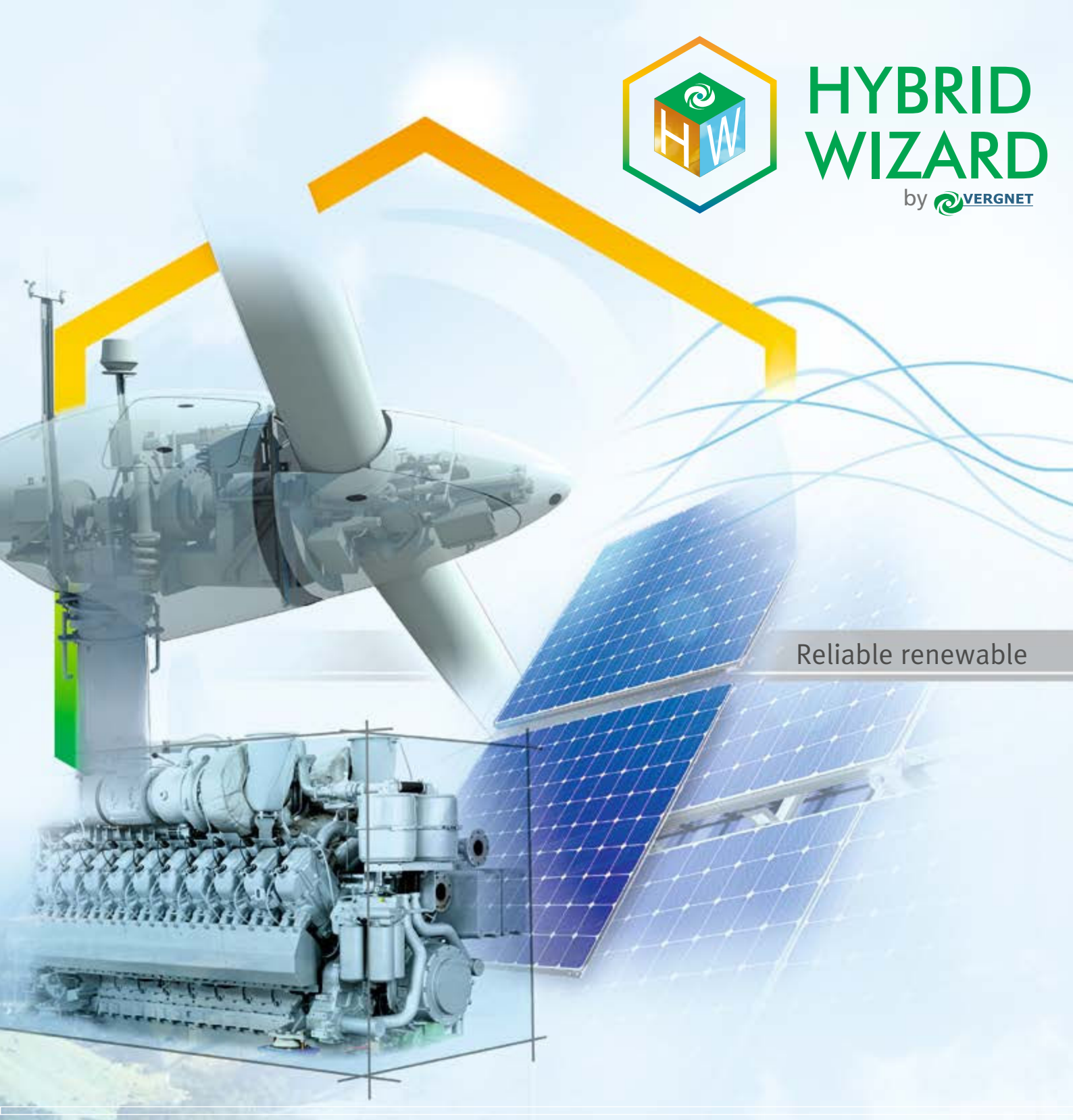




HYBRID WIZARD

by  VERGNET



Reliable renewable

The REAL-TIME hybrid solution for REAL SAVINGS in remote locations

 **VERGNET**
RENEWABLES



HYBRID WIZARD

by  VERGNET

HYBRID WIZARD™: THE REAL-TIME HYBRID CONTROLLER FOR WIND AND PHOTOVOLTAIC PENETRATION, ON REMOTE LOCATIONS

In remote areas and isolated grids, renewable energy can substantially reduce diesel consumption on electrical generation.

