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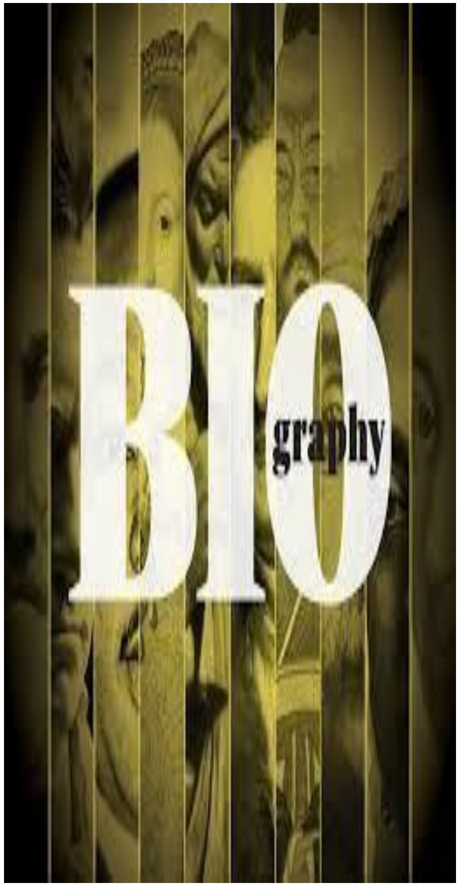
ΕΛΛΗΝΙΚΟ ΑΝΟΙΚΤΟ ΠΑΝΕΠΙΣΤΗΜΙΟ
HELLENIC OPEN UNIVERSITY

Hellenic Open University, Adjunct Tutor

Biography

George (Georgios) Xydis worked on various projects mainly in Greece that range from a single 10-kW turbine to a 486 MW offshore wind farm. He did work in the wind sector together with developers, utilities, universities, and research institutes. He holds a PhD in Engineering from National Technical University of Athens (NTUA), and a degree in Mechanical Engineering from Aristotle University of Thessaloniki. He used to work as a Wind Projects Development Coordinator at Rokas Renewables – Iberdrola Renewables, as a Wind Project Developer (Wind Resource & Siting Engineer) at Vector Hellenic Windfarms S.A., and as a Researcher (eq. Assistant Professor level) in the Center for Electric Power and Energy (CEE), Department of Electrical Engineering at Technical University of Denmark. He now runs his Energy Research and Applications company (www.xydis.gr/gr) and collaborates with Hellenic Open University and the Open University of Cyprus as an adjuct tutor, with the Centre for Research and Technology Hellas as a Senior Researcher (project funded), with the Technological Education Institute of Piraeus, and with various SMEs in the fields of Wind Resource Assessment, Energy Resources Optimization and Spatial Planning, Demand Side Management Strategies, Smart Cities, and Exergy Analysis.



Research Interests

- Wind Resource Analysis; Energy Analysis; Energy Resources and Spatial Planning; Demand Side Management Strategies; Resource Use Efficiency and Sectorial Analysis; Urban Planning and Built Environment.

RECENT PUBLICATIONS

- EA Nanaki, CJ Koroneos, GA Xydis, D Rovas (2014) Comparative environmental assessment of Athens urban buses—Diesel, CNG and biofuel powered.
- G. Xydis, E.A. Nanaki, C.J. Koroneos (2014) Comparative wind farm planning on a high plateau: Dust dispersion as a sitting constraint.
- G Xydis (2013) Comparison study between a Renewable Energy Supply System and a super grid for achieving 100% from renewable energy sources in Islands.
- C. Koroneos, G. Xydis, A. Polyzakis (2013) The Optimal use of Renewable Energy Sources—The Case of Lemnos Island.
- G Xydis, E Nanaki, C Koroneos (2013) Energy analysis of biogas production from a municipal solid waste landfill.
- G Xydis (2013 Wind energy to thermal and cold storage—A systems approach.

- G. Xydis (2013) The wind chill temperature effect on a large-scale PV plant—an energy approach.
- George Xydis (2013) A techno-economic and spatial analysis for the optimal planning of wind energy in Kythira island, Greece.
- George A Xydis, Evanthia A Nanaki, Christopher J Koroneos (2013) Low-enthalpy geothermal resources for electricity production: A demand-side management study for intelligent communities.
- G Xydis (2012) Development of an integrated methodology for the energy needs of a major urban city: The case study of Athens, Greece.
- G Xydis (2012) Wind-direction analysis in coastal mountainous sites: An experimental study within the Gulf of Corinth, Greece.
- Christopher J Koroneos, Evanthia A Nanaki, George A Xydis (2012) Sustainability Indicators for the Use of Resources—The Energy Approach.


Wind Resource
Analysis

What do wind energy systems provide?

