



Solutions in distributed energy



# Renewable distributed energy solutions

**Kliux Energies is a Spanish company, with an international presence, that specialises in distributed energy solutions or energy generated at the site where it is to be used, tailor-made to the client's needs**

Kliux is the result of the accumulated experience of its founders (the Eguizábal brothers), acquired over 20 years of living abroad (the United States and Argentina). Today they have **a team of 21 professionals**, the majority specialised engineers.

Kliux has an important network of industrial and technological allies and strategic partners, which include Bayer Material Science, the University of La Rioja, La Rioja Regional Government, through the Economic Development Agency (ADER), as well as the Fundación CIRCE of Zaragoza and the Centre for the Development of Industrial Technology

(CDTI). Kliux implements, through its industrial partner Talleres Morte, the fabless manufacturing process model, applied by world leaders in automobile industry.

Kliux has worldwide exclusivity rights to manufacture and sell the **Geo 1800 vertical-axis wind turbine**, developed by Geolica Innovations, which also integrates into hybrid systems with solar photovoltaic technology (Hybrid model).

Kliux also offers **energy efficiency solutions and lighting solutions** through its agreement with Teknica Lighting.



## Customer oriented services

Kliux has a **Project Management Office**, where engineers and economists develop the necessary studies to analyse, estimate, and budget any distributed energy generation or energy-efficiency installation from start to finish.

- **Study of the dimensioning and amortisation** of an installation, based on energy requirements, existing installation, wind and solar resources available, location, objectives and budget.
- **Site Feasibility Study (SFS)** in order to determine the feasibility of a location for installing a distributed energy generation system.
- **Energy efficiency study.** Project for the implementation or replacement of lighting systems, graphics, light simulations, and amortisation tables.
- Maintenance of the installations.
- Training of technicians.
- Monitoring the installation. Quality and performance.



## Commitment to R&D

### The present is The 3rd Industrial Revolution and the smart Grids

Kliux Energies supports the 3rd industrial revolution that will transform energy generation and distribution systems in the world, by transferring power to the user as a centre for generation. The Internet will be the platform used to enable these advanced intelligent network systems which will optimally control the balance between generation, transmission, and consumption.

Kliux relies on **Geolica Innovations** as its R&D centre and laboratory for distributed energy products and solutions. Since its early days as a technology-based company, Geolica Innovations has been committed to research, development, and innovation, investing a total of 3 million Euros. Participate in over 22 regional projects. Leads the project AVER, of the Ministry of Economy and Competitiveness (INNPACTO 2011) and the project WINDHEAT of the Seventh European

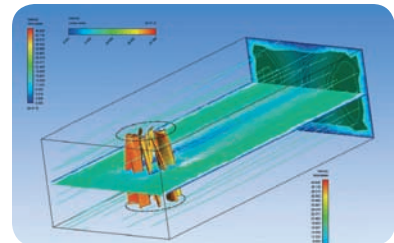
Framework Programme (Capacities) being partner in projects OSGRAM and OPTIWIND. Develops two proposals as leader in 7FP (Capacities), 1 proposed as leader in 7FP (Cooperation-Energy) and another as a partner in "Cooperation-Smart Cities": INNOVATION CITY RUHR, the most ambitious Smart City project in Germany.

### Certifications

- CE Declaration of Conformity.
- ISO Certification 9001 and 14001.
- Certifications in progress: IEC 61400 -2/ -11/ -12, AWEA 9.1, BWEA Standard 2008.

### Awards and Recognition

- April 2011. **La Caixa XXI Entrepreneur.**
- May 2011. **AJER Innovation.**
- July 2011. **Best New Company, Actualidad Económica.**
- January 2012. **University-Company Award. Social Council, University of La Rioja.**
- October 2012. **Red empredeverde**



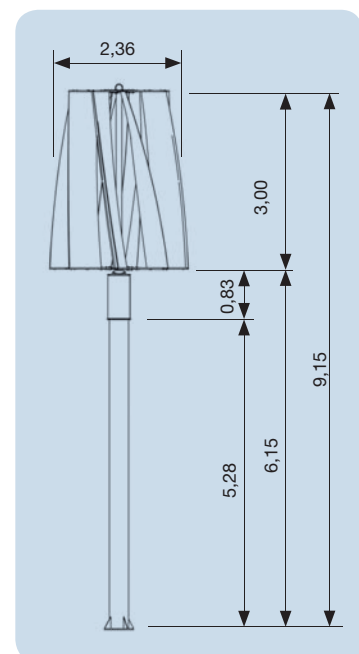
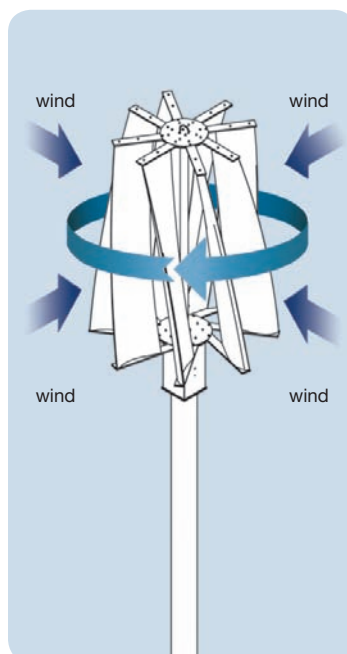
# First vertical-axis wind turbine

with Technology 100% made in Spain.

