



«АККРЕДИТТЕУ ЖӘНЕ РЕЙТИНГТІҢ
ТӘУЕЛСІЗ АГЕНТТІГІ» КЕМ

НУ «НЕЗАВИСИМОЕ АГЕНТСТВО
АККРЕДИТАЦИИ И РЕЙТИНГА»

INDEPENDENT AGENCY FOR
ACCREDITATION AND RATING

REPORT

on results of the work of the external expert commission on the assessment of compliance with the standards of specialized accreditation of educational programs

5B071700- Heat power engineering (re-accreditation)

6M071700- Heat power engineering (re-accreditation)

5B071800-Power engineering (accreditation)

6M071800-Power engineering (accreditation)

6D071800-Power engineering (re-accreditation)

Karaganda State Technical University

Site Visit Dates: from 20 May to 23 May 2019

***Independent Agency for Accreditation and Rating
External expert commission***

***Addressed to
Accreditation
Council IAAR***

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Karaganda State Technical University

in the period from 20 May to 23 May 2019

Karaganda, 2019

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(I) LIST OF SYMBOLS AND ABBREVIATIONS

AMP – Automation of manufacturing processes
JSC - Joint Stock Company
EEEA - external evaluation of educational achievements
SAM - State attestation commission
SME - State municipal enterprise
DAA - Department of Academic Affairs
DIE - Department of innovation and entrepreneurship
DPI - Department on personnel issues
MEI - measuring equipment and instrumentation
IC - individual curriculum
KSTU - Karaganda State Technical University
NAS RK - National Academy of Sciences of the Republic of Kazakhstan
SRI – scientific-research Institute
SSRW – student’s scientific-research work
SRW – scientific-research work
EP - educational program
RO - registration office
REM - on the rights of economic management
TS – faculty members
WI - work instruction
RSE - Republican State Enterprise
WC - work curriculum
QMS - Quality Management System
MM – mass media
SC - standard curriculum
LLP - limited liability partnership
EMCD – educational and methodical complex of the discipline
MPE - management of postgraduate education
MOEP – Management for the organization of the educational process

(II) INTRODUCTION

According to the order №53-19-ML from 05.02.2019, of the independent agency for accreditation and rating from 20 to 23 May 2019 an external expert commission evaluated the correspondence of Karaganda State Technical University educational programs "5B071700-Power system", "6M071700- Heat power engineering», "5B071800 -Power engineering", "6M071800-Power Engineering», "6D071800-Power engineering" to specialized accreditation standards IAAR (№10-17-ML from February 24, 2017, fifth edition).

Report of the External Expert Commission (EEC) contains an assessment of the submitted educational programs according to the IAAR criteria, EEC recommendations for further improvement of educational programs and settings of the educational programs profile.

The composition of the EEC:

1. Commission chairman - Gita John Rewald, doctor PhD in physics, corresponding member of the Latvian Academy of Sciences, member of the Latvian Association of Science, president of Almaty University of Energy and Communications (Almaty);

2. Foreign expert - Narkevitch Mikhail Yurievich, candidate of technical sciences, Associate Professor, Magnitogorsk State Technical University (MSTU) named after G. I. Nosov, expert of Russian accreditation agency (Magnitogorsk, Russia);

3. Foreign expert - Torobekov Bekzhan Torobekovich, candidate of technical sciences, Professor, Vice-Rector for Development and the state language, Kyrgyz State Technical University named after I.Razzakova (Belarus, Bishkek);

4. Expert - Ibrayshina Gulnar Kenzhegaziyevna, candidate of philosophy sciences, Associate Professor, International Education Corporation (KazGASA) (Almaty);

5. Expert - Elmira Kalshabekova Nurlybaevna, candidate of technical sciences, Associate Professor, South Kazakhstan State University. M.Auezov (Shymkent);

6. Expert - Askar Kasymov Bagdatovich, Dr. PhD, State University named after Shakarim K. (Semey);

7. Expert - Abdimuratov Zhubanyshbay Suynullaevich, candidate of technical sciences., Associate Professor, Almaty Energy and Communications University (Almaty);

8. Expert - Vadim Pavlovich Markowski, candidate of technical sciences, Associate Professor, Pavlodar State University named after S. Toraigyrov (Pavlodar);

9. Expert - Bulashev Berdibek Kabkenovich, candidate of chemical sciences Associate Professor, Kazakh Agrotechnical University named after S. Seifullin (Astana);

10. Expert - Lyudmila Polyakova, Deputy Chairman EMCU(educational and methodical council of the university), Kazakhstan Engineering and Technological University (Almaty);

11. Expert - Aldungarova Alia Kayratovna, Dr. PhD, Associate Professor, Pavlodar State University named after S. Toraigyrov (Pavlodar);

12. Employer - Kutlin Sergey, Director of the Training Center "Logic-Soft" (Karaganda);

13. Employer - Kairbekova Nailya Kamalovna, director of the AIO&LG (Association of individual entrepreneurs and legal entities) "Association of builders of the Karaganda region" (Karaganda);

14. Student - Pozilbekov Murothon Muhtorugli, a member of the Alliance of Students of Kazakhstan, 1st year student of specialty "5B071800-Power Engineering", Karaganda State Industrial University (Temirtau);

15. Student - Omirzakova Aizhan Amangeldiyevna, a member of the Alliance of Students of Kazakhstan, 2nd year student of specialty "5B071600-Instrument making", Karaganda State University named after academician EA Buketov (Karaganda);

16. Student - Ayman Tlegenova Askhatkyzy, a member of the Alliance of Students of

Kazakhstan, 1st year student of specialty "5B071900-Radio engineering, electronics and telecommunications," Karaganda State University named after academician EA Buketov (Karaganda);

17. Student - Asanov Alikhan Altinbekuly, leader of the Alliance of Students of Kazakhstan in Karaganda region (Karaganda);

18. Agency observer - Timur Kanapyanov Erbolatovich, Dr. PhD, head of the international projects and communication with the public IAAR (Nur Sultan).

(III) REPRESENTATION OF EDUCATIONAL ORGANIZATION

Republican State Enterprise Karaganda State Technical University (next KSTU) is the subject of higher education of the Republic of Kazakhstan and acts on the basis of the Charter, registered in the Karaganda Regional Department of Justice 14.04.2004, the number of 3-8 / 139, certificate of state re-registration of the legal entity number 8488-1930-GP 24.02.2000 year.

In 2012, the State Enterprise "Karaganda State Technical University" was transformed into the Republican State Enterprise on the right of economic management "Karaganda State Technical University." University Charter approved by the Chairman of the Commission for State Property and Privatization of the Ministry of Finance of the Republic of Kazakhstan № 922 from 17.09.2012 years.

KSTU is one of Kazakhstan's largest institutions of higher education. There is provided by the preparation of highly qualified specialists for industrial enterprises of Kazakhstan, carrying out research and training at their base highly qualified personnel. Personnel training in KSTU carried out in accordance with the state license to practice in the field of higher and postgraduate education in educational activities number 12014940 from 22.10.2012, the application for a license the order of the Chairman of the Commission for Control in Education and Science sphere MES RK №547 from 05.31.2016 till 82 specialties, including 40 bachelor specialties, 27 master specialties and 8 doctoral specialties, 7 military occupational specialties, and applications for a license from 02/04/2019 to 12 bachelor and 9 master's degree programs and 3 doctoral degree programs.

In 2014, the University passed institutional accreditation, in 2014-2015 - specialized accreditation of 24 educational programs in the IAAR. In 2014-2015, the university also has passed specialized accreditation of 27 educational programs in IKAQAE (Independent Kazakhstan Agency for quality assurance in education) and international specialized accreditation of 15 educational programs in ASIIN. In 2016, 10 educational programs KSTU passed international specialized accreditation in ACQUIN.

In 2018 KSTU passed the international re-accreditation in the IAAR period of 7 years.

In 2018 KSTU took 3rd place in the national ranking of the best technical universities in Kazakhstan, conducted IKAQAE.

According to the results of the national ranking, performed by an independent agency for accreditation and rating (IAAR) in 2015 year 36 educational programs (EP) of University took first place out of 68 participating; in 2016 - 37 of 38 EP; in 2017 - 41 EP of 50; in 2018 - 35 EP of 50; in 2019 - 41 EP of 50, accordingly.

