

**SCIENTIFIC RESEARCH CONTRACT  
NO. 285/04.09.2009**

**TITLE:** *Experimental research for estimating the wind energetic potential in Alba County (location indicated by Employer).*

**I. THE CONTRACTING PARTIES TO THE CONTRACT**

**Art. 1** This agreement is made by and between:

- a) "1 Decembrie 1918" University of Alba Iulia, with the headquarters in Alba Iulia, Gabriel Betlen Str., No.5, 510009, telephone 0040258-806130, fax 0040258-812630, with fiscal code 5665935, account number RO17TREZ0025003XXX00006 opened at Trezoreria Alba-Iulia, represented by Rector Ph.D. Eng. IOAN MOISE ACHIM and chief accountant ec. SOFIA MIHALACHE, subordinated to The Ministry of Education, Research and Innovation, acting as executants

and

- b) Innovative Wind Concepts GmbH, with the headquarters in Husum / Germania, 12-16, Otto-Hahn Street., 25813 Husum, telephone +49-4841-8944-955, fax +49-4841-8944-960, registration number in the Trade Register HRB 6244 FL, fiscal code DE 252036139, IBAN code.....opened at bank ....., represented by administrator Mr. Hans-Heinrich Hollmann and Pierre-Jean de Vonarkha-Varnak, acting as Employer.

**II. Services, research objectives and terms**

**Ref:** Scientific Research Contract No.285/04.09.2009

**1. TITLE:** *Experimental research for estimating the wind energetic potential in Alba County (location indicated by Employer).*

**2. TERM OF RESEARCH:**

Starting date: date of signature

Duration: One Year (twelve months) of measurement plus report

**3. SCHEDULED STAGES AND TERMS:**

**- Phase 1 – Legal framework**

– the drawing up of the documents necessary with a view to obtain the building authorization

- measurement pillar layout, including sensors

- the setting to work of the monitoring system

**- Phase 2 – Measurement development and processing**

- regular acquisition of registered data

- collected data processing and measurement card synthesising

- the drawing up of research report and final remarks.

**- Phase 3– Final report**

- final meeting, workshop and report

**4. DETAILS OF RESEARCH**

The offer incorporates the following sub-points:

**1. Building permission for a wind turbine at a given location in the Alba region**

Our service includes

- Compilation of the primary documentation (ownership sketch, land registry extract, planning, etc.)

- Consent from: local authorities, energy / electricity / gas supply companies, telecommunications provider, environmental authorities and airline association.
- Compilation of construction documentation and consent from the highway and building authority, land registry, agricultural association, etc.

## **2. Measurement of wind potential in the Alba region, Romania (using own infrastructure)**

Our service includes:

- Local transport, preparation, construction, commissioning and maintenance of the installed measurement infrastructure (85 m\*),
- Establishment of autonomous electricity energy supply system,
- Continuous recording of meteorological data (at least wind speed and direction, temperature, humidity, atmospheric pressure),
- Regular data queries / readings and data storage,
- Wind speed measurement at a choice of 3 heights above the ground and wind direction measurement at a choice of 2 heights, and over a chosen period (e.g. 12 months),
- Continuous information on the measurement site and structures as well as the measuring data collected via GSM modem,
- Reports on the composition and analysis of the measurements incl. tables and graphic illustrations of the findings (1 month),
- Consolidation of the results with neighbouring measuring stations (if available) on the basis of correlation investigations,
- Disassembly and removal of the measuring system at the end of the measuring programme,

The measuring equipment with the meteorology mast and data transfer system would correspond to the devices normally used for measuring the wind / determining the wind potential. The sensors have calibration certificates from MEASNET and the components meet the recommendations of IEA1999. To carry out the measurements, we will adhere to the *Technical Guidelines for Wind Energy Plants Part 6, from the Fördergesellschaft Windenergie e.V.* (Federation of German Windpower) and the requirements of the additional international wind expert appointed by the client.

(\*) Autonomous measuring system for the estimation of wind energy consists on:

- Measurement tower height 85 m, with assembly- and structure-accessories (guy wires, anchors, clamping fixture, auxiliary masts, mounting plate, aviation light and/or beaconing);
- At least 4 Thies first class anemometers (depending upon climatic conditions with heating), 2 x Thies wind direction sensors, 1 x Temperature sensor with shield, 1 x barometric pressure sensor, 1 x relative humidity sensor;
- Power Supply System consist on PV-Module, Voltage-regulator, 12V Battery, in lockable steel cabinet
- Wireless data transmission system (GSM-Modem + 1xCampbell CR1000 data logger inclusive leads)

*All the offered sensors possess calibration certificates of MEASNET and/or the components keep the recommendations IEA 1999. For the execution of the measurements we follow Technical Guidelines of Wind Energy Plants; Part of 6, from the promoting organization in Germany „Fördergesellschaft Windenergie e.V“, and/or after the recommendations from employer switched internationally wind expert.*