

## **Specifics educational program on the specialty "Heating Energy"**

### **Aims and objectives of the educational program**

Educational program "Thermal power station" on the specialty 6M071700 - " Heating Energy" was established on the basis of the request of employers due to the needs of the dynamic city, Astana, as the largest city in the region in terms of consumption of energy facilities, as well as due to the rapid depletion of fossil fuel feedstock as a whole, on a global scale. The main goal of the program is as follows:

Formation of the basic professional competences in

- Performance in the field of scientific and technical activities for the design, information services, organization of production, labor and management, metrological support, technical control;
- The development of methodological and regulatory materials, technical documentation, as well as proposals and activities designed to implement projects and programs;
- The organization works to improve the scientific and technical knowledge of employees of energy companies;
- Organizing and conducting the technical operation of devices, systems and networks FEC.

### **2. General characteristics of the educational program**

This educational program consists of two main cycles:

1) Basic disciplines - BD; 2) profile disciplines - PD. Each cycle consists of theoretical training compulsory component and the component of choice. The list of disciplines essential component and the corresponding minimum volume of credits are determined by the National Standards SES RK 5.03.002 - 2004 standard and speciality Master.

The list of elective courses and the corresponding minimum volume of credits are set high school in accordance with the needs of the labor market.

### **3. The qualifying characteristic**

Sphere of professional activity

Graduate Master's degree in 6M071700- «Heating Energy" is assigned an academic degree "Master of thermal power."

- The scope of professional activity is combined heat and power, forming part of the art and include a set of tools, techniques and methods of human activity, created for the use heat control its flow and transformation of other forms of energy into heat.
- Objects of professional activity

The objects of professional master power system are:

- steam and hot water boilers for different purposes;

- steam and gas turbines;
- power units;
- installation for the production of compressed and liquefied gases;
- compressors, chillers;
- installation of air conditioning systems;
- heat pumps;
- installation, systems and complexes of high-temperature and low-temperature heat technologies;
- chemical reactors;
- auxiliary heat equipment;
- heat and mass transfer devices for different purposes;
- heat network;
- fuel and oil;

### **The subject of professional activity**

Objects of professional activity Master in 6M071700 - "Heating Energy" systems are:

the thermal power station;

- Industrial and heating station;
- Heat and power systems and heat technologies;
- The centralized and autonomous energy saving industrial enterprises and organizations;
- Production and distribution of energy;
- District heating and thermal networks;
- Preparation of water and fuel;
- research:
  - Research and development in the field of power and heat technologies, energy use and energy of individual sections (steps, tasks) threads in accordance with approved procedures;
  - Technical decision support for the development of systems of power system and heat technologies;
  - Analysis of the status and prospects of development of power engineering, energy, heat technologies, with the necessary tools and methods;
  - Analysis of the dynamics of the objects and activities;
  - The use of computer modeling techniques and processing the results of experimental and theoretical studies;
  - The establishment of reserves and potential energy savings in industries;

- The development of promising new and innovative ways of processing technology and natural water and fuel preparation;
- Research and implementation of low-waste and non-waste technology;
- Educational activity:
- Curriculum development;
- Writing teaching materials;
- Training sessions with students;
- Introduction of modern forms and methods of teaching.

#### **4. Prospects for employment experts**

Graduate student enrolled in an educational program "Thermal power station" in the future can work at the facilities such as: the thermal power station (TPS), this - combined heat and power (CHP), condensing power station (IES), nuclear power station (NPS);

-Industrial and heating station;