



Energy Storage

Power System Consulting

Sizing and deploying an energy storage system involves more than just hardware decisions. Whether you're planning a new installation or expanding an existing one, understanding how your system will perform under real-world conditions is critical.

Why Power System Consulting matters for energy storage projects

A power system study—supported by detailed modelling—is essential to ensure your system meets grid requirements, performs as expected, and responds effectively to both planned and unexpected events. While some studies rely on generic assumptions, project-specific modelling delivers far more accurate and actionable results. These insights can help identify potential issues early, reducing risk before major investments are made.

Importantly, these studies aren't just a one-time requirement. As grid codes evolve and operational demands shift, ongoing analysis helps system owners and operators adapt. With a dynamic model in place, you can evaluate performance, maintain compliance, and optimise system behaviour throughout its lifecycle.

Key benefits of accurate power system modelling



Optimal system design and planning

Accurate modelling aids in the design and planning of new power systems, ensuring they are efficient and meet future demands.



Improved grid stability and resilience

By simulating various operating conditions and disturbances, such as faults or sudden load changes, power system modelling helps engineers assess the system's response and determine its stability margins, thereby enhancing grid stability and resilience.



Enhanced grid reliability

Through precise simulations of the entire power system, engineers can identify potential weaknesses and vulnerabilities, improving the overall reliability of electrical grids and preventing disruptions in electricity supply.



Increased energy efficiency and cost savings

Power system modelling enables the optimisation of energy efficiency, allowing utilities to pinpoint areas where energy losses can be minimised, leading to significant cost savings.

The Valo Power Systems Team is here to support your engineering team at every stage—from the early planning of your new project to ongoing management throughout its lifespan.

Each of these services relies on project-specific models, ensuring precise and relevant insights. Our team uses three sophisticated software platforms—PSCAD, PSS/E, and DigSILENT—choosing the most appropriate one based on your project's unique requirements.

Our expertise

Accurate and project-specific data: Our studies are conducted using precise, project-specific data to ensure highly reliable results. We strive to minimise assumptions and avoid using default, non-project-specific data.

Expert team and versatile tools: Our highly skilled and dedicated team has hands-on experience and knowledge of various grid codes, as well as IEEE and IEC standards. They can effectively choose from different software tools to ensure the best fit for your project needs.

Comprehensive lifecycle services: We provide consulting services for various stages of a new build project and throughout the system's lifetime, ensuring continuous support and optimisation.

Additionally, our power systems experts are actively involved in designing controllers for the primary and secondary control of the system, utilising this knowledge to better analyse system impact and performance.





Type	Scope	Deliverable
Modelling	A project-specific, user-defined dynamic model is required to support all of the items listed below.	Report containing: - Overview of data used for input - Tests performed - Results showing the dynamic behaviour of the system
Planning and sizing	Determining the appropriate size of equipment—such as batteries, transformers, and cables—is a critical part of system design. The scope of this work can vary depending on the project's size and complexity, and it may be carried out using either a generic project model or a user-defined model tailored to specific requirements.	Report containing: - Overview of data used for input - Tests and simulations performed - Result showing optimal system size(s)
Integration and impact analysis	Analysing the impact of the energy storage system on the grid and vice versa, prior to commissioning. The scope of work can vary depending on the size and complexity of the project and must be conducted using the project-specific model.	Report containing: - Overview of data used for input - Tests and simulations performed - Results showing impacts
Validation studies	Verifying the test results obtained from the field against the simulation results. The study must be conducted using the project-specific user-defined model.	Report containing: - Overview of data used for input - Tests and simulations performed - Overview of differences and similarities between the field data and the simulation results

Why Valo?

Valo brings years of global experience, backed by access to original product data and advanced engineering tools. Our team combines deep technical expertise with global resources to deliver integrated energy solutions that connect traditional and renewable power sources.

With a focus on reliability, flexibility, and safety, Valo provides visibility into critical energy systems and optimises the performance of multiple generation assets—helping energy operators around the world meet evolving demands with confidence.



VALO

Our power systems engineering team is with you every step of the way

Contacts

For questions about the content of this bulletin, or if you need Valo assistance and services please contact your nearest Valo representative. If you don't have contact details at hand, please follow the link:

valoenergy.com