We at Vergnet are convinced that the time has come to fully harness local wind & solar resources, with a hybrid solution designed for remote and islanded areas. To take up this challenge, we concentrate our strength, lying in decades of innovative R&D and unmatched field experience, to design hybrid solutions which maximize renewable energy penetration on the grid while providing the best quality of current at the lowest possible cost.

The Hybrid Wizard™ patented solution monitors the grid and manages generators and loads in REAL TIME. Hybrid Wizard™ maximizes the use of renewables, at the optimal operating level, to generate cheaper kWh, without compromising on the current quality.

Vergnet has built Hybrid Wizard™ upon :

- A unique experience in both wind & solar generation for more than 20 years
- An expertise in grid integration stability. All Vergnet Equipment is weak-grid friendly.
- The installation of numerous hybrid systems, under various configurations and penetration levels, currently in operation worldwide
- A demonstrated track record in remote locations, on all continents. With more than 40 projects completed on islands, Vergnet is able to deliver, anywhere in the world.

«THE SELF-ADAPTIVE HYBRID SOLUTION»

«NO COMPROMISE ON POWER QUALITY AND AVAILABILITY OF SUPPLY»

«SHORT PAYBACK TIME ON HYBRID INVESTMENT»

«UP TO 60% AVERAGE PENETRATION RATIO»



SMART INVESTMENT

- Fuel Savings
- Lower cost per kWh
- Short payback time
- Suitable for new and existing installations
- CO₂ emissions reduction



DESIGNED FOR REMOTENESS

- Hybrid-specific design of the equipment and BOP
- In line with Vergnet history: sturdy design for extreme weather conditions (marine, salty, dusty, cyclonic, warm & cold environments)
- Specialist in remote and insular locations
- Long term support to clients and partners worldwide



SELF-ADAPTIVE SYSTEM

- Automated system
- Limited preliminary studies
- Step-up approach:
 - Seamless upgrades without additional studies
 - Expandable monitoring system



POWER QUALITY

- Grid stability:
 - Constant monitoring of grid key parameters
 - Service continuity
- Power quality:
 - Flicker & harmonics monitoring & control
 - Adjustable threshold for key parameters
- Safe integration of renewables

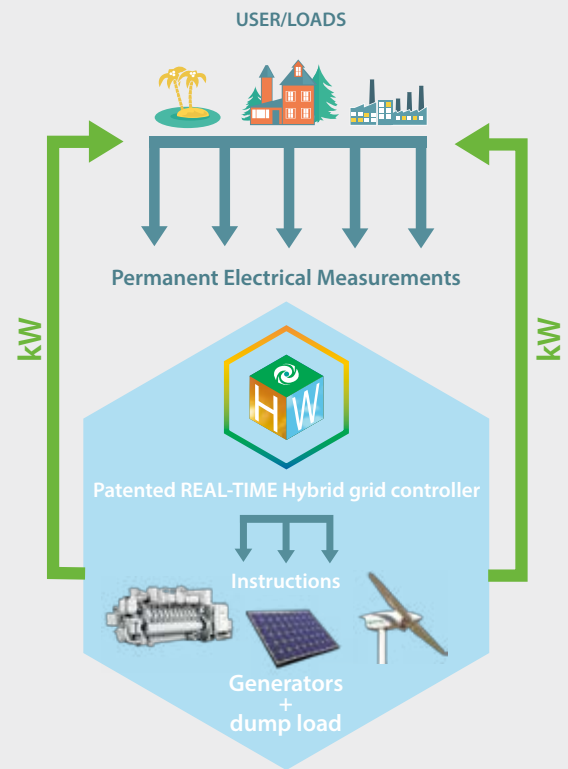


PATENTED REAL-TIME HYBRID GRID CONTROLLER

- Perpetual feedback loop between loads and generators
- Extended visibility of the grid, in real-time
- Constant calculation of electrical instructions for all generators
- Real time optimizing of Renewable Energy injection on the grid

ADDITIONAL PACKAGES

- «Dump/Smoothing» load
- Storage
- Power prediction



Hybrid Wizard™ integrates a smart management system based on a permanent feedback loop, circulating throughout the system. By constantly monitoring the grid parameters, Hybrid Wizard™ is able to send individual instructions to all generators, to automatically optimize the system, in real-time.

