



INTERNATIONAL SAKHAROV
ENVIRONMENTAL UNIVERSITY (ISEU)



ISEU ACTIVITY IN THE FIELD OF TRAINING AND EDVANCED RETRENING SPESIALISTS FOR RENEWABLE ENERGETIC

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DIRECTION OF THE ACTIVITY

- 1) Training and advanced training of the specialists in the field of renewable energy sources (RES);
- 2) Creation of technical base for training and research;
- 3) Creation of Competence-center for effective use of local fuels and RES;
- 4) Arrangement of informational and educational workshops for schoolchildren, students, teaching staff and specialists on energy-efficient technologies and use of renewable energy sources.

TRAINING AND ADVANCED TRAINING OF THE SPECIALISTS IN THE FIELD OF RES

- ❑ Within specialty «Ecological monitoring, management and audit» in 2005 specialization «Management of renewable energy sources» has been introduced.
- ❑ Since 2008-9 academic year is opened in ISEU (with supporting of Belarus National Technical University) a specialization «Renewable energy sources» within specialty «Energy efficient technologies and energy management» (qualification of absolvents -“engineer-energy manager”.
- ❑ Since October, 2007 advanced training courses for teaching staff of schools, universities and specialists in the field of renewable energy sources and energy-saving is start operating.

TECHNICAL BASE OF TRAINING AND RESEARCH IN THE FIELD OF RES

Since 1999 the University has been using, for training purposes and for energy-supply of the building, solar collector for water heating, and solarvoltaic array for ground floor tell-tale light (supplied from Austria, Land Forarlberg).



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RENEWABLE ENERGY SOURCES LABORATORY

Within the cooperation with University of Applied Sciences Osnabruck, (Germany), under financial supporting of IIB (Germany) a completed laboratory for study and demonstration of all types of renewable energy sources has been set up in the ISEU.



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DEMONSTRATIONAL SITE OF RENEWABLE ENERGY SOURCES

It is located in ISEU training and research complex in
Volma village not far from Minsk



**Volma estate is one of the most ancient in Belarus.
It belonged to old noble family of the Monivids, known from the
document of Great Duke Vitovt dated back to 1398.
In the 18-20 centuries the estate belonged to the Vankovitch family**

**Since 2001 the estate has been included in
the Inventory of historical and cultural
memorial of the Republic of Belarus.**

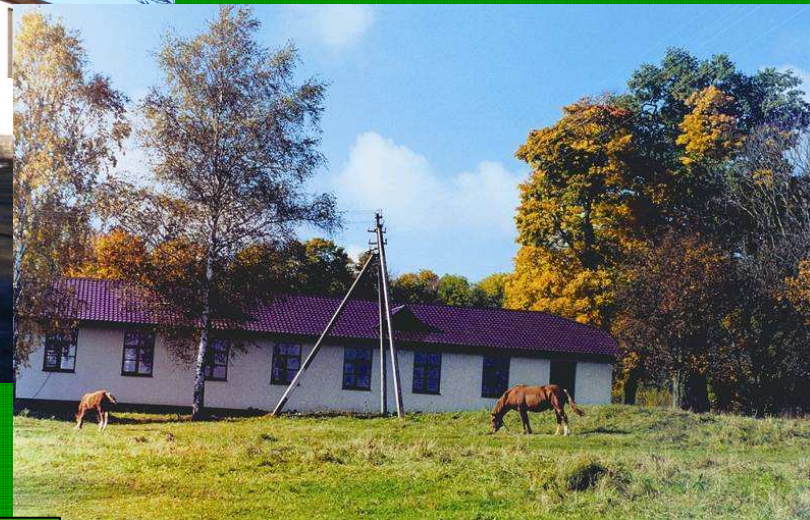


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Within the project implementation the construction of training and hotel building is under completion now