In international rankings in 2018 University gained the following positions: QS World University Rankings 751+ place; QS University Rankings EECA - 171 place (TOP-300); UNIRANK World University Rankings 2765 - place; UNIRANK Country University Rankings 2- place; RANKPRO Worldwide Professional University Rankings 577- place; RANKPRO Country University Rankings 2- place; UI Green Metric World University Rankings 482 - place; UI Green Metric Country University Rankings 5- place; WEBOMETRICS World University Rankings 5574 - place; WEBOMETRICS Country University Rankings 6- place;

ARES World Universities-European Standard ARES - BBB +.

The total area of the building owned by the University is 91,268.6 square meters. The University includes 8 faculties (Architecture and Construction, Mining, Manufacturing, transport and traffic, engineering economics and management, innovative technologies, energy, automation and telecommunications, correspondence and distance learning), 30 cathedrals, 8 departments, the Center»Triunity of languages" named after Shakarima Kudaiberdiev, Center for Career Guidance Center of working professions, Center for Engineering Pedagogy, Training Center "Serpín – 2050", Center for IT-competence, Center for career growth, the Upgrade Center, the International Center of Materials' science, SRI»Kazakhstan multidisciplinary institute of reconstruction and development," Kazakhstan Institute of Welding, college.

To obtain working professionals at the first stage of students' training, KSTU has 6 centers: mechanical engineering, mining, construction, welding, energy and telecommunications.

In order to improve the organizational structure that centrally manages the implementation and promotion of innovative projects to the market, KSTU has created University innovative scientific and technical complex, including:

- 6 research institutes;
- 4 scientific and educational complex ("Industry 4.0"«Digital Engineering",»Nanotechnologies in industry" and»Bioengineering");
- 16 innovation centers;
- Testing laboratory of engineering profile "Complex development of mineral resources."

The university has a public catering complex, including café "Polytechnic" with an area of 2345.9 square meters, 9 buffets, 3 dormitories, sports and health camp»Polytechnic", Youth Palace»Zhastar Alemi".

Training sessions teaches 67 (60 of them are full-time) doctors, including those with the title of professor (HAC) - 46, 236 candidates of sciences (218 of them full-time), including those with an academic rank of associate professor (HAC) - 109, 26 doctors PhD, 278 Master.

Contingent on the university of 11,402 students, including undergraduates - 1394, doctoral students - 128.

The University uses a number of licensed software products in its professional activities that provide rational support for educational, scientific, organizational and control functions.

The educational process uses 72 interactive sets, 3186 modern computers with internet access. The library located in 3 educational buildings. Area of libraries 2311.06 sq.m. There are 290 seats in the reading rooms. In the open access on an area of 72.1 sq.m. presented 2140 copies of literature. General fund of libraries 1,898,611 items, contains all the necessary materials for training: educational, technical, reference, popular scientific literature, various periodicals. The current fund - 1,185,771 copies, including in the state language - 337 045 copies.

In recent years, has achieved positive growth of total S & R funding. In 2018, 98 scientific and technological projects were completed in the amount of 980,1 million tenge, including: 237 million tenge - on the state budget, 743 million tenge - on commercial contracts, which exceeded the figure for 2017 at 90.9 million. tenge. The main customers of contractual works are: JSC»Mittal Steel Temirtau", LLP»Kazakhmys Corporation", JSC»SSGPO", LLP»Bogatyr Coal", JSC»Zhairam", JSC»Shubarkol" and others.

In 2018 university passed the recertification audit for compliance with ISO 9001: 2015.

The department APP was established in 1962 and is currently trains in the

preparation of technical experts in the field of automation of technological processes and production, automated electric drive, Power Engineering, mechatronics and robotics, integrated automation technology, the use of non-traditional sources of electricity, automated heuristic (including remote) systems of training and knowledge assessment. Since 2008 at the Department has opened the doctoral studies PhD program on a specialty»Power Engineering".

Department of»Power Systems" was established in 1956 as the»Mining mechanics" and in 1958 the department of»General and mining electrical engineering" was founded. In 1968, on the basis of the Department»General and mining electrical engineering", the Department»power Supply of industrial enterprises" and the Department»Theoretical foundations of electrical engineering" were formed. In 1980, the Department was reorganized and named»electrical Engineering". In 1990, the specialty»power Supply" was opened and in 1991 the name of the Department was changed to»power Supply". In 1997, the departments of»power Supply" and» electrical Engineering»were merged and until 2008, the joint Department of" power Supply and electrical engineering» (PS&EE). In 2001, the Department opened the specialty»electrification and automation of agricultural enterprises", in 2005 it opened the specialty» Heat power engineering». Since 2001, the Department has opened a master's degree program. In 2008, the Department of PS&EE was renamed to the Department of»energy", and in 2015 to»Energy systems".

The departments are equipped with the most advanced tools, automation systems and software for research, design and technical implementation of industrial automated technological complexes, information and measurement systems. In recent years, the laboratory base of the Department has been updated with electrical complexes that meet modern requirements.

All these years, the Department produced electrical engineers and bachelors is of high quality, as evidenced by the successful passage of multiple state certifications from the MES RK.

The contingent of students of internal and correspondence branches EP»power" in the 2018-2019 academic year 266 people, including in bachelor degree 208, 48 master's, 20 doctoral, and EP "Heat Power engineering" 134 persons, from them in bachelor degree 67, 67 master's degree.

Qualitative and quantitative composition of teachers in the EP»Power Engineering" for the 2018-2019 academic year, the total number of full-time teachers list is 48 people, including 34 full-time teachers, 33% are settled down, and the average age is 40 years.

Qualitative and quantitative composition of teachers in the EP» Heat power engineering» for the 2018-2019 academic year, the total number of full-time teachers list is 36 people, including 30 full-time teachers, 37% are settled down, and the average age is 48 years.

Information on employment of graduates in 2018 bachelor's degree 5B071800 EP - »Power Engineering" -85%, Masters - 93%, and doctoral - 100%. According to EP 5B071700 -» Heat power engineering» Bachelor -80% -100% magistracy.

In the period 2014-2019 external academic mobility program for one semester in universities in Europe and Asia were trained 4 students. At this point 1 student is studying in the Czech Republic for the academic mobility. (<http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/>)

6 undergraduates were sent for academic mobility under the University of the Shanghai Cooperation Organization program. (<http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/>).

Students of the KGIU, specialty»Power Engineering" are trained on internal academic mobility, with the issuance of transcripts, according to the agreement on mutual cooperation in the provision of educational services between KSTU and KGIU from 14.03.2011.

In the period 2014-2019, 10 students of specialty 5B071800»Power Engineering"; were trained under academic mobility program, 7 students of specialty 5B071700» Heat power engineering»; 2 undergraduates of specialty 6M071800 -» Power Engineering»; 1 undergraduate specialty 6M071700 -» Heat power engineering».

Faculty members of»Energy Systems" and APP perform research work with an innovative character:

-»Implementation of a resource-saving heat supply system for energy-efficient operation of decentralized facilities", 2018 (grant of the Ministry of education and science of the Republic of Kazakhstan);

-»Revision and adjustment of lifting installations", 2018. (economic contract);

- Development of distributed software - technical systems of protection and diagnostic elements of high-voltage power lines (grant state registration number 0113RK01049);

- Cathodic protection of structural elements of overhead power lines located underground (grant state registration number 0113RK01049);

- Monitoring of leakage currents of suspended insulators of overhead transmission lines (grant state registration number 0113RK01049);

- Development of algorithms and software for controllers of the local system for the technical condition of structural elements of overhead transmission lines (grant state registration number 0113RK01049);

- Development of algorithms and software for the system for collecting processing and visualizing current information received from local systems from overhead transmission lines (grant state registration number 0113RK01049);

- Creation of a distributed noise-resistant»smart grid" system for monitoring the state of overhead transmission lines using combined methods of information transmission (state registration number 0115RK00405);

- Research and development of hierarchical information and control technologies for optimizing the functioning of heat supply complexes in megacities;

- Production and sale of sailing wind power plants (Autonomous with a capacity of 10-20 kW).

The total amount of funding for the last 3 years amounted to 82.89 million tenge, including 46 million tenge by order of the MES of Kazakhstan.

The development of the Department of APP leakage current protection Device" is included in the list of exhibits of the world exhibition»Expo-2017».

(IV) DESCRIPTION OF THE PREVIOUS ACCREDITATION PROCEDURE

In accordance with the order of the Independent agency for accreditation and rating №26-14-ML from 10.10.2014 year, from 14 to 17 October 2014 in KSTU external expert committee evaluated the correspondence "5B071700-Power system" of educational programs, "6M071700- Heat power engineering», «6D071800-Power engineering" specialized accreditation standards IAAR (from "26" in April 2012 № 08-ML, second edition).