- Electricity for
  - Central-grids
  - Isolated-grids
  - Remote power supplies
  - Water pumping

…but also…

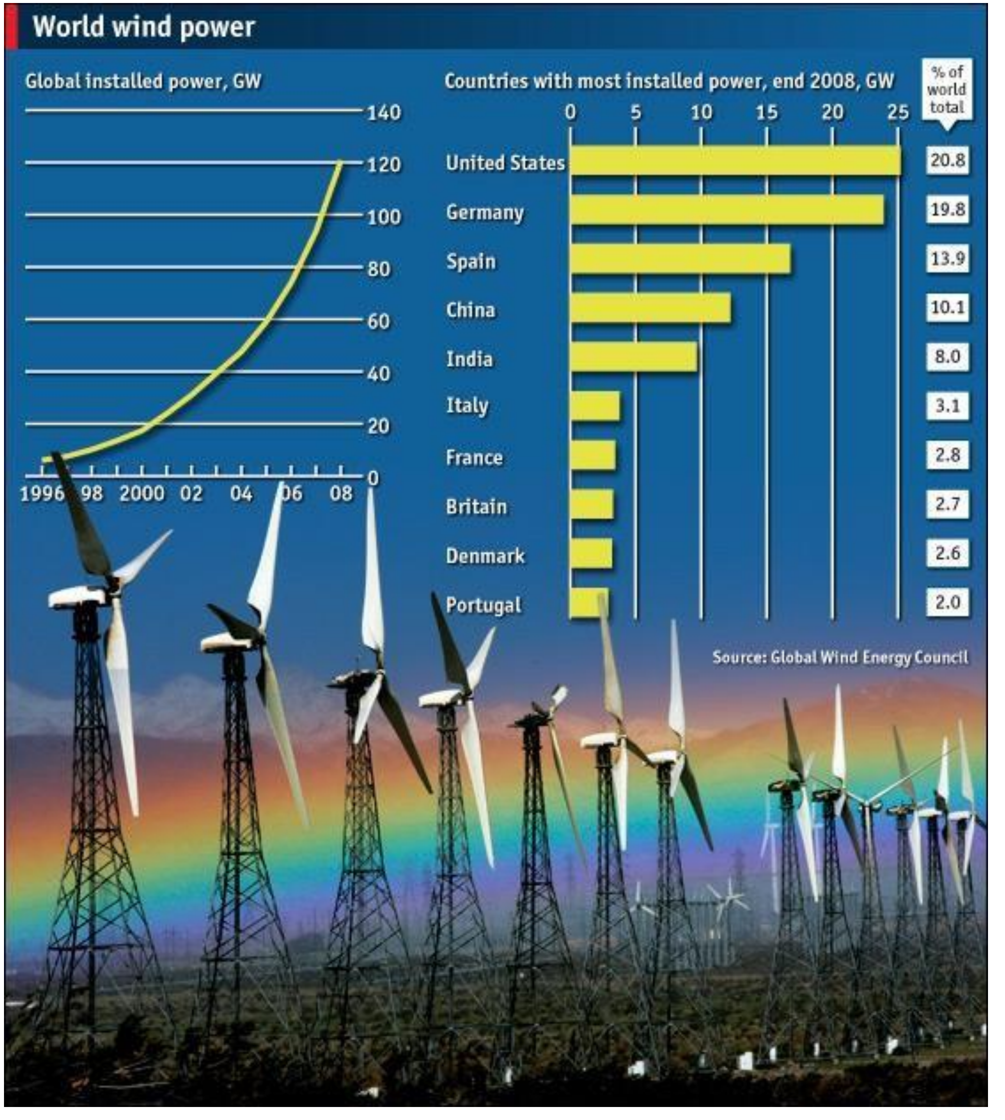
- Support for weak grids
- Reduced exposure to energy price volatility
- Reduced transmission and distribution losses

Wind Resource

- High average wind speeds are essential
  - 4 m/s annual average is minimum
  - People tend to overestimate the wind
  - Wind speed tends to increase with height
- Good resource
  - Coastal areas
  - Crests of long slopes
  - Passes
  - Open terrain
  - Valleys that channel winds
- Typically windier in
  - Winter than summer
  - Day than night

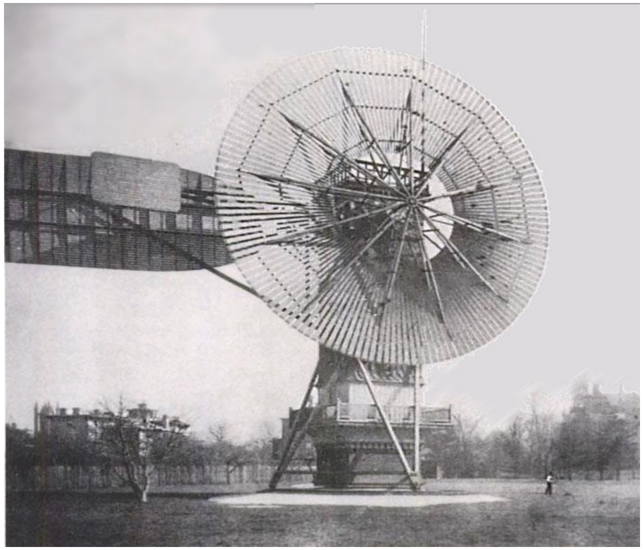
Advantages of Wind Power

- Environmental
- Economic Development
- Fuel Diversity & Conservation
- Cost Stability