- FUEL SAVINGS ARE MAXIMIZED as renewable penetration is constantly pushed to what the grid can accept.
- AVAILABILITY and QUALITY OF CURRENT ARE GUARANTEED as all electrical parameters are strictly kept within the user-defined range.

Hybrid Wizard™ has been designed for new or existing off-grid power plants, from 500kW. It is particularly suitable for Industrial, Commercial or Islanded applications.

WIND OR PV?

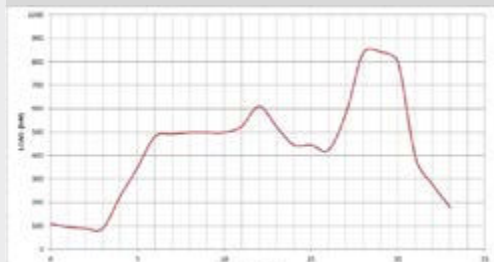
AVERAGE OR INSTANT PENETRATION?

On commercial, industrial or remote grids, Hybrid Wizard™ is able to optimize any renewable resource, to build a hybrid system which addresses the specific needs of each project. No need to choose between the Sun or the Wind, Hybrid Wizard™ makes the most of locally available resources, and generates cheaper kWh, with no compromise on the supply or quality.

The hybrid language can be confusing...

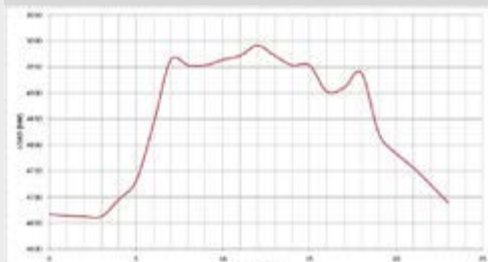
Instant penetration enables to show off nice figures, but **average penetration of renewables is what really matters, as it is where you save fuel.** Hybrid Wizard™ has been designed with the profitability of the investment in mind, taking the challenges of remote sites into account. It enables to reach up to 60% average penetration of wind and/or PV into the grid, with a minimum use of additional enablers or storage. Thus, initial investment and maintenance costs are reduced, for a quicker ROI.

ISLANDED GRIDS



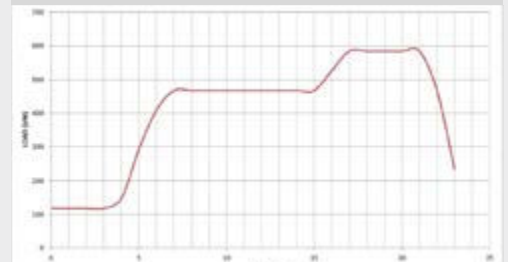
RESOURCE AVAILABLE: WIND + PV
 PAYBACK TIME: 6.3 YEARS
 DIESEL SAVED: 245 000 LITERS/YEAR
 LCOE HYBRID : - 13% VS ALL HFO+DIESEL COST

REMOTE INDUSTRIES



RESOURCE AVAILABLE: WIND
 PAYBACK TIME: 3,8 YEARS
 DIESEL SAVED: 2 320 000 LITERS/YEAR
 LCOE HYBRID : - 20% VS ALL DIESEL COST

HOTELS & RESORTS



RESOURCE AVAILABLE: PV
 PAYBACK TIME: 4,5 YEARS
 DIESEL SAVED: 198 000 LITERS/YEAR
 LCOE HYBRID : - 18% VS ALL DIESEL COST

OVER 20 YEARS' EXPERTISE IN HYBRID SYSTEMS:

1992

First Wind-diesel plant

2007

First high penetration Wind-diesel plant

2011

PV-diesel plant

2014

HYBRID WIZARD
 Real-time hybrid solution

FOR MORE INFORMATION, PLEASE CONTACT US:

export@vergnet.fr

www.vergnet.com



@vergnetwind



12 rue des Châtaigniers
 45140 Ormes - FRANCE
 Tel. +33 (0)2 38 52 35 60
 Fax +33 (0)2 38 52 35 83