

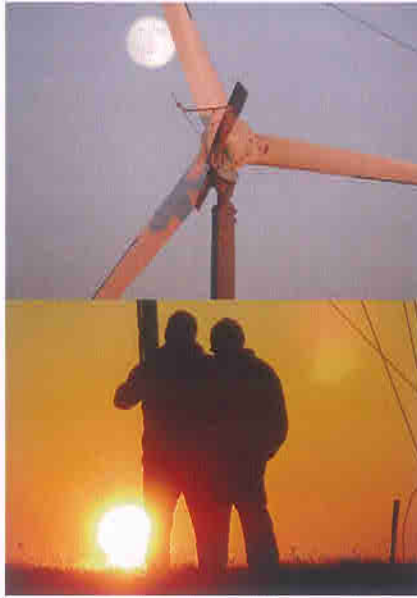
# SEEWIND PROJECT

One of thematic priorities of the European Energy Strategy is development and integration of renewable energy sources. To that end, strategic aims include research throughout Europe in order to increase energy safety and supply, reduction of harmful gases emission, increase not only in utilization of renewable energy sources, but also in its efficiency.

The regions of the former Yugoslavia offer excellent possibilities for utilization of wind energy. Despite that, the terrain features and, generally, unique and extreme character of local wind systems of highly individual characteristics present enormous challenges for wind farm designers and operators. SEEWIND Project, being implemented by a consortium of acclaimed companies and institutions from Austria, Bosnia and Herzegovina, Croatia, Germany, Serbia, and Switzerland, is focused on these challenges. The total budget of the programme amounts to EUR 10 million, out of which some EUR 3.5 million are being contributed by the European Commission as part of 6th Framework Programme. Three typical locations are selected in highland areas (Bosnia and Herzegovina and Serbia) and at the coastline (Croatia) for purpose of wind measurements, wind turbine performance assessment, development of complete wind farms projects and installation of the first megawatt-class demonstration wind turbines. Therefore, the project will not result only in research studies, but also in installation of three wind turbines which would serve as nuclei of wind farms in selected locations.

Research and technology development aims of SEEWIND are focused not only on transfer of European experience and knowledge, but also on identification of characteristic development needs in the area of wind energy in the region. Relevancy of the mentioned aims is seen in:

- Promotion of wind energy utilization and incentives for implementation of first wind farm projects in South-East Europe,
- Gaining the experience in the area of innovative measurement technologies, computer simulation tools, project develop-



ment, and control of wind farm operation in complex terrain,

- Creation of friendly, international co-operation network of all stakeholders interested in wind energy in the region,

■ Establishment of local professional teams and educational centers,

- Creation and harmonization of the relevant civil engineering codes and standards.

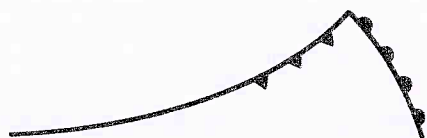
## WIND ENERGY IN AGRICULTURE

Sustainable agricultural production imposes new challenges, not only in limiting the usage of agro chemicals, but also in utilization of renewable energy sources and reduction of harmful gases emissions. Institute for Multidisciplinary Research has been working for three years now on development of pilot project of utilization of wind and sun radiation energy in small and medium agricultural economies. First phase of the project implementation – wind measurements and wind energy yield prognosis – has already been implemented in concrete example of production of grapes and wine at the economy of Radovanovic family in Krnjevo, near Velika Plana. In order to increase cost-effectiveness of production of outstanding wines in Cellar Radovanovic, energy aspect of this multidisciplinary project is composed of development and application of a model for integration of wind and sun radiation energy into grapes and wine production process, as well as into other aspects of local consumption at the economy. Installation of a wind turbine of appropriate power into the integrated system with solar panels as complementary sources of energy would enable not only satisfaction of household and local community needs, but – in certain periods – generation of excess energy for

sale or exchange with electrical energy distributors. This demonstration system would at the same time serve to postgraduate education in renewable energy science, development of management systems and investigation of all aspects of installation of similar or bigger systems in rural areas.



Measurements in the Radovanovic vineyard.



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### WIND TO SAILS OF SERBIA

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## INSTITUTE FOR MULTIDISCIPLINARY RESEARCH

Having high academic standards, with 35 Doctors of Science and more than 70 researchers in its staff, the Institute for Multidisciplinary Research is amongst a group of scientifically most successful research establishments in our country.

It was established in 1970 as Center for Multidisciplinary Studies of the University of Belgrade, its aim being to foster research and postgraduate education of young scientists in borderline multidisciplinary scientific and research areas. In October 2007, the Center changed its status and was named the Institute for Multidisciplinary Studies. Eminent members of the Serbian Academy of Arts and Sciences who played key role and gave their contribution to the establishment of the Center are professors Radoslav Andjus, Momčilo Ristić, Aleksandar Despić, Ljubiša Rakić, Rajko Tomović, Mirko Simić, Dušan Kanazir, Miomir Vukobratović, Miroslav Gašić, Pantelija Nikolić, Dragutin Dražić, as well as its first director, Zvonimir Damjanović. They initiated the organization of modern graduate courses to educate young people through participation and work in scientific-research projects which were implemented through the Centre, i.e. the Institute.

The Institute has remained faithful to those noble aims since its establishment till present days, and its scientific staff members are active in the following areas: material sciences, biophysics, neurosciences and biomedical engineering, environmental science and protection (starting from researches related to water and fish, through soil, phyto-remediation, atmosphere and climate, to ecosystems), surface phenomena and electrochemistry, energy conversion and renewable energy sources, artificial intelligence and information technologies, etc.

During the 1970s, the first graduate school was established by the Belgrade University in Yugoslavia and Central and Eastern Europe, and the Center played key organizational role in that activity. It was planned that such school should be an institution with modern approach and top quality education of scientific staff, with flexible and even individually designed programmes. In the course of 37 years, during the existence of the Center, more than 750 young people received the title of Master of Science and more than 50 received the title of Doctor of



Wind energy research on Vlasina

Science. Nowadays, most of them are professors or eminent scientists, both in our country and the world.

Research in the area of energy conversion was started during first years of the Center's activity, initiated by Professor Despić. A few years ago, thanks to Professor Petar Gburcik, the Institute engaged its intellectual potentials and knowledge of its associates in the area of renewable energy sources. As the

result of a five year activity of the Institute and its associates emerged the "Study of Energy Potential of Serbia for Utilization of Sun Radiation and Wind Energy", as well as the "Atlas of Wind Energy Potential in Serbia", and we started our participation in the EU FP6 project of wind farm development in South Eastern Europe. Also, through this activity anemometers based on original principles have been developed.



Windmill