Technology

Turbine Evolution



Used for

- Pumping water
- Grinding grain

Mainly used for

- Generating Electricity

Types of turbines

VAWT

- Drag is the main force
- Nacelle is placed at the bottom
- Yaw mechanism is not required
- Lower starting torque
- Difficulty in mounting the turbine
- Unwanted fluctuations in the power output

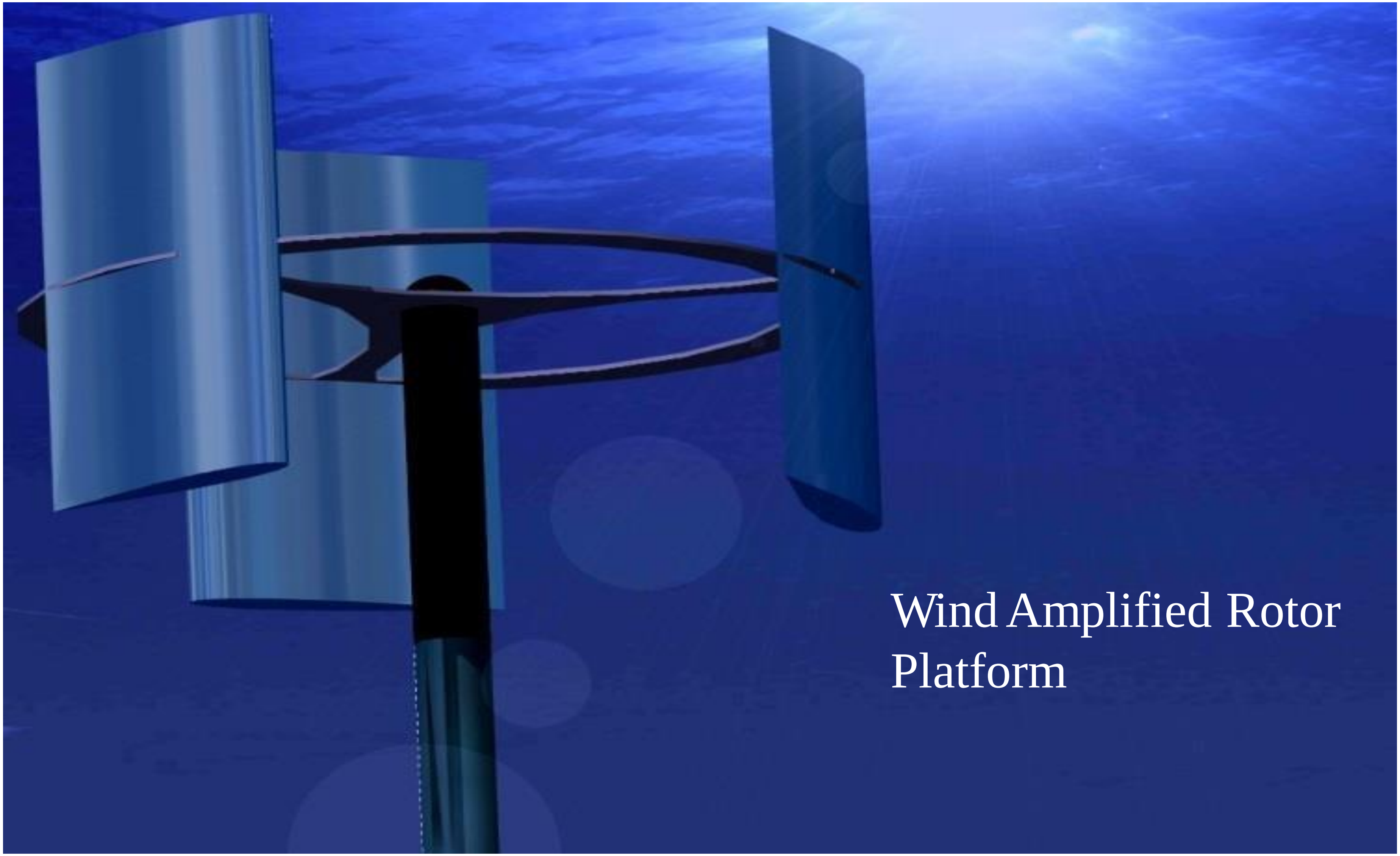
HAWT

- Lift is the main force
- Much lower cyclic stresses
- 95% of the existing turbines are HAWTs
- Nacelle is placed at the top of the tower
- Yaw mechanism is required

Offshore Turbines

- More wind speeds
- Less noise pollution
- Less visual impact
- Difficult to install and maintain
- Energy losses due long distance transport

Future Wind Turbines



World's First Airborne Wind Turbine To Bring Renewable Energy and WiFi

Disc type wind turbine

- Much more efficient than HAWT
- Requires less height
- Low noise
- Works in any wind direction

E-signature

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