



Delivering Quality, Performance, Reliability, Security and Savings
Reliable Renewables: Hybrid and Wind Solutions

NOUADHIBOU WIND FARM

Mauritania, West Africa

- Customer:** SNIM
- Wind Turbine:** 16 Vergnet GEV MP-C, 275kW, 32m rotor diameter, 55m hub height
- Total power:** 4.4 MW
- Commissioned:** 2011
- Operations and Maintenance:** SNIM



Nouadhibou Wind Farm-Mauritania

Vergnet GEV MP Wind Turbines Deliver Energy and Cost Savings for SNIM Iron Mine

Société Nationale Industrielle et Minière (SNIM), Africa’s second largest producer of iron ore, operates a mine in Zouerate and exports the ore from the port of Nouadhibou, Mauritania, in Western Africa.

The facility is powered by a 16 MW diesel plant equipped with 4 diesel gensets, feeding a 5.5 kV grid. Consumers are essentially motors for ore conveyors and crushers. Considering the powerful wind potential of the Nouadhibou site (8.78m/s at hub height), SNIM decided to diversify onsite power generation through the development and installation of a wind farm. Specific wind turbine technology was also required to address the near-shore location, very dry and warm climate, and highly corrosive environment.

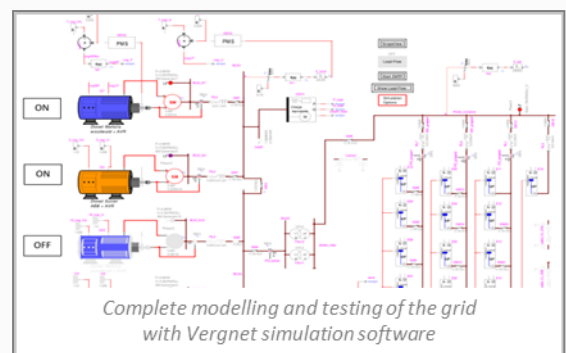
A Hybrid Approach – Investing in Wind Energy and Vergnet’s Hybrid Wizard® Solution

With Hybrid Wizard® at the core of his proposal, Vergnet not only fully complied with client’s specifications but also allowed optimization of wind power production with existing diesel power production to maximize fuel savings. For all installations, Hybrid Wizard® implements single outage contingency (N-1) for generating units.

A full study was performed to assess and guarantee the achievable wind power penetration according to wind profile, grid load cycles and diesel gensets characteristics, while preserving safety and security of goods and persons, availability of the grid and power quality.

The study consisted in the following points:

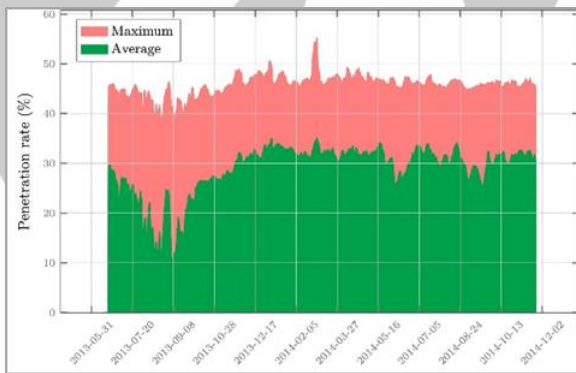
- On site measurement session to precisely characterize the gensets performances
- Numeric modelling of the whole grid with wind farm, diesel facility and subsystems
- Simulation campaign addressing all possible cases for stress tests



Making a Difference at Nouadhibou

“Electricity demand has been growing at an average of 10% since 2000 mainly due to mining and other industrial operations. Electricity production in Mauritania are mainly of thermal origin, with a strategic plan in progress to diversity the mix (to reach 20% of renewables by 2020). SNIM is the second largest producer of electricity in the country after SOMELEC, producing electricity to satisfy mining activities in Zouarate and Nouadhibou. The 4.4 MW wind project by SNIM clearly appreciated as commendable efforts to diversity the energy mix”

Oumkelthoum MOUSTAPHAR Project Manager, SOMELEC
Speaking at the Energy and Mines Conference in Johannesburg (July 2015).



Main assets of this project

- Industrial load with high intra-day variations
- Wind farm and diesel plant integration study, operating parameter calculation
- Spinning reserve management
- Diesel minimum load management
- First level of integration: Hybrid Wizard® is the diesel plant operator adviser

Since commissioning in 2013, the Nouadhibou wind-diesel plant reaches an average renewable power penetration of 30%, with peaks at 50%

Reliable Renewables

Vergnet is a global renewable solutions company with a successful track record in providing high performance, reliable and affordable clean energy solutions for companies around the world.

Advanced renewable solutions, encompassing wind, solar PV and hybrid technology, make Vergnet a recognised partner of choice throughout the world.

The company leverages a 25 year heritage in delivering power quality, performance and availability of supply in remote, isolated environments with extreme climatic conditions and limited electricity infrastructure.

With a strong focus on design, manufacturing and engineering innovation, Vergnet provides adaptable renewable solutions that are highly customised to both the local environment and the specific needs of the project.

Vergnet’s uniquely designed technology is adaptable for grid-connected as well as off-grid operations and has been developed specifically for extreme weather conditions providing reliable, efficient and scalable energy solutions. Vergnet operates in over 40 countries and has 166 employees in 10 offices.

Developing adaptable and affordable solutions that cut energy costs is at the heart of everything we do.



16 GEV MP C-Nouadhibou Wind Farm-Mauritania