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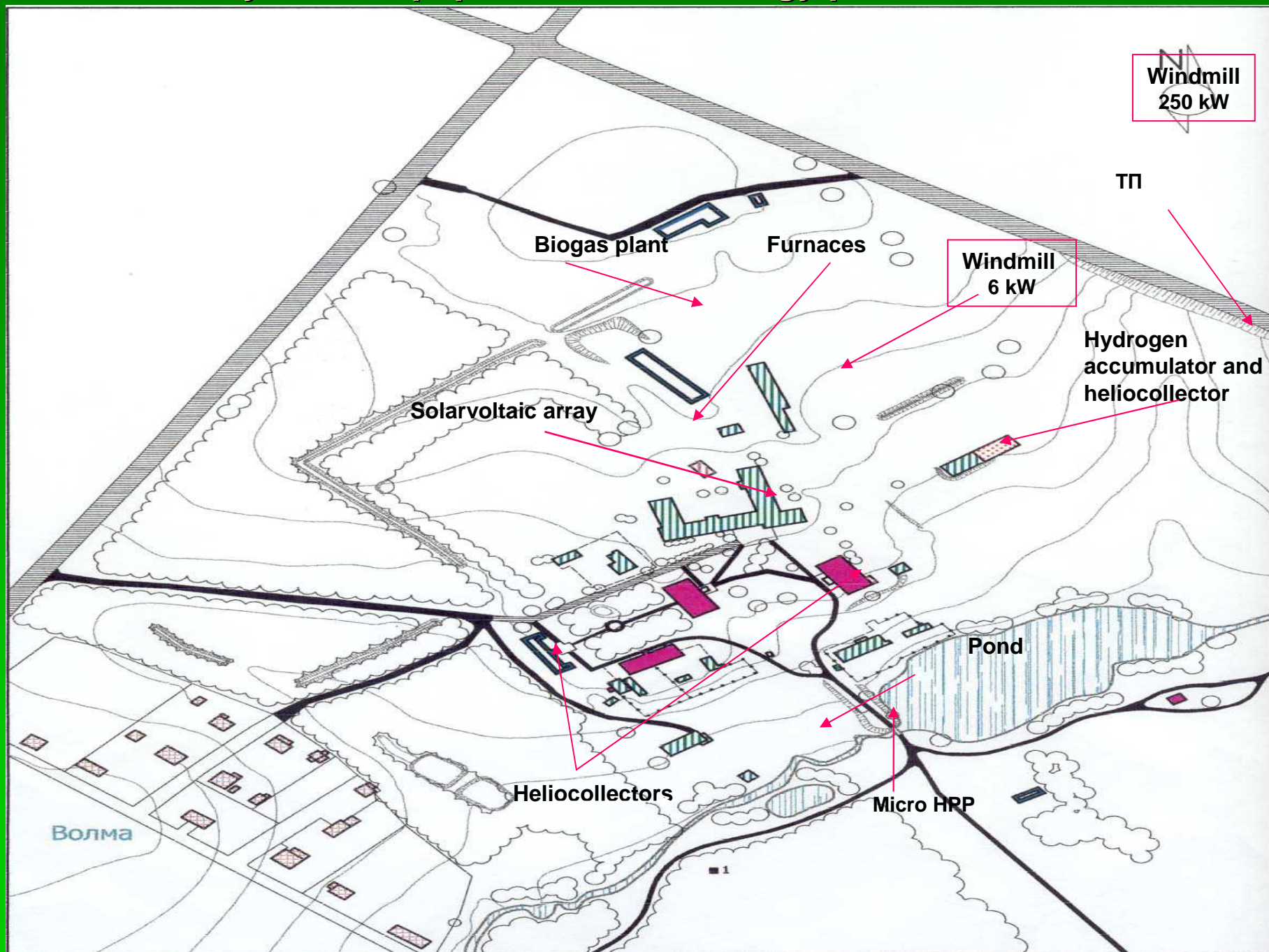
**The training and research complex will have
almost autonomous system of energy
supply using ecologically clean renewable
energy sources**