Educational programs"5B071800-Power engineering", "6M071800-Power engineering" are accredited for the first time in the IAAR.

The report of the previous external expert committee (EEC) provides an assessment submitted to the educational programs of educational organization criteria IAAR WEC recommendations for further improvement of educational programs and profile settings KSTU educational programs.

The composition of the previous WEC in KSTU:

1. The Chairman of the Commission- Shunkeev Kuanyshbek Shunkeevich, doctor of

physics and mathematics, Professor, Vice-Rector of Aktobe State Regional University named after K. Zhubanova

2. Foreign Expert- Svetlana Kolesov B., candidate of economical science, Deputy Director for Academic Affairs of the Institute of Oil and Gas named after MS Gutseriev Udmurt State University (Izhevsk, Udmurtia);

3. Expert - Aryngazin Kapar Shakimovich, candidate of technical science, Professor, Head of Department»Vocational training and environmental protection" of Pavlodar state university named after S. Toraigyrov;

4. Expert- Zhunusov Akylbek Asyrarkulovich, candidate of geological and mineralogical sciences, professor, Head of the Department of Geological Survey, Search and Exploration of Mineral Deposits, Kazakh National Technical University named after K.I. Satpayev (Almaty);

5. Expert - Kasymkanova Heini Kamal M., doctor of technical science, Associate Professor, Head of the Department of Cartography and Geoinformatics Kazakh National University named after Al-Farabi;

6. Expert - Smirnov Mikhail Borisovich, candidate of technical science, Professor, Head of the Methodology Department of the State University named after Shakarim Semey city;

7. Expert - Kanaev Amangeldy Tokeshovich, doctor of technical science, professor of the Kazakh Agro-Technical University named after S. Seifullin (Astana);

8. Expert - Sagalieva Zhanar Kaukerbekovna, candidate of pedagogical sciences, Senior Lecturer, Department of Vocational Education of the Kazakh Agro-Technical University named after S.Seifullin;

9. The expert - Sagitov Polat Ismailovich, doctor of technical science, Professor, Head of the Department of electric drive and automation of industrial facilities of Almaty University of Energy and Communications;

10. The expert - Baklanov Alexander E., candidate of physics and mathematics, Head of Instrumentation and Process Automation of the East Kazakhstan State Technical University (Ust-Kamenogorsk);

11. The employer - Akhmetov Serikkazy Intybekovich, Director of State Enterprise»Kazgeodeziya"«Ortalykmarksheyderiya" (Karaganda);

12. Student- Tusupbekova Sulushash Eleusizovna, 3rd year student of the specialty»Finance" of the Karaganda State University named after EA Buketov;

13. The observer from the Agency - Ayman Nurahmetova Bekbolatovna, head of information-analytical agency of the project.

RECOMMENDATIONS to university under the previous accreditation procedures

In 2014, the EEC for specialized accreditation of educational programs "5B071700- Heat power engineering», "6M071700- Heat power engineering» recommended:

According to the standard "Management of the educational program"

- intensify the work on the analysis of the success of the implementation of educational programs and subsequent corrective actions;

- further development of cooperation with domestic and foreign universities implementing similar educational programs;

- the growth of external and internal academic mobility of students.

according to the standard "The specifics of the educational program"

- introduction at the University of automated workflow system;

- involvement in the leadership of scientists from institutions and organizations involved in research and development;

- intensify work with domestic and foreign universities implementing similar

educational programs;

- collaborate with foreign universities program of double-diploma education;
- to strengthen the development of basic and internet versions of textbooks and teaching aids for graduate EP» Heat power engineering»;
- activation of the faculty members participation in the research work of the department in the form of the conclusion of economic agreements with enterprises.

according to the standard "The teaching staff and teaching effectiveness"

- collaborate with foreign universities program of double-diploma education DD;
- to invite the leading domestic and foreign scientists to conduct studies;
- it is necessary to expand the scope to pass refresher courses for staff of the department in other regions of the country in the amount of not less than 72 hours;
- to intensify efforts to provide faculty members the possibility of studying English at the university and to develop measures to encourage the teachers.

according to the standard "Students"

- to strengthen the vocational guidance for admission of students - holders of»Altyn belgi" sign;
- to organize the work of students in research activities, as well as an increase in publications in rating journals to increase citation index of Hirsch;
- to expand the geography of universities to provide academic mobility of students.

According to the standard "Resources available to educational programs"

- to intensify efforts to attract students to funded research and development projects;
- to intensify efforts to provide teaching staff the possibility of studying English at the university and to develop measures to encourage teachers;
- acceleration of updating the material and technical base, library funds by attracting sponsorship funds;
- the growth of external academic mobility of students.

According to the standard "Standards sectional individual specialties"

- by this standard no recommendations.

November 29, 2014 decision of the Accreditation Board IAAR educational programs "5B071700- Heat power engineering", "6M071700- Heat power engineering» implemented KSTU were accredited for 5 years.

Post-monitoring control to assess the implementation of the recommendations of the IAAR EEC, formed as a result of the specialized accreditation of educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering» by the IAAR expert group was carried out in KSTU on May 26-27, 2016.

Post-accreditation monitoring of the KSTU activity showed that, in general, the recommendations given by the EEC are being implemented. The measures and actions taken have contributed to improving the quality of the educational process and the implementation of educational programs of the university, positive trends in attracting students to scientific research, creating conditions for expanding the geography of partner universities and developing conditions that contribute to the formation of the student's personality.

At the same time members of the EEC, carried out the re-accreditation from 20 to 23 May 2019 found that the following work has been done on the recommendations of a previous EEC:

1. According to the recommendations of the standard "Management of the educational program":

- The document "Strategic Development Plan of Karaganda State Technical University for 2014-2023" was approved (with changes and additions from 05.06.16). According to it, the tasks for achieving the goals are determined and indicators are established that characterize the completeness of their solution in the strategic directions of the university's

activities, as well as the ways and means of achieving these goals are established. The document DP KSTU 26-2018 was approved, containing mechanisms for assessing customer satisfaction, on the basis of which, among other things, an analysis of the success of the implementation of the EP is made, also, the Comprehensive Development Program of KSTU is approved annually, containing specific measures to achieve certain target indicators, structural units that implement these measures, as well as deadlines and responsible executors;

- a tripartite agreement on academic mobility of teachers was concluded between Academician E.A. Buketov KarSU, KSTU and a teacher on organizing the course of lectures in certain disciplines;

- work was carried out to conclude new interuniversity agreements on cooperation, however, the academic mobility of students remains at a rather low level.

2. According to the recommendations of the standard "The specifics of the educational program":

- In 2018 was purchased and put into operation an electronic document management system Directum RX;

- Research work at the Department of Energy Systems will be held in various areas, diploma and master's projects have a variety of subjects, but their leadership continues performed only by employees of the department;

- An agreement was signed with the University named after academician E.A. Buketov for academic exchange within the framework of EP»Power system", regular lectures by visiting professors in the near and far abroad.

- According to the program of double-diploma education was carried out preparatory work, signed by the intentions agreed working curricula of the contract, but full agreement has not been concluded between the universities and the set of the program was not produced;

- The department is actively working on the development of TS and publication of manuals and textbooks for» Heat power engineering» students at EP, including undergraduates;

- The department of energy systems TS conducted hozdozdogovornye following work: Kzyzyrov KB, Likhachev VV»Revision, adjustment and development of recommendations for improving the mode of operation of stationary installations incision" Hercules drainage pits»(lifting installation inclined shafts); Likhachev VV Kzyzyrov KB»The audit, adjustment and development of recommendations for improving the conditions of work of stationary installations mine" Bogatyr mine drainage»(lifting the installation of vertical shafts).

3. According to the recommendations of the standard "The teaching staff and teaching effectiveness":

- it was carried out preparatory work on the organization of joint work with Tomsk Polytechnic University, but the program has not yet been set implemented due to lack of agreement concluded between the universities;

- The department of energy systems of invited lectures at KSTU domestic scientists and professors and abroad. Along with studies, consultations and workshops International training program managers («Synergy", USCO, TEMPUS, Erasmus +, and others.);

- In 2015-2016 gg. 5 teachers have been training in the internship organized by the MES on the basis of the Nazarbayev University on»Program of training and professional managers of high schools RK" on three fronts»entrepreneurial university",»university research activities" and»the university academic activity."

