

19TH OSCE ECONOMIC AND ENVIRONMENTAL FORUM
CONCLUDING MEETING

“Promotion of common actions and co-operation in the OSCE area in the fields of development of sustainable energy and transport”

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“Opportunities in Wind Energy Technology Solutions”

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Background

The team of professionals in *Turbina IPD* has been developing a new wind turbine technology with the vertical axis for more than six years. We succeeded in turning this promising technology into the product with unique competitive advantage and discovering ways of powering numerous applications through renewable energy sources. Many prestigious world renowned distinctions and awards, in addition to the patent and CE mark, attest to the quality and uniqueness of our technology.

Turbina develops and builds products in the vertical wind turbine sector with an actual power output of up to 50KW. Turbina develops hybrid off-grid power supply systems as complete solution for remote base stations. This wind technology is currently being tested in Slovenia, Poland and Bosnia and Herzegovina.

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.

The technology offers potential for the location worldwide as a new alternate power supply concept. Existing prototypes of various capacities are already tested in different weather conditions, configuration, and areas of application.

Advantages of TURBINA VAWT Technology

- *Completely silent – no wind resistance*
- *Safe for birds and people*
- *No vibrations, no external moving parts*
- *Easy integration in all kinds of environments (urban, natural, etc.)*
- *Architecturally integrated wind turbine with commercial space*
- *Low cut-in wind speed: 1,5 m/s for power generation*
- *Independent from the wind direction*
- *High durability (Long life cycle - over 4 times more than HAWT)*
- *Usable for serial connections - several turbines on one tower*
- *Can work with extremely high wind speeds and extreme weather conditions*
- *Can be transported easily and is easy to assemble (principle of the construction kit)*
- *Multifunctional (battery charge, heating system, pump water, grid connection, etc.)*

- *Can use turbulence to produce energy in urban areas*
- *Hybrid system (can be combined with solar panels)*
- *Easy maintenance (no specialists needed)*

Turbina Wind Energy Products in Application

Turbina's wind turbine has successfully passed all practical testing phases of both prototypes and products in practical application. Today, it has been successfully installed and used in Bosnia and Herzegovina, Slovenia and Poland? The wind turbine operates as a part of a hybrid system with solar panels that successfully powers Telecom Slovenia's telecommunication base station for more than eight months without any additional power supply.

The Turbina-site is a site solution mainly powered by renewable energy sources including wind and sun. There is a battery bank for storage of sun or wind energy and the wind turbines have been modified and perfected for this particular purpose.



Opportunities for Application

Mobile operators, network suppliers and telecom contractors are slowly waking up to the fact that they, like so many other industries, will have to grasp the "green" global trend and make their products and solutions more environmentally friendly. No other practice in the mobile telecom industry is more environmentally harmful than powering several hundred thousand of off-grid base stations by burning diesel fuel, which is so common in Africa or also in Europe.

One single diesel powered base station can consume around 20,000 liters of diesel annually, and emit 50tn of carbon emissions into the atmosphere.

On-going campaigns (Example in Europe): Sustainable Energy Europe Campaign dedicated to energy efficiency and renewable energy solutions.

More than one billion people around the world are currently living in areas off a power grid. Without access to a reliable grid, telecommunications operators struggle to maintain power to their telecom base stations. Turbina IPD together with our partners on this project has developed a solution that is powering base stations in remote areas with alternative and sustainable energies. Thanks to our technology that relies on wind energy, emerging markets are able to replace their need for diesel generators that might otherwise power a wireless base station antenna 24 hours a day. This change is improving mobile communications, providing social and economic benefits and changing the lives of millions.

Estimates show that replacing 100,000 diesel powered base stations with such solutions will reduce global carbon emissions by up to five million tons annually. That, in itself, should be a strong incentive to invest in intelligent solutions. But to make the business case for telecoms even more alluring, there are huge financial benefits by using renewable technology solutions.

Off-grid telecom base stations might cost 10 times more to operate than on-grid base stations. A mobile operator with, say only five per cent of its base stations in rural areas without power grid access, might spend as much as 25% of the company's total expenses on this relatively small number of base stations.

Intelligent solutions are integrated and optimized for minimum diesel consumption so they not also reduce the carbon dioxide emissions by up to 100%, but also drastically cut the fuel costs, maintenance visits and operating expenses of a base station by up to 100%.

The longest running solution has been installed in a remote site in Slovenia, where it has been extensively monitored and mapped for more than eight months. Given an integrated site solution where all parts have been designed for optimum system performance, results show that renewable energy sources and efficient battery charging managed to power the base station 100% of the time. The diesel generator was not present on the site.

In real numbers, annual operating expenses could be cut from approximately 30,000 EUR with a diesel powered base station including diesel fuel, transport and logistics to a mere 5,000 EUR with Turbina renewable energy power supply solutions.

Miroslav Tešić

More information at: www.turbina.ba