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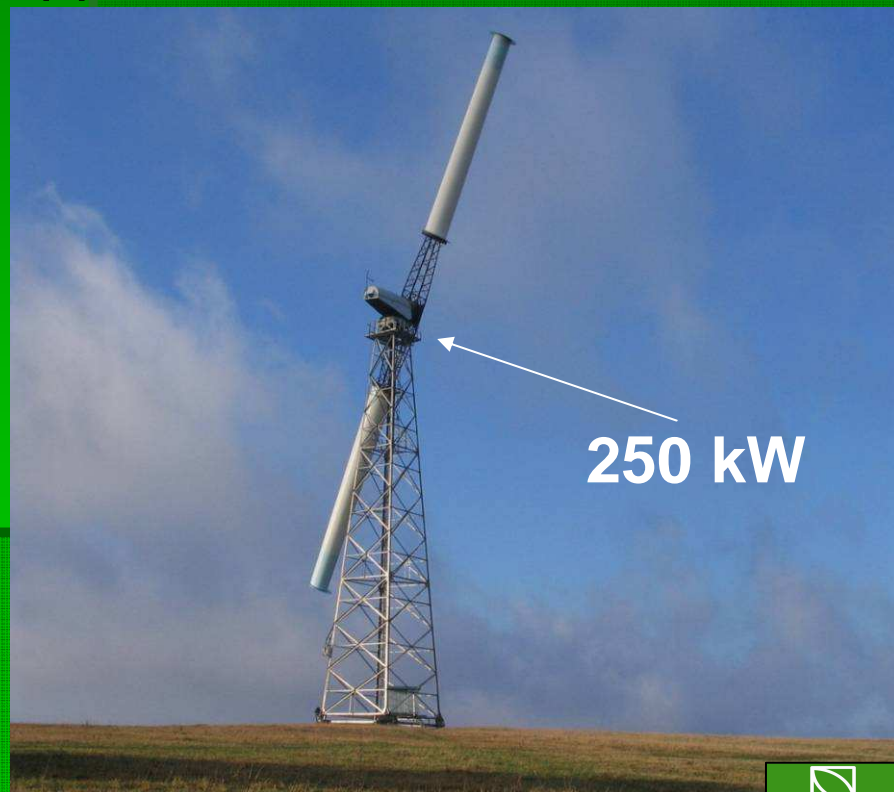
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Layout of equipment in eco-energy park “Volma”



Early 2006 Rotor Windmill (БЭУ-250) with its infrastructure was attached to the University.

In 2007 the windmill has been put in operation, and the energy is supplied into the electric net