- In 2019 the grant of the World Bank have launched free English language courses for 150 university faculty. Among them, 3 teachers of the department»Energy System", including the head of the department Taranov AV

4. On the recommendation of "Students" standards:

- According to the protocols of the department held regular meetings with the vocational guidance work of the city schools, including maintained separate explanations for holders of «Altyn belgi» sign;

- On the basis of the following commands to set up working groups on the implementation of research students and undergraduates EP «Power system» take part in the research work of the department, including the funded programs;

- new contracts to provide academic mobility of students have been signed, but most of them remain inactive. Indicators of incoming and outgoing mobility remain low.

5. According to the recommendations of the standard "The resources available to educational programs":

- Master of gr.TEM-17-2 Miroshnichenko DN included in the working group on the implementation of research on the topic number AR05132451 «The introduction of resource-saving heating system for energy-efficient operation of decentralized facilities." Master of t. TEM-18-1 is one of research relating to the performers № AR05131751 «Micro cogeneration type thermal power plant with heat recovery." Master of IV Isaev It is one of the authors in the patents « hammers» №29859, «Heat-exchange surface of the boiler heating» №30265, heat exchanger surface №30833. Undergraduate RA Mehdiyev It is one of the inventors' Drive with an external supply of heat cogeneration type with heat recovery» (Patent №3784);

- The university provided ample opportunities for learning English as part of a World Bank grant received. 3 TS Department of Energy systems are training under this program;

- Material and technical base of EP «Power system» to create their own teaching staff and students of the Department of Forces. Attracting sponsorship funds to upgrade laboratory equipment EP it was not made in recent years. Library funds are replenished including through the development of manuals and textbooks staff of the department;

- Indices of external mobility remain low.

In 2014, the EEC according to the specialized accreditation of educational program "6D071800-Power engineering" recommended:

According to the standard "Management of the educational program"

- Expand cooperation with universities of far abroad, implementing educational programs of doctoral studies PhD.

- Enhance training of teaching staff for the study of professional English.

according to the standard "The specifics of the educational program"

- the introduction of interactive methods in the educational program 6D071800 «Power engineering»;

- development of basic and internet versions of textbooks and teaching aids for the EP and 6D071800 - «Power engineering».

according to the standard "The teaching staff and teaching effectiveness"

- develop mechanisms for job hunting and graduate studies in other countries;

- to develop foreign relations in the direction of «Power engineering» and teacher training in universities and abroad.

- increase the level of preparedness of the MF in the study of a foreign language.

according to the standard "Students"

- enhance the training of doctoral students in the English language;

- provide access to full-text doctoral databases in international databases;

- to expand the training of the teaching staff of the program of academic mobility Bolashak, ErasmusMundus +;

- develop mechanisms for job hunting and graduate studies in other countries;

According to the standard "Resources available to educational programs"

- constantly deal with issues of modernization of the educational and laboratory base

of the EP.

- to attract doctoral students to improve laboratory facilities on an ongoing basis.

According to the standard "Standards sectional individual specialties"

- to intensify work on attracting doctoral students to funded research and development projects.

- constantly update the material and technical base by the teaching staff and trainees.

November 29, 2014 decision of the Accreditation Board IAAR educational program»6D071800- Power engineering», implemented by KSTU has been accredited for 5 years.

Post-monitoring control to assess the implementation of the recommendations of the EEC of the IAAR, formed as a result of the specialized accreditation of the educational program»6D071800-Power Engineering" by the expert group of the IAAR, was carried out in KSTU on May 26-27, 2016.

Post-accreditation monitoring of the KSTU activity showed that, in general, the recommendations given by the EEC are being implemented. The measures and actions taken have contributed to improving the quality of the educational process and the implementation of educational programs of the university, positive trends in attracting students to scientific research, creating conditions for expanding the geography of partner universities and developing conditions that contribute to the formation of the student's personality.

At the same time members of the EEC, carried out the re-accreditation from 20 to 23 May 2019 found that the following work has been done on the recommendations of a previous EEC:

1. According to the recommendations of the standard "Management of the educational program":

- During the period from 2014 performed the following activities: research consultant Iskakov UK, defended his PhD thesis in 2016. and Parshina GI, defended PhD thesis in 2018 was Professor Lucas VA (Technical University of Berlin). Scientific consultant Voitkevich SV thesis PhD in 2016, he was Professor V. Vyatkin (Aalto University, Finland), who is also scientific consultant of doctoral Kotov ES Scientific consultant of doctoral Sundet GE a doctor PhD Zhabelova G. (Luleå University. Sweden). doctoral program in the specialty 6D071800»Power Engineering" is working closely with non-CIS universities. Specifically, there is a cooperation agreement:

- Saint-Petersburg State Polytechnical University. Development and implementation of joint educational programs, joint management graduate and doctoral PhD, joint research, joint publications, exchange of scholars, teachers, students, undergraduates and graduate students, doctoral PhD, exchange of information and other types of cooperation. [http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/;](http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/)

- Tomsk Polytechnic University. Development and implementation of joint educational programs, joint management graduate and doctoral PhD, joint research, joint publications, exchange of scholars, teachers, students, undergraduates, graduate students, doctoral PhD, exchange of information. Training, commissioning, certification and testing equipment, the development of measurement techniques, preparation for accreditation of laboratories, and other types of cooperation;

- Kuzbass State Technical University named after T.F. Gorbachev. Development and implementation of joint doctoral educational programs in the specialties»Automation and Control",»Power Engineering", exchange of curricula and programs, exchange of scientific and methodological literature, implementation of academic mobility of students and teachers, holding conferences, seminars, workshops, implementation of a double degree program;

- Moscow Energy Institute. Development and implementation of joint educational

programs, joint management graduate and doctoral PhD, joint research, joint publications, exchange of scholars, teachers, students, undergraduates, graduate students, doctoral PhD, exchange of information and other forms of cooperation;

- Sevastopol National Technical University. Development and implementation of joint educational programs PhD doctoral specialty «Automation and Control», «Power». Development and implementation of joint educational program of double-diploma education baccalaureate;

- Baltic State Technical University VOENMEH. Development and implementation of joint educational programs, joint management graduate and doctoral PhD, joint research, joint publications, exchange of scholars, teachers, students, undergraduates, graduate students, doctoral PhD, exchange of information and other types of cooperation.

- *Department of innovation and entrepreneurship* KSTU won the grant, and within the framework of the grant 1.5-year training faculty for the study of professional English to give the IELTS certificate in the period from 17.04.2019 to 31.12.2020 is being studied by the teaching staff of the APP department: PhD Kalinin A.A., PhD Voitkevich S.V., PhD Parshina G.I., PhD Smagulova K.K., doctoral student, senior lecturer. Tokhmetova K.M.

2. According to the recommendations of the standard "The specifics of the educational program":

- According to EP 6D071800 «Power engineering» introduced interactive teaching methods, such as: problem method, dialogization method lecture conference. These methods are reflected in the monthly reports on the analysis of master classes and open classes;

- developed and certified a slide lecture for doctoral specialty 6D071800 «Power engineering» on «Modes of mine electrical circuits. Features mine electrical circuits.» Certificate number 5016 from 02.11.2014, the KSTU. The authors: PhD Smagulova K.K., Ph.D. Breydo I.V.

3. According to the recommendations of the standard "The teaching staff and teaching effectiveness":

- Senior Lecturer Kritskii AB is a graduate student of Tomsk Polytechnic University (TPU) has passed a preliminary protection for the degree of candidate of technical sciences;

- In the universities of the near and far abroad, the following teaching staff have improved their qualifications: Ph.D. Associate Professor Kochkin A.M. - Innovation in Teaching and Learning. Singapore, Nanyang Technological University. 07/06/2015 - 07/10/2015; Ph.D., associate professor Kochkin A.M., PhD Voitkevich S.V. and Ph.D., Associate Professor Kaverin V.V. - Modern control systems and technologies. Saint Petersburg Polytechnic University named after Peter the Great. 12/14/2015 - 12/25/2015; Doctor of Technical Sciences, professor Sholanov K.S. - American Association for Science and Technology (AASCIT). KazNTU named after K. Satpayev. 04/19/2016; PhD Smagulova K.K. passed a foreign scientific internship at the Federal State Autonomous Educational Institution of Higher Education «Peter the Great St. Petersburg Polytechnic University», which is included in the TOP-500 according to the results of QSWorld University Rankings in the period from 05.24.17 to 06.08.2017; Doctor of Technical Sciences prof. I.V. Breydo Zadar, Croatia from 05.11.17 - 13.11.17; Doctor of Technical Sciences, prof. Breydo I.V. Shihezi University, China November 2017; Doctor of Technical Sciences, prof. Breydo I.V. Vienna, Austria 08.11.17 - 11.11.17;

- The Department of Innovative and Entrepreneurial Activity of KSTU won a grant, and within the framework of this grant, 1.5-year training of teaching staff in the study of professional English with the receipt of an IELTS certificate in the period from 17.04.2019 to 31.12.2020 is being studied by the teaching staff of the APT department: A.A., PhD Voitkevich S.V., PhD Parshina G.I., PhD Smagulova K.K.

