

Hybrid Power Station Solutions

Overview | SYSTEM SOLUTIONS

ENABLING ELECTRICAL POWER SYSTEMS INTEGRATION

The shift to distributed generation is changing long-established concepts about how electricity should be produced, transmitted, and used. Power flow through the grid is becoming more decentralized and bidirectional. Local measurement, fault detection, and remote control are now essential for stability and intelligent load management. A new approach is needed: one that encourages greater use of renewable sources and facilitates interconnection of distributed power generation using advanced monitoring, communication, and control. Woodward is recognized as a leader in the field of advanced power generation and distribution control products. We continue to build on our legacy by creating cutting-edge control and protection devices, designed to work in complex systems to meet the needs of tomorrow's smart grids. Our global strategy is melding all aspects of power generation and distribution to enable electrical power systems integration.



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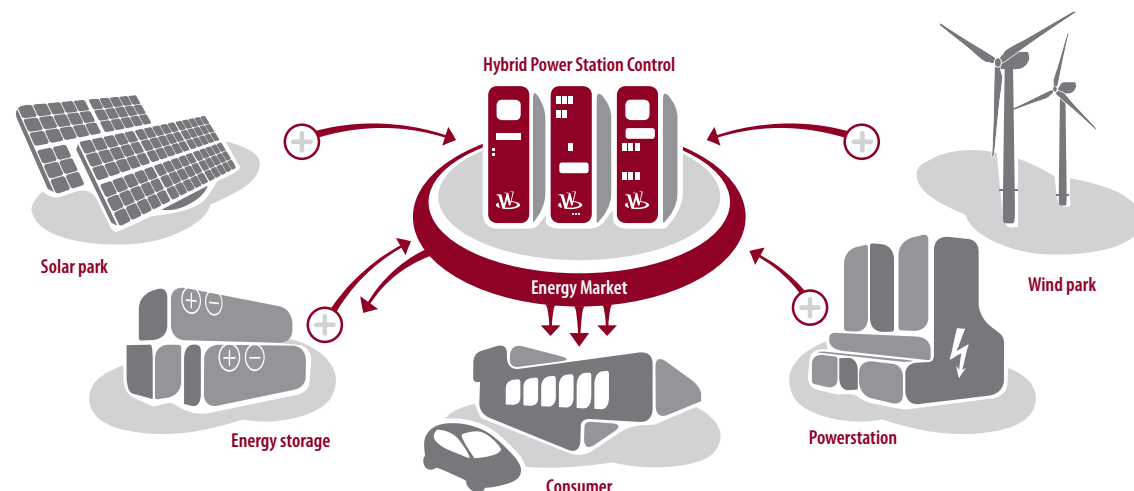
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WHAT ARE SMART GRIDS AND HYBRID POWER FOR?

A smart grid is the idea of balancing power generation and energy consumption based on intelligent/smart mechanisms in order to save energy, improve grid quality, or just to reduce CO₂ by increasing the share of renewable energies in the energy mix. As this often requires distributed power generation, the demand for intelligent control rises along with increasing numbers of consumers and producers (prosumer).



100% RENEWABLE ENERGY VS. GRID QUALITY

As renewable energies such as wind, solar, or tidal power often fluctuate, a system that combines volatile Power Generation needs to have elements that can cover or balance periods of no sunshine, no wind, or no waves, etc. These elements can be energy storages of different types or high-dynamic diesel or gas generation sets, which can quickly ramp-up on demand. But obviously, this has to be controlled from a central station in order to deliver reliable power according to local grid codes.



SECURING INVESTMENTS AND PROFITABILITY

Environmental protection is an important goal, but affordability needs to be granted as well. That is why Woodward Power Solutions offers the integration of existing assets into a Hybrid Power Station Control System. Fuel savings along with reduced maintenance costs compensate investing in renewables.

OUR SERVICES INCLUDE:

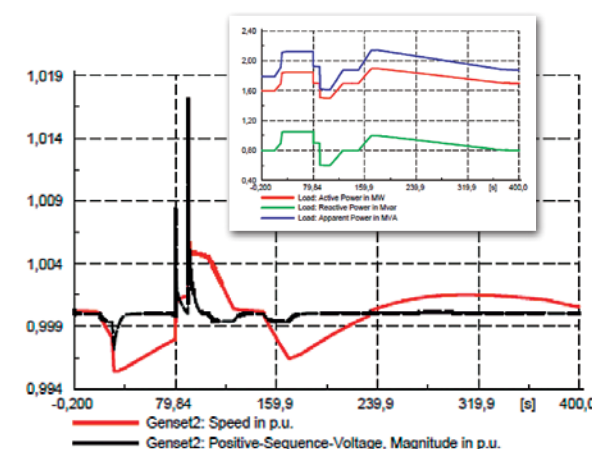
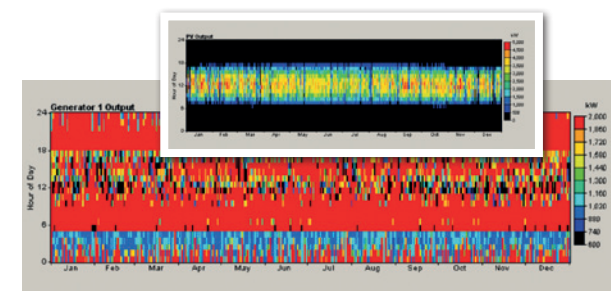
As a recognized provider of Power Station control Systems, Woodward Power Solutions offers a wide range of services, aligned with the needs of Power Station operators:



- Evaluation of options to integrate renewables
- Project proposal, first design
- Simulation and modeling of different options
- Iterative optimization
- Enabling existing assets to communicate with Hybrid Power Station Control
- Hybrid Power Station Control hardware
- Start-up/commissioning Remote Service for later optimization

LONG- AND SHORT-TERM CONSIDERATIONS

Do you want to know whether a project is feasible at a specific location under the given environment conditions? We support you with data for your feasibility study. Economical considerations are performed based on long-term calculations (see right); technical considerations are performed on the high-precision simulation tool DlgSILENT Power Factory (see down).



VOLATILE INPUT PARAMETERS VS. PREDICTABILITY: SIMULATION

Predictability is a core requirement of investors, thus Woodward Power Solutions is able to perform analysis based on mathematic models that present the physical behavior of real Wind Turbines, PV plants, Gensets, Energy Storages, or even power lines and transformers. In short – each element of a Hybrid Power Station can be simulated under the given load curve or wind speed or irradiation curve. This results in a design that can cover aspects like “economic mode,” “ecologic mode,” or anything between. Woodward Power Solutions has a long-standing experience with interpreting simulation results.