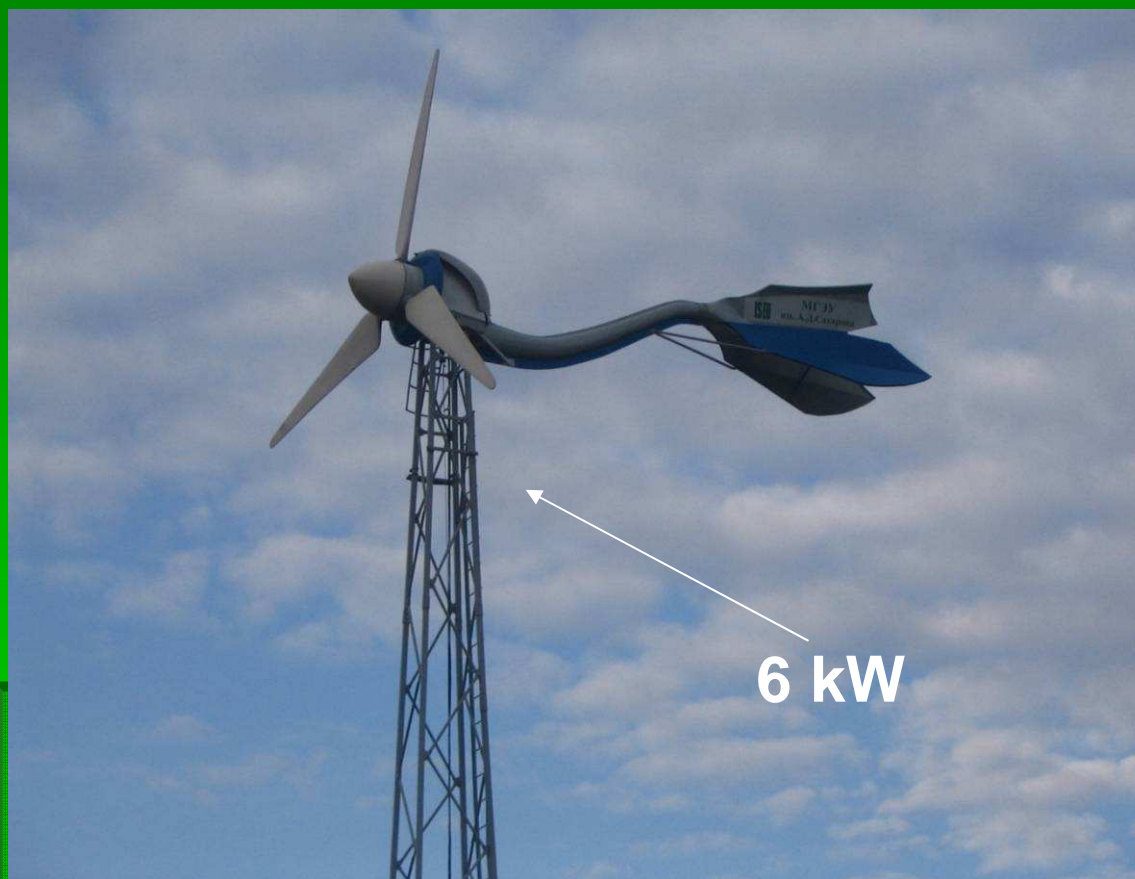


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Autonomous windmill ВЭУ- 6 (October 2006)



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It is planned to create the wind park (80+80 MWt) in the region of Volma (firm «Enertrag» (Germany)), which will be used not only for electrical energy production, but for training students and retraining specialists in the field of renewable—(especially, wind) energy.



In March 2006 a photovoltaic module (a gift of Forarlberg-Austria) under the support of Otto Hug Strahleninstitut (Prof. E. Lengfelder) was put in operation.

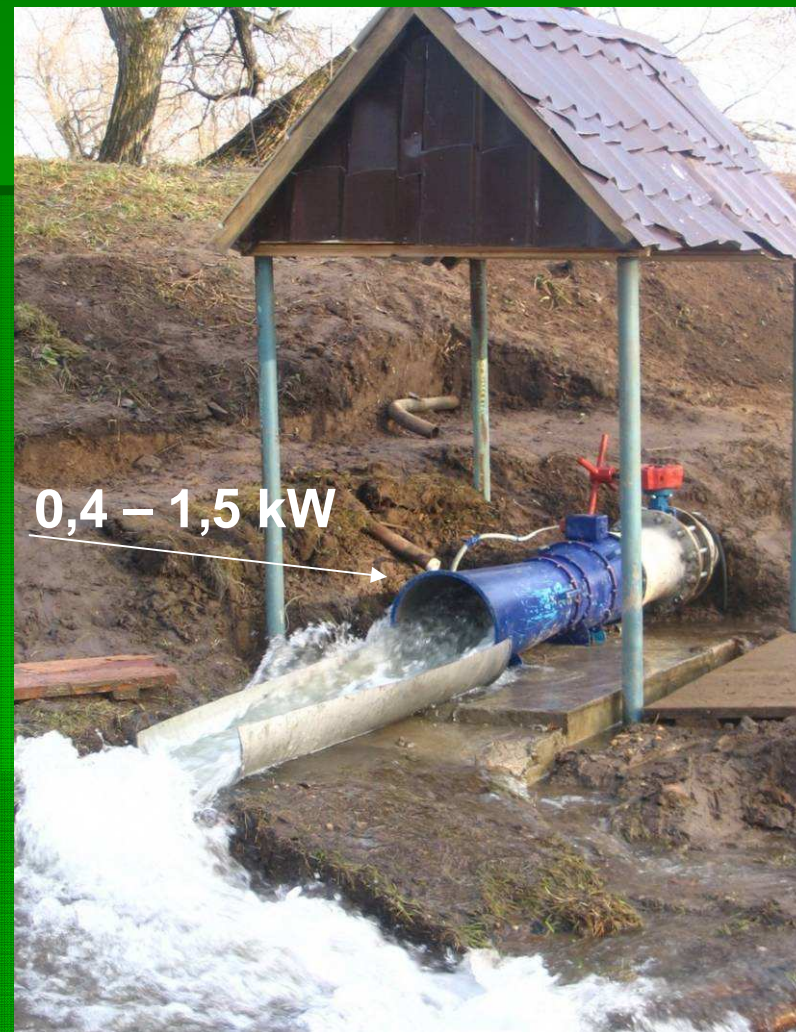
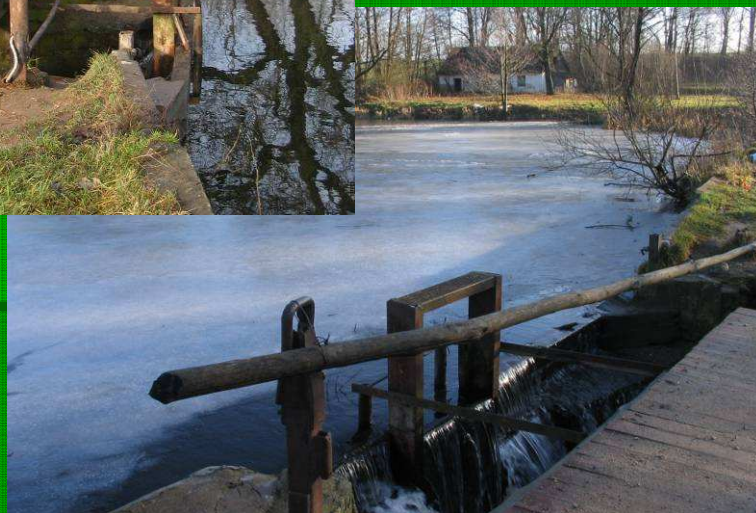