## Advantages of Geo 1800



- **Always wind oriented**
- **High aerodynamic efficiency in all type of winds:** multi-directional, turbulent, ascendent, very slow and gusty winds.
- Cut in wind speed: 3.5m/s (12.6km/h)
- At high wind speeds it continues to generate maximum energy output, due to the rotor's unique aerodynamics which **self-regulate the RPMs** through a stalling motion, instead of requiring to be stopped with an external breaking system like most turbines in the market.
- **Simple and easy maintenance.**
- **Completely quiet.** Sound pressure measured at 10 meters distance and 6m/s wind speed is just 32dBA, which makes it ideal for Urban and Residential applications.
- Roof-Top or Ground installation for either Off-Grid or Grid Connected solutions
- Normal relatively **slow rotation speed** (between 10 and 40 rpms) avoids environmental effect on birds and results in a lesser fatigue of its components. Because of the slow rotation motion the rotor blades present an excellent advertising and sponsorship platform.





# Real applications of distributed energy

Bringing Power generation close to where is to be consumed could take place in multiple different type of applications, for either Off-Grid and Grid Connected solutions.

The proposal for a specific installation will be determined by:

- 1) The user's needs in terms of the quantity and type of electricity consumption.
- 2) The quantity and quality of existing natural energy resources at the installation site (wind speed, solar radiation).
- 3) The topography and layout of the site (orientation, shadow, vicinity) as well as useful surface available to locate the generation, electronic, and accumulation equipment.



## Private residences

- Partial or total supply of housing needs.
- Community of Property Owners. Common areas (elevator, lighting, pool).
- Picnic areas and wine cellars.

## Rural tourism

- Cabins, hostels, and country houses with access to the grid or with a back-up generator.
- Coastal hotels, spas.

## Sports facilities

- Yacht clubs and lighthouses.
- Yacht and boats.
- Golf courses.

## Agriculture and livestock farming

- Wineries.
- Wells. Pumping stations.
- Farms and dairies.

## Public sector.

### Urban planning and environment

- Roads, pedestrianised areas, and bike lanes. 100% electricity supply with renewable energy integrated into the low-energy illumination system.
- Squares and parks.
- Intelligent networks for towns, villages, neighbourhoods, and districts.
- Public and non-residential buildings.

### Mountain and forest

- Mountain lodges.
- Fire watchtowers.
- Ski resorts.

### Roof-top mounted

- Residential buildings.
- Industrial warehouse.
- Shopping centres.
- Office buildings.

# Kliux Geo 1800 vertical-axis wind turbine



## Rotor:

Maximum energy without noise

Own design and patent, uniquely combines drag-type vertical-axis model and lift-based model in one single rotor. Has eight blades with two different alternating profiles, alpha and beta.

- The alpha receives, drives, and retains the wind for a longer period. It performs the drag function to obtain maximum energy.
- The beta picks up the winds coming from the alpha, enhancing the turn of the rotor, "making it fly" (like the wings of a plane). It performs a lift function.

The rotor speed is slow and rarely exceeds 60 rpm, providing **structural integrity, no noise, less wear and tear, and less maintenance required** during its useful life.

The rotor limits its speed naturally, without the need for brakes. It reduces the risk of damage and increases energy production time.

Its modern, sculpture-like appearance means it is easily integrated into the landscape, as well as being an **excellent advertising medium**.

## Generator:

Efficiency and durability

With permanent magnets, it is one of the most efficient electricity-generating technologies. It is simple to operate and requires little maintenance.

It provides a three-phase output voltage, and its amplitude and frequency vary with the rotational speed. A low starting torque enables the rotor to start turning at low wind speeds.

## Support:

Strength and aesthetics

The rotor and generator are supported by a steel structure with mechanical resistance to withstand the force of the wind. It is anchored to the ground with a footing, thus eliminating the need for cables, making it more aesthetically pleasing and integrated into the landscape.

It has a coating of anti-corrosion paint.

Technical specifications at [www.kliux.com](http://www.kliux.com)



# Kliux Hybrid wind and solar system

Kliux Energies recommends using any natural resources available at each location thus optimizing the flow of generating hours, cost efficiency ratio, and equipment depreciation periods.

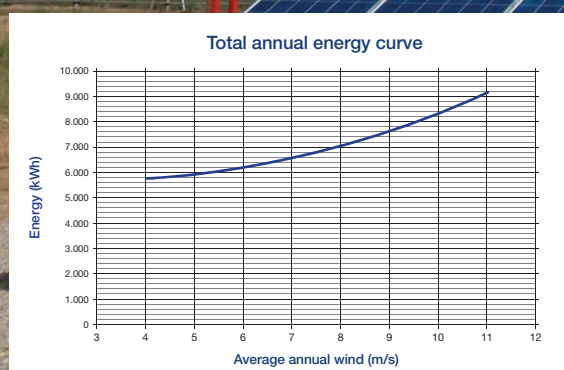
It has therefore designed a hybrid system of energy generation by integrating a Kliux Geo 1800 vertical-axis wind turbine and solar photovoltaic panels.

This is the most recommended configuration for an off-grid installation of the network, as it provides the option of incorporating a battery bank which gives a supply autonomy of between 3 and 5 days.

## Components of the Kliux Hybrid installation:

- Kliux Geo 1800 wind turbine.
- 15 photovoltaic panels, monocrystalline, at 265 W each. (3975 W total).
- Electronics: wind inverter, solar inverter, inverter protection, communication module, and weather station.

Annual total energy generated								
	Annual average wind (m/s)							
	4	5	6	7	8	9	10	11
Total (kWh)	5.787	6.017	6.334	6.765	7.303	8.018	8.559	9.170



Technical specifications at [www.kliux.com](http://www.kliux.com)

## Partners and Collaborators



**KLiUX**  
energies

Diego Velázquez, 5  
26007 Logroño. La Rioja  
Tel. +34 941 102 410  
info@kliux.com  
www.kliux.com



KliuxEnergies



@KliuxEnergies



KliuxGeolica