

TRAINING OF SPECIALISTS FOR “GREEN ENERGETICS”

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In accordance with the National program of the development of domestic and renewable energy sources for 2011 – 2015 it was planned to ensure that by 2015 at least 30% (32% by 2020) of the consumption in furnace fuel balance will be constituted by domestic energy resources.

The successful solution to the above mentioned task is associated with the energy security of our country, as well as the main provisions of the Directive №3 "Economy and thrift - the main factors of state economic security," by the President of the Republic of Belarus is largely dependent on the availability of highly qualified specialists in this field.

In Belarus training in the field of energy efficiency and renewable energy is organized at all levels of education:

- in the first stage of higher education: Engineer - energy manager;
- in the second stage of higher education: Master of renewable energy resources;
- specialists of the highest qualification: PhD in "Power installation based on renewable energy";
- retraining in the field of "Renewable Energy. Energy conservation. "

To meet the demands of the economy for specialists in the field of energy efficiency and energy conservation in 1998 curriculum and the standard of the specialty "Energy efficient technologies, energy management" have been developed by Belarusian National Technical University (BNTU) , in 2007 - its new version, currently - a new standard specifically tailored to the 4-year period of training.

According to the State classifier in this specialty were provided the following specializations:

- Energy-efficient technologies in the energy sector;
- Energy-efficient technologies of chemical industry;
- Energy-efficient technologies in industry and housing and communal services;
- Energy-efficient technologies in the agricultural sector;
- Energy-efficient technologies in the forest complex;
- Energy efficiency and energy management in transport;
- Management of renewable energy resources.

Currently, training of the specialists in the field of renewable energy in the Republic of Belarus is carried out by the following universities: BNTU (specialization "Energy efficient technologies in industry and housing and communal services"); Belarusian State Technological University (BSTU) (specialization: "Energy efficient technologies in chemical industry" and "Energy-efficient technologies in housing and communal services"); International Sakharov Environmental University (ISEU) ("Management of renewable energy resources"). Qualification of graduates of the specialty "Energy efficient technologies, energy management" is "Engineer - energy manager."

Disciplines of specialization: "Management of renewable energy resources" includes following: "Bioenergy"; "Wind power"; "Solar and geothermal energy"; "Hydropower"; "Exploitation of renewable energy equipment"; "Management of renewable energy resources"; "Basis of designing of renewable energy equipment".

To increase the level of knowledge in the field of energy conservation of all university graduates of the Republic of Belarus the subject "Fundamentals of energy efficiency" was introduced to the curriculum, which provides a study in the framework of lectures (16 hrs.), laboratory (practical) classes (16 hrs.) with the following main issues: normative base and policy of the country in the field of energy conservation; application of energy efficient technologies, renewable energy sources; organization of energy efficiency in various sectors of the economy; issues of energy management and auditing.

Training of masters. In 2012, ISEU has developed a program of professional Master's program in "Management of renewable energy resources" (study duration 1.5 - 2 years). Currently, a necessary methodological and technical support for the opening in BNTU this specialization and the professional Master's program are under development.

Training of PhD students. Order of the Higher Attestation Commission of the Republic of Belarus of June 12, 2007 № 111 is approved passport of specialty 05.14.08 "Power plants based on renewable energy". This specialty carried out in the Belarusian State Agro-Technical University (BSATU). In BSATU there is a Specialized council Д 05.31.01 for examination of dissertations in this specialty.

Retraining of specialists. According to the Order of Ministry of Education of the Republic of Belarus of 09.08.2007 BNTU and ISEU were included in the list of educational institutions for retraining of specialist on energy conservation and renewable energy. For practical realization of this task ISEU developed a training methodical complex in the field of "Renewable Energy. Energy conservation" and organized this work.

Material and technical base. The universities that train specialists of different levels in the field of energy conservation and renewable energy are created the necessary laboratory facilities for the practical training of students and research conducting. In particular, in ISEU was established an educational-research complex "Volma" - the center of renewable energy sources. The teaching and hotel building with classrooms and research laboratories was built in "Volma". Laboratory work is carried out on the real renewable energy equipment (solar photovoltaic panels, solar water collectors, wind turbines, heat pump, micro-hydro power plant, modern wood-fired boilers, biogas equipment) (fig.1).



Fig.1. Renewable energy sources of the Educational-research complex "Volma"

Laboratory for energy conservation have been established also in almost all universities of the country.

Thus, in the Republic of Belarus the necessary methodological support as well as material and technical base have been created, there is qualified teaching staff for the implementation of the training of specialists in the field of renewable energy and energy conservation at all levels of education.