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Micro-hydropower plant (October 2006)



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**Boiler house runs on wood raw materials
(it is planned to put in operation the first stage
in December 2008)**



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Boilers of Austrian firm “KÖB”



Pyromat Eco plant, (150 kW) for whole timber firing

PYROT plant (250 kW) for ground timber firing

Logging machinery



Hydraulic press for firewood chopping

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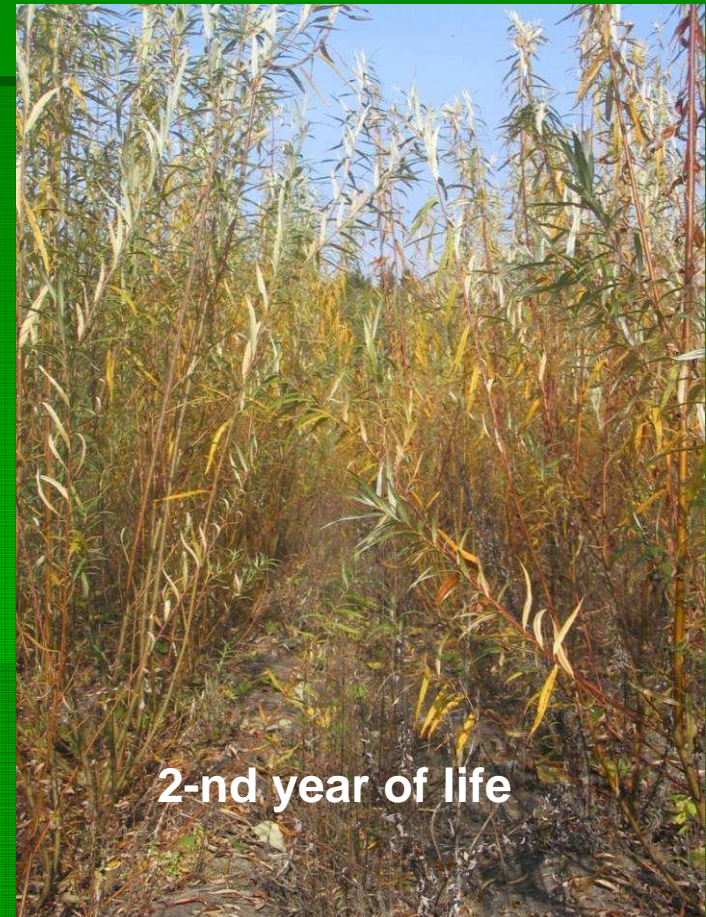


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There have been developed ecological methods for degraded soils rehabilitation based on use of rapidly growing plantations of trees as a renewable biofuel (at present ISEU has 3 experimental and study sites).



1-st year of life



2-nd year of life

**It is planned in 2011 to create bio gas plant
100 kW**



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In 2006 in cooperation with Otto Hug Strahleninstitut – MHM, Munich, diesel power station (300kW) using colza oil was put in operation in milk plant of Khoiniki town (Tschernobyl zone).