4. On the recommendation of "Students" standards:

- In «Schneider Electric» Center in Almaty in the period 03-07.04.2017, the doctoral

Saifulin R.F., Kotov M.S. Training seminars were held in English. (Kotov E.S. certificate №001-017 from 07.04.2017, the (40 hours), Saifulin R.F. №002-017 certificate from 07.04.2017, the (40 hours). The Department of innovation and entrepreneurial activity of KSTU won grant, and within the framework of the grant 1.5-year training to obtain the IELTS certificate in the period from 04.17.2019 till 31.12.2020, the doctoral studies, senior lecturer Tohmetova K.M.

- Every year, the university library and representatives of high-ranking databases hold seminars and issue certificates: Official Springer Nature training on working in the SpringerLink database on October 27, 2017; Winter Grant Series for educators and researchers; Official seminar Calarivate Analytics»Information tools for the analysis of scientific activities" October 23-30, 2018; Official seminar Calarivate Analytics»Practical recommendations for publishing in international journals" October 23-30, 2018; Official Calarivate Analytics Workshop»Information Tools for Authors of Scientific Publications" October 23-30, 2018.

- Master of specialty 6M071800 **"Power engineering"** Amankeldin Sh. towards renewable energy graduated from the University of Glasgow (Scotland) and won 2 grants for doctoral studies at the Budapest Technical University (Hungary), at the Beijing Institute of Technology (China); Under the program ErasmusMundus + 1 doctoral and 2 nd year Sindet G.E, Shpakova L.G. trained at the Polytechnic University of Bucharest from 11.03.2019 till 28.06.2019, the

- Senior Lecturer Kritskii A.B. is a graduate student of Tomsk Polytechnic University (TPU) has passed a preliminary protection for the degree of candidate of technical sciences.

5. According to the recommendations of the standard "The resources available to educational programs":

- In the period 2014-2018 GG Department APP modernized laboratories and laboratory equipment. A new laboratory for remote access project»Synergy" acquired a unique educational equipment concerns»to Festo" and»MitsubishiElectric","Schneider Electric» It is an analogue of actually operating the integrated automated process control systems and production facilities, including 13 stands for software and hardware-based automation equipment»MitsubishiElectric»Stand»Processor Technology" educational mechatronic line of 5 booths, stands»Tracking and stepper drives," gantry robot, a mobile robot»Robotino» Festo production.

- During the 2014-2018 at the Department of automation of production processes, equipment was purchased for automation systems and renewable energy sources, where doctoral students are involved in learning and research.

6. According to the recommendations of the standard "Standards in the context of individual specialties":

- Doctoral Voitkevich S.V. Performer grant financing»Development of distributed software and hardware systems and protections diagnostic elements high voltage power lines" (2013-2015) and performer grant financing»Creating distributed interference-free" smart grid»state supports VLEP control system using the combined transmission techniques" (2015-2017).; Doctoral Kalinin A.A. Performer of the following types of work:

- The grant of MES RK. Subject 2920 / GF4»Development of hydrodynamic models and theories for calculating the design parameters of environmentally friendly alternative sources of energy on the principles of mechanical activation of liquid media" (2015-2017.). According to the budgetary program 217»Development of science", a subprogram 102»Grant funding for research", specificity: 156»Payment of consulting services and research," priority»Energy and Engineering" (Kazakhstan National Academy of Natural Sciences, State registration number 0115RK00385.);

- Grant funding for research on the program: the development of clean energy sources of the Republic of Kazakhstan for 2013-2017 in the framework of EXPO-2017.»Development

of design and technological documentation to establish a production base and manufacturing a series of demonstration models of environmentally friendly hydrodynamic heaters" 2014 State registration number 0213RK03283;

- Scientific research work 04.02.01 «Poster study modes of hydrodynamic heaters and development of methods of calculation of parameters of structural assemblies for industrial technologies using low-grade heat", Karaganda, 2005;

- Agreement №17.25.01 from 15.02.2017, the «Research and development of software module "Accounting for repair and damage»CAM" Astana-Teplotranzit» (KSTU, state registration number 0117RKD0645);

- Agreement №16.25.01 from 02.01.16, the «Supply and implementation of commercial operation," Information and graphical software package (ISPC)»TGID-07."

- *During 2013-2018. equipment for automation systems and renewable energy sources was purchased at the Department of Automation of Production Processes for teaching doctoral students: the Laboratory of Innovative Technologies in Metallurgy was opened, equipped with training stands by Schneider Electric; 04/29/2016 the training center»KSTU - Mitsubishi Electric - Kazpromavtomatika" was opened in 08.12.2015; On June 14, 2018, an innovative lecture hall "Digital Industry" was opened.*

At the department on CD-ROM and paper-based catalogs are modern electrical equipment and software and hardware from leading manufacturers.

Experts conducted analysis showed that, in general, according to the recommendations given in the EEC regarding accredited educational programs there is a good positive trend. Undertaken by university policies and actions contribute to improving the quality of the educational process and the implementation of educational programs, positive trends in the development of the mobility of students, expand the creative relationships that support young teachers and the development of the research component of the EP.

(V) DESCRIPTION OF THE EEC VISIT

The work of the EEC was carried out on the basis of the approved Program of the visit of the expert commission for specialized accreditation of educational programs at KSTU in the period from 20 to 23 May 2019.

In order to coordinate the work of the EEC on May 19, 2019, an opening meeting was held, during which powers were distributed among the members of the commission, the schedule of the visit was clarified, and agreement was reached on the choice of examination methods.

To obtain objective information about the quality of educational programs and the entire infrastructure of the university, to clarify the content of self-assessment reports, meetings were held with the rector, vice-rectors of the university in areas of activity, heads of structural divisions, deans of faculties, heads of departments, teachers, students, graduates, employers. In total, 171 representatives took part in the meetings (Table 1).

Table 1 - Information about employees and students who took part in the meetings with the EEC of the IAAR:

Category members	amount
Rector	1
Vice-rectors and the head of the rector of the device	6
Heads of departments	36
deans	2
heads of departments	6

teachers	25
Students	25
Graduates	35
employers	35
Total	171

During the excursion, the EEC members got acquainted with the state of the material and technical base, visited the dean's office of FPEAT and the audience:

- audience №104 (ES) Laboratory of the theoretical foundations of electrical engineering and electrical measurements. The laboratory carries out laboratory work on the discipline»Power stations and substations". Equipment: The laboratory complex of»Educational Technology";

- audience №107 (ES) Laboratory of electrical machines and drives. The laboratory carries out work in the disciplines»Electrical machines",»Electrical installations",»Electric drive and electrical equipment". Equipment: Laboratory stand»Electrical machines and drive",»Educational Technology";

- audience №02 (ES) Research laboratory»Energy efficient technologies". The laboratory conducts laboratory work on the discipline»Modern problems of the Power Engineering industry" for master's, and is also used to conduct master's research. Equipment company»Schneider Electric»;

- audience number 05B (ES) laboratory work is carried out in the disciplines»Heat supply",»Basics of heating",»Boiler plants and steam generators". Equipment: models of heat supply system and turbine installations.

- audience №136 (APP) Innovative lecture hall»Digital Industry". The auditorium»Digital Industry" is designed by the firm»Promelectrosystem", organized by the graduates of the department;

- audience №144 (ES)»Center of working professions №6». The laboratory conducts laboratory work in the disciplines»Electrical materials science",»Electrical materials",»Relay protection and automation". In the auditorium there is a measuring device for relay protection parameters and a cabinet for protection of lines and circuit breaker control automation, a transformer protection cabinet, and a central alarm cabinet. RETOM-11M equipment.

