

Division: *Institute of Engineering and Technology/ Department of Power Stations, Grids, and Electric Power Systems*

Academic programme: *13.04.02 Power Engineering and Electrical Engineering, Integrated Use of Renewable Energy Sources*

Mode of study: *full-time*

Programme length: *4 years*

Programme level: *Master's degree*

Language of instruction: *Russian*

Programme description: *Students of this programme obtain theoretical knowledge and practical skills in the field of using natural resources, based on green renewable energy sources (solar power, wind power, hydro-, bio- and geothermal energy). Much attention is paid to the specifics of using wind-driven and solar power plants, and hydroelectric power plants. Students learn how to calculate the power potential of renewable energy sources for certain terrains; engineer electrical power systems based on using local natural energy sources; design electrical equipment and automation tools intended for operation using both traditional and renewable energy sources; and perform technical control and maintenance of the operated equipment.*

In the process of training, students obtain the skills in using the main software for 3D modelling, computer-aided calculations, creation of digital models (ANSYS Mechanical, MATLAB, and SolidWorks), and learn the programming using C++ language aimed for solving of applied tasks.

Students can engage in research activity jointly with the Alternative Energy International Innovations Centre at the SUSU Department of Power Stations, Grids, and Electric Power Systems, as well as take internships at solar power plants, wind-driven power and other enterprises for equipment production and power generation.

The competences and skills gained during training allow graduates to get well-paid jobs in both research and design related to renewable energy sources, but also at any modern enterprises in the fields of power engineering and production.

In the Ural Federal District, only SUSU trains specialists in this promising area of activity.

Main programme-specific classes:

- *Solar Heating Systems in Power Engineering*

- *Photoelectrical Solar Power Systems and Their Use*
- *Use of Low-grade Heat in Power Engineering*
- *Use of Solar Radiation Concentrates in Power Engineering*
- *Combined Power Plants Based on Renewable Energy Sources*
- *Integrated Use of Hydroelectric Power Plants*
- *Chemical and Thermal Biomass Energy Conversion*
- *Integrated Use of Wind-driven Power Plants*
- *Energy Conservation in Social Sphere*
- *Installation, Adjustment and Operation of Power Plants in Renewable Energy Sector*
- *Integrated Use of Energy-storage Plants and Stations*
- *Ecology of Using Renewable Energy Sources*

Programme manager: *Irina M. Kirpichnikova, Doctor of Sciences (Engineering), Professor of the Department of Power Stations, Grids, and Electric Power Systems*