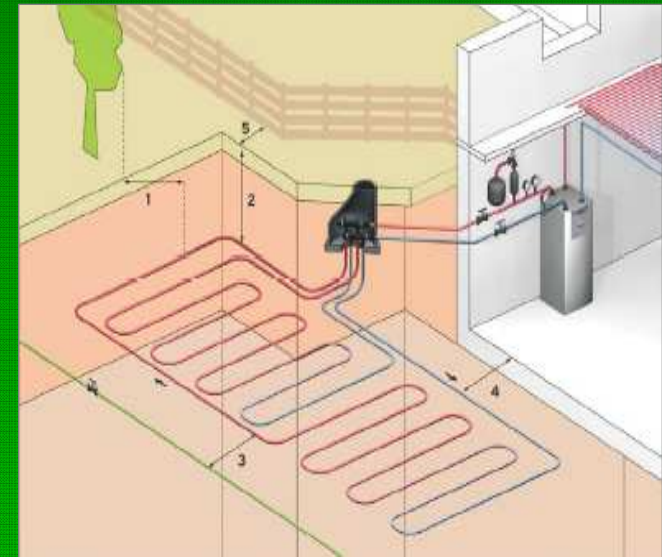


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In cooperation with Austrian Energy Agency the university was provided by heat pump (10 kW), which is getting to operation in the near future in Volma



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COMPETENCE-CENTER FOR EFFECTIVE USE OF LOCAL FUELS AND RENEWABLE ENERGY SOURCES

- It is planning to organize in 2010 in Volma Competence-center for effective use of renewable power sources and energy efficiency (consulting and energy audit in the field of RES for enterprises and population, implementation of projects, conduction of training workshops).
- The Project was awarded a silver medal of International Exhibition-Congress “High technologies. Innovations. Investments”, S-Petersburg, 2-6 October, 2007.



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PUBLIC WORK WITH POPULATION IN THE FIELD OF RENEWABLE POWER SOURCES

- For the period of 2006-2010 under the support of the International Education Center (IBB, Germany) the University has conducted more than 20 workshops for schoolchildren, teaching staff, and population from Minsk Region and Khojniki district of Gomel region, dealing with the practical issues of renewable energy sources and energy-saving



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SEMINARS FOR SPECIALISTS AND PUBLICATION IN THE FIELD OF RES

- ❑ In February 2008 under supporting of OSCE the International seminar “Perspectives and possibility of wood biomass utilization for energy purposes; international and domestic experience” was organized.
- ❑ During 2008-2009 under the support of OSCE Office in Minsk, the International Educational Center (Germany) the University held 11 seminars for pupils, school teachers and population of Minsk region and Khoiniki district of Gomel region dedicated to the questions of use of renewable energy sources.