During the excursion, members of the EEC visited the research and educational complex»Industry-4.0". The complex includes 3 Engineering Competence Centers, created jointly with leading multinational companies and innovative companies of Central Kazakhstan, and an innovative lecture hall»Digital Industry":

- audience №128 (APP). Authorized educational center»KSTU - Schneider - Electric". The center was opened as part of the creation of a new educational program for the profile master's program "Robotics. Control systems»at the expense of budgetary funds. It contains the most modern digital equipment for automation and power engineering, produced by the Schneider-Electric concern (France). The modern equipment of the Schneider-Electric concern and new stands created by the efforts of students and undergraduates in the course of graduation were demonstrated. Shown in action the development of the department»System of anti-swaying load for overhead cranes." It also implements innovative projects;

- audience №133 (AMP). Scientific and educational republican center»KSTU - FESTO: Synergy". In the center, on the basis of an agreement signed with TCI - FESTO, which is part of the Festo group of companies (Austria, Germany), the international scientific and educational project Synergy is being implemented, based on the combination of the best laboratories and the best teachers of leading technical universities of the CIS into a single educational Internet complex. For several years now, she has been studying for an

international master's degree in automation and mechatronics. The Center houses the Festo mechatronic line, as well as modernized training stands for automation;

- audience №134 (AMP). Joint educational center «KSTU-Mitsubishi-Electric - Kazpromavtomatika". The center was created with the help of Kazpromavtomatika, on the basis of Mitsubishi - Electric equipment, donated free of charge, by the forces of specialists, students and undergraduates of the department. The Center houses modern equipment based on software and hardware for automation and power engineering produced by "Mitsubishi-Electric concern".

At the meeting of the IAAR EEC with the target groups of KSTU, the mechanisms for implementing the policy of the university were clarified and the specific data presented in the university self-assessment report were specified.

For the period of accreditation, classes at the university were no longer held on schedule

During their work, members of the EEC visited the internship base of LLP NPF «Ergonomics" - a branch of the Department of ES. NPF Ergonomics LLP - is engaged in the following types of work: energy audit, design, engineering, equipment supply, installation, commissioning, service maintenance. The material and technical base of the branch consists of modern innovative energy-saving equipment. The company has vast practical experience in the implementation of technically complex projects related to the installation of water treatment, pumping, boiler and other related equipment for household and industrial use.

In the classroom, students and undergraduates can directly in practice study the operation of automated points, geothermal cooling and heating systems from leading manufacturers, warm floors, infrared heaters, instrumentation, pumping equipment and electric boilers.

In order to confirm the information presented in the Self-Assessment Report, external experts requested and analyzed the working documentation of the university. Along with this.

(VI) Conformity of specialized accreditation standards

6.1. Standard "Management of the educational program"

Evidential part

The successful implementation of each EP is determined by the systematic, purposeful and effective implementation of the goals and the development plan of the cluster above developed by involving all program interested parties, taking into account the analysis of the satisfaction of students and faculty / staff, analysis of available and required resources program, including logistics .

At the moment, KSTU mission inextricably linked with the history and development of KSTU. The university's mission: KSTU technical innovation and entrepreneurial type formation, providing comprehensive training of competitive specialists with higher and postgraduate education meeting modern requirements of social and economic environment, based on the integration of education, science, innovation, production and business in Central Kazakhstan' (<http://www.kstu.kz/dorogie-druz-ya-2/>). In determining KSTU mission, goals and objectives taken into consideration its material, financial, human and scientific potential, as well as many years of experience in domestic and international educational sphere.

University quality policy focuses on providing consumers with permanent all forms of

ownership of educational services at the level determined by the legal and regulatory requirements, market signals in long-term relationships with suppliers.

It is posted on the University's website <http://www.kstu.kz/wp-content/uploads/2018/11/%D1%86%D0%B5%D0%BB%D0%B8%20%D0%B8%20%D0%BF%D0%BE%D0%BB%D0%B8%D1%82%D0%B8%D0%BA%D0%B0.pdf>.

The main planning documents used in the course of activities of the university are: Strategic plan for the development of Karaganda State Technical University for 2014 - 2023gg, work plans of KSTU, faculties, departments and other structural subdivisions of the academic year (<http://www.kstu.kz/wp-content/uploads/2018/10/15/StrPlan2014-2023.pdf>).

The institution defines the contribution to support the implementation of national programs for the country's development through the development and implementation of the Strategic Development Plan of the Karaganda State Technical University in the 2014-2023 GG, in which it is said that the University was created and implemented patriotic education of students model on the example of the First President of the Republic Kazakhstan NA Nazarbayev, which twice was discussed in the Parliament and was recommended for dissemination in the country's universities. In 2014, in accordance with the national idea «Mangilik El» it was transformed into a model of «Formation the New Kazakhstan patriotism.»

Also, the university has developed and implemented comprehensive program of development of Karaganda State Technical University in 2019 in the light of the strategic objectives of President of the Republic of Kazakhstan Messages to people of Kazakhstan - Leader of the Nation NA Nazarbayev: «New opportunities of development in the conditions of the fourth industrial revolution», «Five social initiatives of the President» and «Growth of Welfare of Kazakhstan: increasing incomes and quality of life.»

In the context of the government program implementation «Digital Kazakhstan» adopted the Concept of transition to the model of «Digital KSTU» by the Academic Council of KSTU. In support of the government program «Digital Kazakhstan» and the national project «Intellectual Nation - 2020», proclaimed by the President of the Republic of Kazakhstan, Nursultan Nazarbayev, work on functioning of the Cisco Academy is under way.

Inform the public about this criterion provided by posting all the documents on the website of the university in the open access and discussion boards on the collective management bodies with the participation of interested parties.

Research, teaching and learning communication at the University are being implemented through:

- integration of research results in the educational process (writing manuals, production labs, the implementation of projects and project works, theses in undergraduate, master's writing projects in profile magistracy and dissertations in scientific and pedagogical master's degree);

- training staff of departments in doctoral studies at KSTU or foreign universities, scientific topics of departments of the University or joint research;

- the involvement of students in research work, the complex implementation of scientific research by undergraduate and graduate students under the guidance of doctoral students.

The use of educational programs provides for the achievement of the following goals:

- in practice, implement the democratic principles of managing the educational process, expand academic freedom and opportunities for higher educational institutions;

- to ensure the adaptation of higher education in the specialty and scientific research to the changing needs of society and the achievements of scientific thought;

- to ensure the recognition of the level of training of specialists in other countries;

- to ensure higher mobility of graduates in the changing conditions of the labor market.

The most important indicator of the quality and effectiveness of educational activities of an educational program, recognition of its prestige at the national and international levels is the presence of foreign students.

Students from Mongolia, Uzbekistan, Tajikistan, Russia - 37, the majority - 31 students (83.7%) are citizens of Uzbekistan - study at the EP»Power Engineering". The largest number of foreign students in the first year (enrollment in 2018) - 15 people (40.5%).

At the moment, EP» Heat power engineering» is studying one foreign student, a citizen of Georgia, under the curriculum of higher education. In 2018, a citizen of Uzbekistan graduated from the training. most important indicator of the quality and efficiency of educational activity of an educational program, a recognition of its prestige at national and international levels is the presence of foreign students.

The head of the educational program develops cooperation with the National Research Tomsk Polytechnic University (Russia) on the implementation of double-diploma education programs in the master's degree in EP» Heat power engineering». In 2018, on the basis of NI TPU, a meeting was held, following which a protocol of intentions was signed on cooperation in the implementation of double-diploma education in the specialty 13.04.01 -» Heat power engineering and heat engineering" and 6M071800» Heat power engineering» dated 19.06.2018. Upon agreement, the following disciplines were included in the working curriculum:»The use of computer systems in solving applied problems",»Experimental studies of heat and mass transfer and gas-dynamic processes",»Experimental studies of heat and mass transfer and gas-dynamic processes".

According to the Erasmus Mundus program of the Power Engineering Department during 2018/2019 organized training of undergraduates and students in Romania. Together with the TPU Research Institute (Tomsk) and ITMO (St. Petersburg), a double-degree education program was implemented.

Joint training in the magistracy of the Department of ETiPEMS (Department of Electrical Engineering and Precision Electromechanical Systems, NRU ITMO, St. Petersburg) under the program of scientific and pedagogical training (2 years) direction»Electrical Engineering and Power Engineering".

The teaching staff of the department sets itself the task of constantly improving the quality of their activities, closer interaction with employers, and increasing competitiveness. The high quality of education, the competitiveness of the EP in the market of educational services of the region and the republic can be judged by the positions taken in various ratings.

