to wind farms without incurring prohibitive curtailment losses.

Even for projects in Scotland where the solar resource is comparatively weak, the complimentary nature of the two technologies and cost reductions achievable through co-location can make this hybrid approach commercially viable.



BATTERY SIZING OPTIMISATION WITH ON-SITE GENERATION

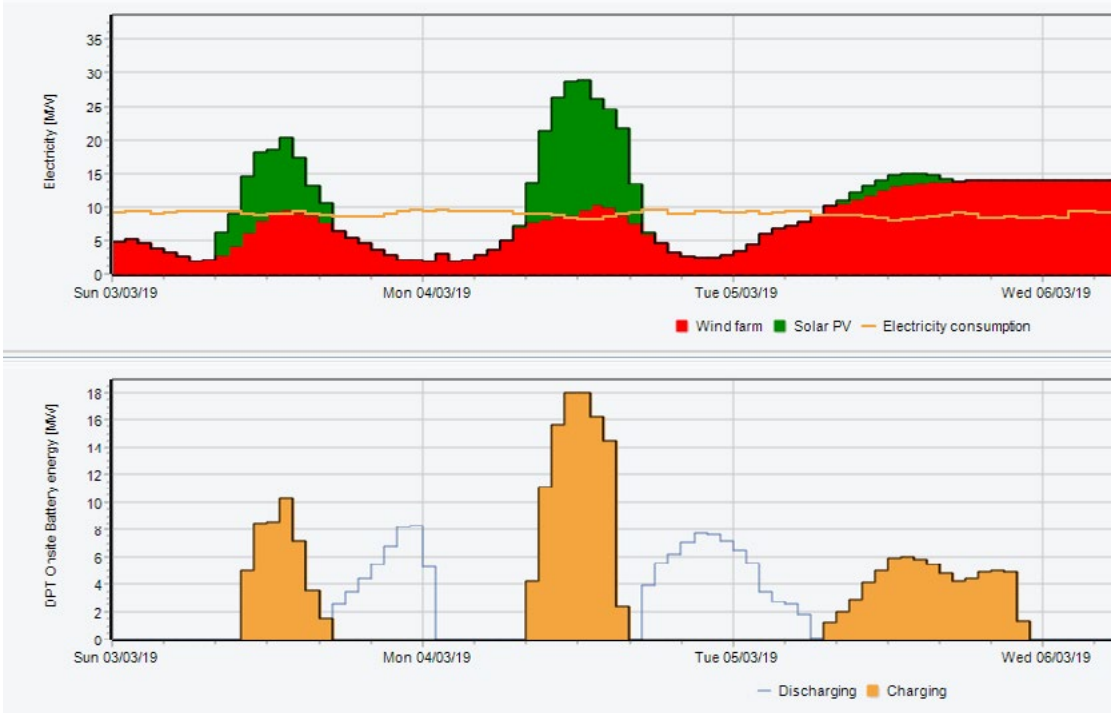
03

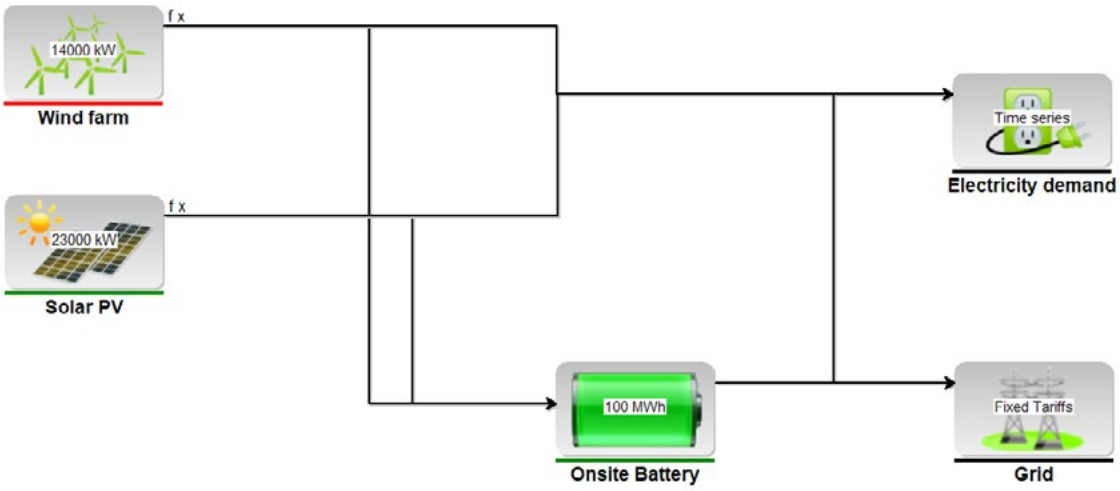
CLIENT CONFIDENTIAL

PROJECT DESCRIPTION Battery storage sizing optimisation for hybrid wind/solar farm supplying industrial load.

SERVICES PROVIDIED Our client wished to investigate the potential for supplying an industrial user with electricity from a proposed wind farm to mitigate wider grid constraints. Analysing the expected wind farm production time series, it became clear that this alone would lead to extensive period of import from the grid in order to meet the user's consumption. To counteract this issue, a solar PV and battery storage scheme was proposed, co-located with the user.

Natural Power used a time series of modelled wind and solar production and the user's consumption profile to size the battery storage system in order to manage the production to demand disparity and minimise grid import.





Images courtesy of EnergyPRO

KEY RESOURCES

Between our full-time resources and comprehensive network of trusted associates, the Natural Power team has years of industry experience. Relevant experience areas for our senior staff are highlighted below and full CVs are available upon request.

		TECHNOLOGIES				SERVICES					
KEY SENIOR STAFF	ROLE	WIND	SOLAR	BATTERY STORAGE	THERMAL STORAGE	FEASIBILITY, PLANNING & ENVIRONMENT	PROJECT MANAGEMENT	ENERGY ASSESSMENT	ENGINEERING & CONSTRUCTION	DUE DILIGENCE	OPERATIONS
RALPH SPERNAGEL	DIRECTOR OF CONSTRUCTION	X	X	X		X	X		X	X	
JOHN WOODRUFF	HEAD OF PROJECTS, PLANNING & ENVIRONMENT	X	X	X		X	X			X	
ALAN KNIGHT	HEAD OF PROJECTS, CONSTRUCTION	X	X	X			X		X	X	
ANDY YUILL	SENIOR RENEWABLE HEAT MANAGER		X	X	X			X	X	X	
HANNAH STAAB	SENIOR DUE DILIGENCE ADVISOR	X	X	X			X	X		X	X
MORGAN HOUTMEYERS	SENIOR CONSTRUCTION PROJECT MANAGER	X		X		X	X		X	X	

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ACCOUNT MANAGER

FOR FULL DETAILS ON OUR **ISO** AND OTHER CERTIFICATIONS, PLEASE VISIT:
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