

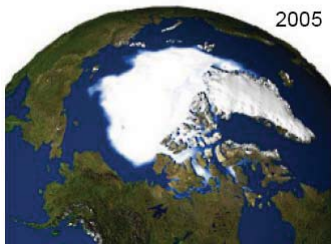
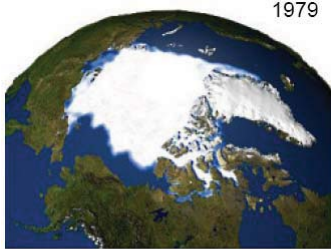
TURBINA VAWT - New Wind Technology

*Contributing to energy efficiency through
wind energy solutions*

**19th Economic and Environmental Forum
7-8 February 2010, Vienna
Conference: Development of Sustainable Energy**



Climate change: Facts



**Main cause of climate change is CO2 emissions
from burning fossil fuels.**

- Ice sheet over period of years has decreased by 25%
- CO2 emissions since 1990 have increased by 25%
- CO2 emissions until 2050 must be reduced by 50%

Source: World Wildlife Found (WWF)

Climate change: Political goals

Increase Energy Utilization Efficiency and Increase Production from Renewable Energy Sources

Political goals:

Quality

- Security of energy
- Climate protection
- Utilization efficiency
- Costs and price stabilization
- Balanced energy distribution



Quantity

“20/20/20”

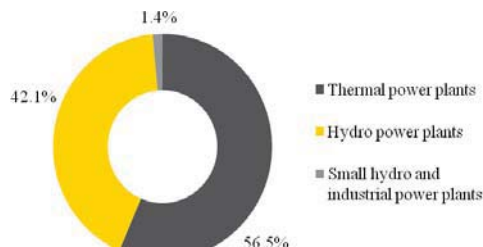
20% energy savings until 2020

20% share of Renewable Energy Sources (1)

(1) European Board 8 March 2007

Bosnia and Herzegovina Energy Profile

- Power generation in Bosnia and Herzegovina is exclusively associated with domestic energy resources - coal and hydropower.



Renewable Energy Potential in Bosnia and Herzegovina

Hydro:

- At present, there are about 25 SHPPs with a total capacity of 36 MW
- Utilizable SHPPs potential may be as high as 1000 MW

Biomass:

- Most significant source is wood mass from forestry and wood waste from the wood processing industry

Solar:

- Total potential of solar energy is estimated at 67.2 PWh
- There are no solar and PV power plants
- Use of solar energy for hot water and heating in the residential sector is insignificant

Geothermal:

- Geothermal potential of 9.25 MWt (for heating), and 90.12 MWt (for heating and health spas)
- There are no geothermal power plants
- Temperature at the known locations is too low (<90oC)

Wind:

- According to recent research, there is significant wind energy potential.

- Currently there are no wind power plants
- Field research has confirmed 13 locations as having good potential
- Two projects underway in the southern part of the country
- Economic potential for developing approximately 600 MW

Legislative Framework:

- Entity level energy strategies under preparation
- Will contribute to a National Energy Strategy

National Development Strategy

- Adoption expected with the formation of new state parliament
- Sustainable energy priorities incorporated in the strategy

TURBINA VAWT - New Wind Technology



Innovation in Wind Energy Generation

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TURBINA VAWT: Innovation in Wind Energy Generation

- Vertical wind turbine sector with an actual power output of up to 50KW.
- Complete solution for remote base station.
- Currently tested in Slovenia and Bosnia and Herzegovina.
- Advantages compared to conventional wind turbines.
- The turbine combined with solar panels is suited as a stand-alone power supply for mobile communication, street lights, traffic surveillance equipment or as extra power supply in private households.



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- *Completely silent*
- *Safe for birds and people*
- *No vibrations, no external moving parts*
- *Fit for all environments*
- *Architecturally integrated with commercial premises*
- *Low cut-in wind speed: 1,5 m/s for power generation*
- *Independent from the wind direction*
- *High durability*
- *Works in extreme weather conditions*
- *Easily transported and set-up*
- *Multifunctional*
- *Hybrid system*
- *Easy maintenance*

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- TURBINA VAWT prototype on the Mountain Vlastic, Bosnia and Herzegovina. This prototype has confirmed all previous assumptions.
- Prototype installed and functioning in three locations in Bosnia and Herzegovina
- **The CE Mark** certifies that this product has met the health, safety and environmental requirements of the European Union, thereby ensuring consumer and workplace safety.