As necessary and on a voluntary basis, the teachers of the departments take part in various educational management programs in order to apply the knowledge gained to improve the quality of development and management culture of EP, as well as to improve their qualifications. Teaching staff trained in educational management programs over the past 5 years:

- in 2014, the head of the department of AMS, professor I.V. Breido, associate professor A.M. Kochkin, associate professor K.K. Smagulova. participated in the training seminar»Development of an intra-university education quality assurance system" (IAAR);

- in 2015 associate professor Kochkin A.M. participated in the seminar»Professional Development Program for Higher Education Leaders of Kazakhstan";

- in 2019 associate professor Kochkin A.M., associate professor Smagulova K.K., associate professor. Voitkevich S.V., senior teacher Lapina L.M., senior teacher Telbaeva Sh.Z., senior teacher Neshina E.G., teacher Duisenbaeva M.S. participated in the training seminar»Intra-university education quality assurance system" (IAAR).

The EP cluster management strives to timely address the challenges that arise during the EP and prepare for scheduled inspections of program stages and various ratings. All stages of leadership are reflected on the university website.

Possible risks at the university level, the consequences in case of failure to take response measures, mechanisms and measures to manage them are shown in the Strategic Development Plan of KSTU for 2014 - 2023.

Analytical part

The strategic plan of the university complies with the current legislation of the Republic of Kazakhstan in the field of education and science, strategic and program documents adopted at the republican level. Experts note that teachers, staff and students are aware of the content of the Strategic Development Plan of the University, they are aware of their contribution to the implementation of the Strategy. EEC confirms the existence of Development Plans for educational programs, which allows for the synchronous development of various educational programs in the context of the Strategic Development Plan of the University.

But based on the results of the analysis of the self-assessment report and the visit to the department, it was determined that there are no plans for the development of the EP for the EPs under consideration. It should be noted that the EP development plan is not identical to the development plans of departments or faculties. According to the standards of specialized accreditation, the development plan for a separate EP is a key document around which the quality assurance policy is implemented in the context of the EP. This approach reduces the effectiveness of planning, implementation and monitoring of the activities indicated in this document.

The experts were convinced of the consistency of the strategic goals of the university, the adequacy of the mission, vision, strategy to the available resources: financial, informational, personnel, material and technical base. Lack of individuality in the plans for the development of educational programs reduces the orientation of employers to the final results of education.

The analysis of the MOP, the documentation of the department and the university showed that when forming the goals of the EP, no emphasis is placed on student-centered learning. In addition, based on interviews with target groups, it can be concluded that the transparency of the development of accredited EP is not ensured.

EEC notes that within the framework of accredited programs, the EP management does not identify, manage and collect information about risks, existing or potential risks within the EP. In the course of the interview and documentary, the EP management did not demonstrate systematic work carried out to assess the risks of the development of educational programs.

Regarding risks, at the university level, the general mechanisms and measures of risk management are documented. At the EP level, only a list of possible risks and measures to reduce one of the risks are given. Members of the EEC noted the absence of a well-built risk management system at the level of EP management.

To teach modern management methods and implement innovations, the Center for Engineering Pedagogy has been created at the university. In April 2018, 99 heads of departments, heads of EP and teaching staff completed the course «Planning the strategic development of the university» (<http://www.kstu.kz/tsentr-inzhenernoj-pedagogiki/>).

According to the results of the survey of the teaching staff:

- 10.6% of the teaching staff assess “relatively poor” the possibility of combining teaching with scientific research;
- 9.6% of the teaching staff assess «relatively poor” the possibility of combining teaching with applied activities.

According to the results of the questionnaire survey, the level of accessibility and responsiveness of the university management is “completely satisfied” - 66.1%, “partially satisfied” - 27.6% of students.

Strengths / Best Practice:

- not identified according to this standard

Recommendations for EP»5B071700- Heat power engineering",»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering":

- to develop plans for the development of EP, taking into account the needs of the state, employers, stakeholders and students, to monitor its implementation and mechanisms for regular revision;

- develop an existing risk management system in the context of each EP and systematize the assessment of the risks of the development of educational programs and work out a mechanism for their reduction, including such factors as the development and improvement of EP, risk management, monitoring, decision-making based on facts;

- to develop for each EP separately Development plans in accordance with the current Development Strategy of KSTU and ensure its transparency;

- to determine the uniqueness and advantages of these EPs and their Development Plans in comparison with other EPs implemented in the region and in the Republic.

EEC conclusions on the criteria:

According to the standard»Management of the educational program" educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" have 12 satisfactory positions and 5 suggesting improvement positions.

6.2. Standard "Information Management and Reporting"

Evidential part

In order to create conditions for the successful implementation of the information flow management process, KSTU has introduced and operates systems for collecting, analyzing and managing information based on the use of modern information communication technologies and software. These include a corporate computer network, own domain name kstu.kz, corporate information system for managing the educational process»Univer 2.0", acquired from KazNU named after al Farabi, automated integrated library information system»Irbis", programs»1C Personnel" and»1C Accounting". For the operational interaction of structural units and departments of the university, there are groups in the WhatsApp messenger. All systems are licensed, documented, have built-in help, user support.

Responsibility for the functioning of information systems (IS) and the reliability of the processed information is assigned to the deans, head. departments, heads of departments. Access to information is carried out according to the multi-role policy: dean, deputy. dean, student department, support department, etc. Responsibility for the functioning of the software of the IP systems is carried out by the programmers of the DRCU.

Information analysis of educational, scientific, educational processes is carried out in the monitoring section of the information system»Univer 2.0", in the system»Rating of KSTU", electronic forms in the Google Forms system. The analysis of the information received is presented to the rector, supervising vice-rectors, deans, heads of departments, chairmen of councils (NS, US, ES, STC, UMC).

To manage information at the university is used IS»Univer 2.0", IS»Rating KSTU", cloud tool»Google Forms", 1C, Zabbix, Zimbra.

The management of the EP»Power Engineering" and» Heat power engineering» uses a variety of ways to disseminate information (including the media, web resources, information networks, etc.) to inform the public and interested parties about all aspects of the development, formation, approval and implementation of the EP. The content of educational programs, with the main documents attached to them (RUPs, QED), are available on the official website of the university (<http://www.kstu.kz/obrazovatelyj-programmy>).

The implemented provisions of the development plan for EP»Power Engineering" and» Heat power engineering» are presented on the corporate website of KSTU by specialties with indication of learning outcomes. Informing about the main provisions of the EP development plan, about changes in the EP are carried out at the meetings of the department, faculty, conducted by the heads of departments. Students receive information on the curator's hours and from the electronic resources of the university (university website, department website) on the qualification assignment at the end of the EP; about teaching, learning, assessment procedures; information about passing scores and learning opportunities provided to students.

Each department has its own section on the KSTU website and posts information about specialties, EP, qualifications awarded at the end of the EP. The website of the APP department is <http://www.kstu.kz/kafedra-avtomatizatsii-proizvodstvennyh-protsesov/>, the website of the ES department is <http://www.kstu.kz/kafedra-energeticheskie-sistemy/>. There are stands reflecting up-to-date information about the EP.

For the security of resources, the university uses antivirus products from ESET NOD 32 with centralized management and administration. To protect the LAN of KSTU from outside threats, the Cisco ASA 5525X firewall with the Cisco FirePOWER software package is used. To ensure the safety of the university's information resources, measures are taken to back up data by creating backup copies that provide the ability to restore information.

The following ISSs work in KSTU: electronic library system IRBIS, web servers (Apache, NGINX), mail server Zimbra, DNS server (BIND), DHCP, ActiveDirectory, Internet gateway of our own design based on Linux, monitoring system Zabbix, network databases and Web-servers of AIS»UNIVER", file servers of the film studio and university departments, servers for activation of licensed software (ETAP, ThermoCalc), RADIUS server (NPS), VPN server for communication with the military department and the 5th building of KSTU.

In the data processing center of KSTU, a data storage network was built on the basis of Dell equipment. The network allows you to store up to 90Tb of information on redundant disk arrays, as well as an unlimited amount of information on magnetic tapes. The DSpace electronic repository has been updated to version 5.6 - as a result, the stability of this service has been improved.

Analytical part

According to the analysis of compliance with the criteria of the standard»Information Management and Reporting" for accredited EP, the commission notes the following: the university operates a system for collecting, analyzing and managing information and reporting based on the use of modern information and communication technologies and software. The data is stored in electronic and paper format in accordance with the nomenclature. In KSTU, the procedure and ensuring the protection of information are determined, including those responsible for the accuracy and timeliness of the analysis of information and the provision of data.

During the conversation with the students, it was noted that they had the opportunity to turn to the leadership with certain problems. The information collected and analyzed by the university takes into account: key performance indicators, the dynamics of the student population in the context of forms and types, the level of academic achievement, student achievement and expulsion, the availability of educational resources and support systems

for students, employment and career growth of graduates.

