

PV-DIESEL POWER STATION SOLUTIONS

WOODWARD | ENGINE SYSTEMS

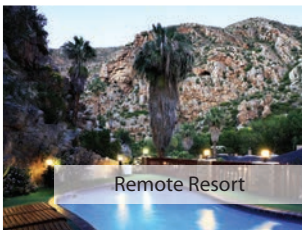


DECENTRALIZED ENERGY RESOURCES

DO YOUR CUSTOMERS NEED TO SAVE COST ON FUEL?

Environmental requirements are evolving rapidly. Decentralized power generation applications like remote resorts, field camps or mining areas are directly affected by this trend.

Help your customer find an alternative. The combination of Photovoltaik with Diesel is the way out of the price spiral. Especially in regions with a high solar radiation your customer can save up to 50% of fuel costs. As a positive side effect the efforts for maintenance and logistics can be restrained and the CO₂ emissions are minimized.



Remote Resort



Mining



Field Camp

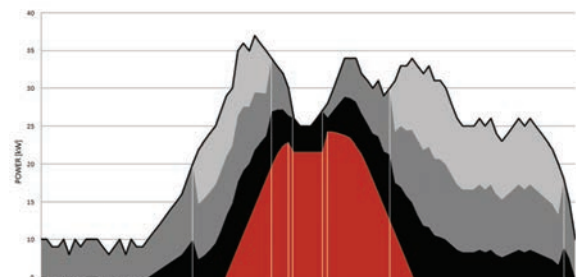


Industrial

Typical PV - Diesel applications are an efficient solution to reduce emissions.

PV POWER IS THE ANSWER

- Make free energy usable and save **up to 50%** of daily fuel costs
- Reduce cost of maintenance and logistics
- Reduce the dependency on fuel price
- Reduce the risk of supply shortage
- Minimize CO₂ emissions
- Control contribution of volatile energy
 - > Operate gensets at optimal point
 - > Ensure sufficient spinning reserve for load jumps



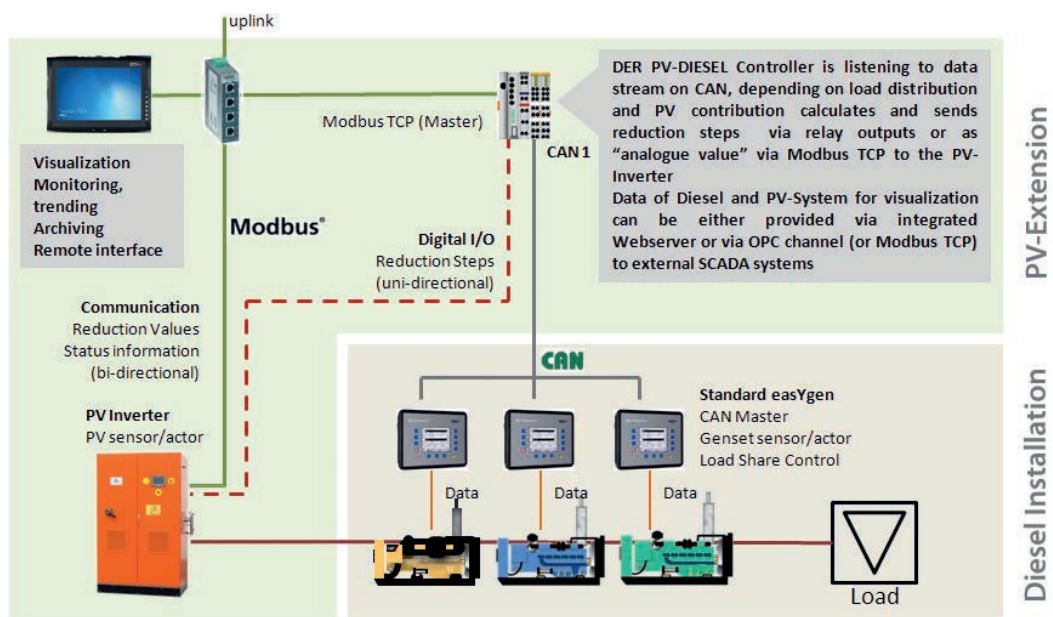
REAL-CASE

Mining project in South Africa
1 MWp PV-Plant
Fuel cost about \$1.2 per liter
Annual savings amount to 540 T\$
Pay back period was 3 - 4 years

INTEGRATION

DESIGN RULE

For best possible cost savings, the diesel gensets need to be de-activated in case of sufficient solar radiation and according load demand. The superimposed control considers the minimum allowed genset utilization (ca. 30%) as a threshold in order to avoid wear due glazing etc.. That results in smaller gensets which are coupled together as a cascade, controlled by an intelligent multi-master capable genset controller like the **Woodward easYgen-3000 or easYgen-3000XT series**.



PV AS NEGATIVE LOAD

Fit for DER Integration

The Woodward easYgen-3000(XT) series is ready for being used in ON/OFF grid and storage PV-Diesel applications in conjunction with third party Diesel/PV communicating via Modbus TCP or CANopen and reacting on commands from the Hybrid controller to ensure long lifetime of Gensets with securing sufficient spinning reserve for load jumps at the same time.



MANAGING THE PV - DIESEL CLUSTER

The Woodward solution is capable to manage the Diesel Power station with built-in common control functions as load-dependent start/stop, etc. These functions allow you to use a cost effective Hybrid Controller for less additional investment and according shorter pay-back time. The easYgen can also be combined with a retrofit package in case that you want to refurbish your existing genset installation.

OVERVIEW OF FEATURES

- Isochronous load sharing (up to 32)
- Soft load/unload of generator
- Synchronizer and sync-check function
- Configurable monitoring
- Load-dependent start/stop
- True RMS measurement
- System overview display
- Event logger
- Support of up to 16 LS-5
- Capability for remote panel
- Advanced communication (CANopen, J1939)
- Multilingual HMI (Up to 11 languages)



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ready

YOUR BENEFITS

FOR END-USER

- Eliminate increasing fuel cost in your OPEX calculation
 - Safe fuel, logistic costs, re-fueling in longer periods
 - De-couple from market price for fuel
 - Gain independence from non-controllable impacts
 - Reduce your CO₂ emissions significantly
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FOR EPC SYSTEM INTEGRATOR

- Rely on Woodward's expertise in diesel, gas, PV, and wind applications
 - Merge renewables and conventional power with lowest engineering efforts and risks
 - Rely on tested and approved components
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FOR INVERTER PV-PANEL SUPPLIERS

- Woodward's standardized interface allows an easy access to the diesel world
 - One pre-programmed Hybrid Controller to interface with Gensets
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FOR ENGINE GENSET SUPPLIER

- Woodward's standardized interface allows an easy access to the PV world
- Utilize built-in common control functions of easYgen series
- Get access to PV-Plant operators and help them to make the system more reliable, sell energy for 24/7
- One pre-programmed Hybrid Controller to interface with PV-Power

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