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TURBINA VAWT 5000 (5kW) wind turbine, Bihac, Bosnia and Herzegovina

This 5kW wind turbine installation could achieve a reduction in CO₂ emissions of 3.5 tones each year – that is 210 tones over its lifetime⁽¹⁾



(1) Calculation based on a mean annual wind speed of 4.9m/s and an energy yield of 8,300kWh. Carbon savings based on 0.43kg of CO₂/kWh and a lifetime of 60 years.

Prototype/Product

TURBINA VAWT 300 (300W) wind turbine, Trebnje, Slovenija. Part of renewable energy system for home power supply.

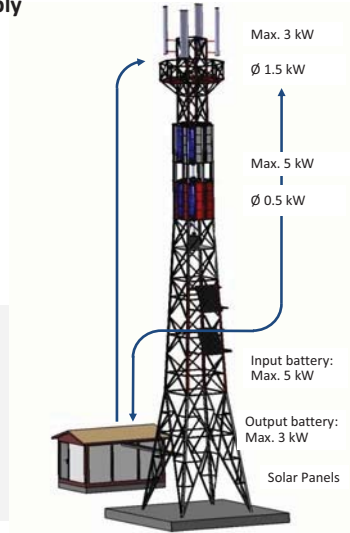


New Project: Green Telecommunication Power Supply

According to research, there are currently about 400,000 cell sites with diesel generators (150,000 in Africa alone). This number will rise to approximately 600,000 in the next five years. The number of off-grid base stations is growing at 30% per year (Source: ABI Research, Pike Research and In-Stat).

One of grid telecom site consumes about 600 liters of diesel per month.

This means that telecom sites consume about 240 million liters of diesel per month for base stations.



New Project: Green Telecommunication Power Supply

Buyer: Mobitel, Slovenija

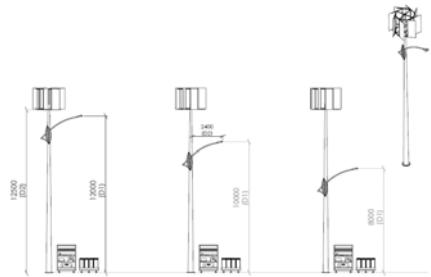
During next five years, between 1 million and 1.5 million base stations will have to be added to serve the next 2 billion mobile subscribers, and half of those sites will be off-grid.

This means:in next five years telecom sites will consume 600 million liters of diesel less per month.

Zero energy telecommunication power supply.



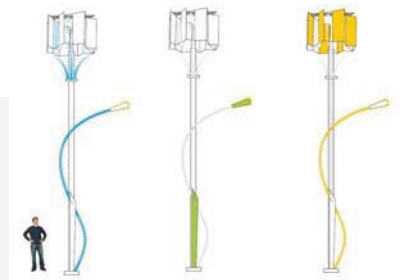
New Project: Zero Energy Street Light



Safe for people, safe for birds, noiseless, work without vibrations, independent form the wind direction, solar panels are located on the top of wind turbine etc.

Our team has designed a unique solution to street lamps, which is supplied from wind energy and solar energy.

- Carbon dioxide savings
- Stand alone power supply systems



Background

- Global Energy Awards Finalist 2009

platts GLOBAL ENERGY AWARDS | 2009

Category: *Sustainable Technology Innovation of the Year*

Award of Excellence Winner

- Global Energy Awards Finalist 2010; Category: *Green Energy Initiative of the Year*

- World Bank Winner

Vertical Axis Wind Turbine project is winner of the West Balkan Development Marketplace 2006

World Bank competition- We won a grant worth 35000 USD and left behind more than 1400 competitors



- More than 10 years experience in inventing and building this technology

We started with the first tests on the first prototype of vertical axis wind turbine in 1997. This project won 6 gold medals at various international fairs. Multiple other international patents issued and pending.



Way Forward

- More institutional support needed to take advantage of the potential inside the country
- Regional cooperation is welcome and necessary, not just at institutional level, but also at business sector level
- OSCE has the means to bring together the relevant stakeholders and provide forum for discussion and exchange



Thank you for your attention!

TURBINA IPD

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