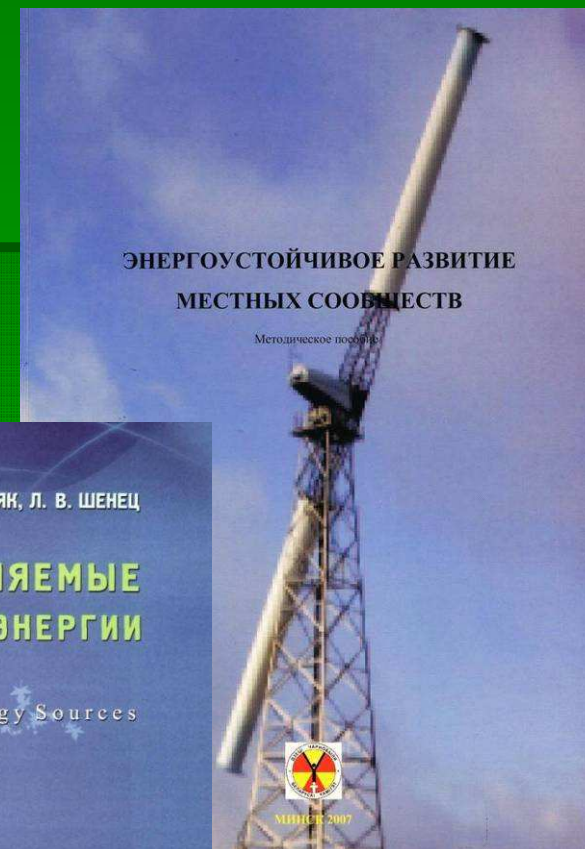
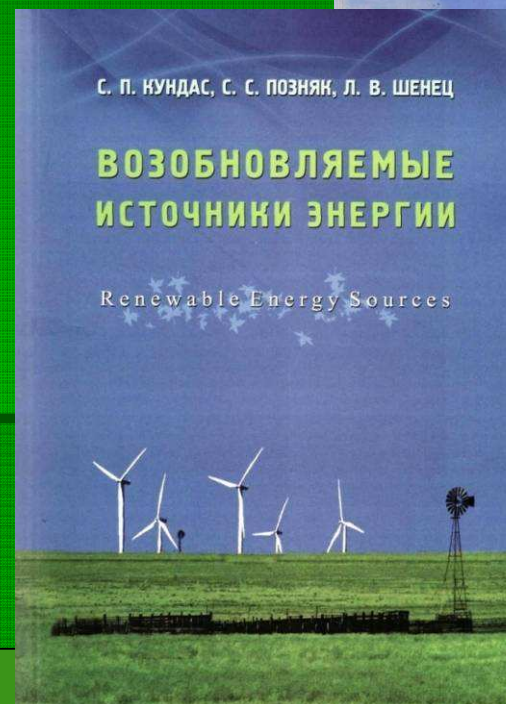
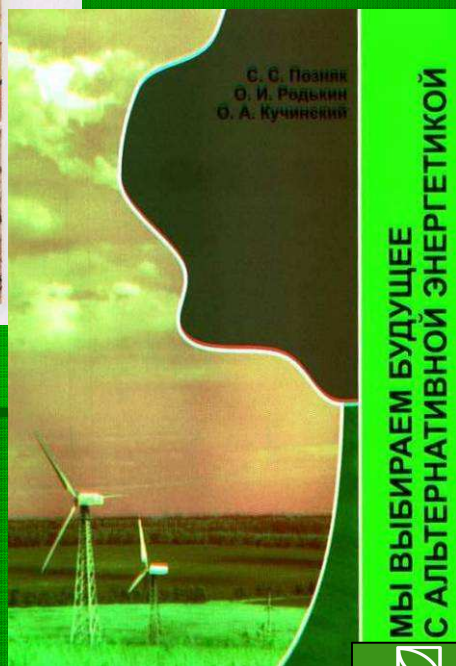
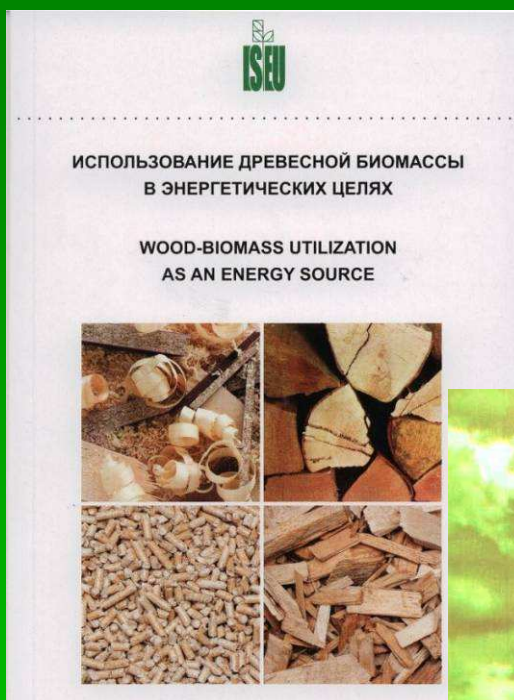


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ISEU PUBLICATIONS IN THE FIELD OF RES



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CONCLUSIONS

- 1) From 2008 Republic of Belarus has begun to train the specialists in the field of renewable energetic (ISEU, BNTU). But this specialists can practice only after 5 years;
- 2) In order to solve this problem it is necessary to organize training and retraining courses for working specialists of energetics and other branches of the economy;
- 3) In order to promote the practical application of energy efficiency technology and RES it is necessary to conduct informational educational work among population, in schools and universities;
- 4) One of the most important task in this direction is the acceptance national stimulating legislation in the field of renewable energy.



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