According to the results of the survey, 31.7% answered "very good" to the question about assessing the involvement of teaching staff in the process of making managerial and strategic decisions, "good" - 55.8%, "relatively bad" - 9.6%, "bad" - 1 %.

Strengths / Best Practice:

- not identified according to this standard

EEC recommendations:

- none according to this standard

EEC conclusions on the criteria:

According to the standard»Management of the educational program" educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" have 17 satisfactory positions.

6.3. Standard "Development and approval of the educational program"

Evidential part

The implementation of specialties EP 5B071800, 6M071800, 6D071800»Power Engineering", 5B071700, 6M071700» Heat power Engineering" is carried out in accordance with the requirements of the State Compulsory Standard for Higher and Postgraduate Education, approved by the Government of the Republic of Kazakhstan No. educational programs of higher and postgraduate education, approved by the Decree of the Government of the Republic of Kazakhstan No. 181 dated April 7, 2017, State Educational Standard of Education No. 604 dated October 31, 2018, the Rules for organizing the educational process on credit technology of education, approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated April 20, 2017 .2011 No. 152, local documents DP KSTU 13-2018»General requirements for the construction, presentation and design of modular programs" and DP KSTU 12-2018»General requirements for the construction, presentation and design of work curricula in the European system ECTS" also methodically them with instructions for the development of Modular educational programs.

Educational programs»Power Engineering",» Heat power engineering» were developed and approved at the departments»Automation of Production Processes" and»Power Systems", subsequently recommended by the decision of the Academic Council of the University and approved by the Educational and Methodological Council of the University.

Educational and methodological complexes of specialties (UMKS) have been developed, including modular educational programs (MEP), working curricula (RUP), catalogs of elective disciplines (CED), which describe the disciplines of the optional component with an indication of a brief content, pre- and post requisites, educational methodological complexes of disciplines (syllables) (UMKD).

Industrial practice for accredited EP is carried out in accordance with the documents»Rules for the organization and conduct of professional practice and the rules for determining the organization as practice bases" (Approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated January 29, 2016 of No. 107), as well as the»Regulations on professional practice", which describe all the processes and criteria for passing various types of practices.

The university was the first in Kazakhstan to undertake the obligations of transition to

a new system of personnel training and created in 2008 an innovative and educational consortium»Corporate University", which included the largest industrial companies, with a specialty profile 5B071800, 6M071800, 6D071800»Power engineering", such as ArcelorMittal Temirtau JSC, Kazakhmys Corporation LLP, Bogatyr Komir LLP, Zhairemsky GOK JSC, Kazchermetavtomatika JSC, Kazpromavtomatika LLP, Energy System LLP LLP and others. In addition, the consortium includes research centers and research and production corporations from Kazakhstan, France, Germany, Russia, Belarus and other countries.

The coordination of educational programs, in particular the content of elective disciplines, is carried out with large companies and enterprises of the Corporate University, the profile of which corresponds to the areas of training, such as: JSC Kazchermetavtomatika, LLP Kazpromavtomatika, LLP Energy System LLP, LLP NPF Ergonomics, ALE»Association (mechanical engineering and metalworking of Central Kazakhstan). It should be noted that the Corporate University is actively involved in the formation of EP and updating their content, changing elective courses, which was formed as part of large companies and enterprises for cooperation with the university.

In the implementation of the EP of this cluster, the participation of the production sector and employers is practiced in the form of creating branches and bases of practices. In this direction, at the departments of APP and ES, branches of the department have been created and are functioning at the enterprises of LLP»Energy System LLP", LLP»NPF Ergonomics", LLP»Kazpromavtomatika". In addition, students undergo practical training on the basis of enterprises such as: Prolux Led LLP, Promelektroset LLP, Tekhtorg LLP, Energoexpert and K LLP, Karaganda Energocenter LLP, Arcelor Mittal Temirtau Department of Management, Elat LLP, Ugleservis enterprise, Arcelor Mittal Temirtau JSC.

During the period of practical training, students master key competencies, for example, graduates of the APP department of the specialty 5B071800»Power Engineering" VE Bayts, K.Zh. Imangalieva. from the 2nd to the 4th year they had an internship at Kazpromavtomatika LLP as backup jobs. After graduating from university in 2018, they were employed at Kazpromavtomatika LLP.

At the departments, a center was created for the workers' professions in demand in the region; In the centers for blue-collar occupations (CRC), students receive the necessary qualifications in industrial practice after the 2nd year, which allows them to undergo industrial practice in full-time workplaces and quickly adapt to the conditions of dual training at enterprises. Training of students of EP» Heat power engineering» is carried out in the direction of»Plumber", EP»Power Engineering" - in the direction of»Locksmith of instrumentation and automation",»Operator of the control panel",»Microprocessor systems of an electric drive" using the modern laboratory facilities of the departments on equipment from Mitsubishi, Festo, Schneider Electric. Issuance of certificates is provided.

The departments have the necessary infrastructure containing laboratory premises, test benches, computer equipment, software and hardware, including SCADA systems, industrial controllers, semiconductor drives with microprocessor control, licensed application software, laboratory and industrial equipment from the world's leading manufacturers of electrical equipment and automation of Siemens, Mitsubishi, Festo, Advantech concerns. The educational laboratories are equipped with multimedia boards, projection TVs, projectors, and there is remote access to the Internet.

EP specialties are provided with standard and working curricula, as well as standard and working programs of disciplines. The content of the disciplines of the compulsory component corresponds to the requirements of the standard curriculum of disciplines, the number of hours allocated by type of study, topics of lectures, practical classes and coursework.

Joint educational programs (SOP) are being implemented with such foreign universities as:

- St. Petersburg State Polytechnic University;
- Tomsk Polytechnic University. Kuzbass State Technical University named after T.F. Gorbachev;
- Moscow Power Engineering Institute;
- Sevastopol State University;
- Baltic Technical University - BOEHMEX.

In educational programs, a double-diploma education under the Master's program, the international project "SYNERGY", as well as participation in the Shanghai Cooperation Organization (SCO) university are being implemented.

In the period 2014-2016 academic year. graduates of the specialty 5B071800«Power Engineering" Belousov E. and Vorobiev V. under the program of double-diploma education studied in the magistracy of KSTU in the specialty 6M071800«Power Engineering" and in the magistracy of the Research University of Information Technologies, Mechanics and Optics (NRU ITMO, St. Petersburg), educational program«Energy efficient automated electric drive and control systems", direction«Electrical engineering and power engineering". Master's theses were defended in the on-line mode within the framework of the SYNERGY project. The SYNERGY project is being implemented under the auspices of the FESTO concern (Austria, Germany).

The number of those trained under the USCO program is for the period 2011-2018. 21 people, including 15 at the Moscow Power Engineering Institute, at the UrFU im. B.N. Yeltsin, Yekaterinburg - 6.

Since 2011, according to EP«Power Engineering" of KSTU and universities of Russia, training has been conducted at the National Research University«Moscow Power Engineering Institute", Moscow and at the Ural Federal University named after B.N. Yeltsin (UrFU), Yekaterinburg. In the period 2014-2019, 15 people were trained.

During the meeting with the students of the educational programs of the cluster, model curricula and programs, it was found that not all students have a clear idea of the ways and forms of involvement in the development of educational programs.

Analytical part

As a result of studying the standard«Development and approval of an educational program", the commission came to the conclusion that the content and logic of building educational programs were disclosed in accredited areas, the process of professional training of students within the EP was described. Curricula provide a logical sequence of studying disciplines based on continuity, rational distribution of disciplines by semester from the standpoint of uniformity of student's academic work; active use of personnel and material and technical potential of all departments. The participation of stakeholders in the development of educational programs is demonstrated, a graduate model is developed, the structure of an educational program based on the modular organization of educational content is revealed. Various types of activity are described, the content of which contributes to the formation of professional competence of students. The representativeness of attracting employers to participate in the design and implementation of EP has been substantiated. At the department there are educational-methodical complexes of the specialty (UMKS), educational-methodical complexes of disciplines (UMKD), syllables and a catalog of elective disciplines. EP management determines the influence of disciplines and professional practices on the formation of learning outcomes.

EEC was provided with OP documents agreed with employers, but such an agreement can be considered only formal, since such organizations as Energy System LLP LLP, NPF Ergonomics LLP and the Public Association "Central Branch of the International Association of Energy Engineers" of the Republic of Kazakhstan can hardly be called the main employers of OP« Heat power engineering» and«Power Engineering".

In interviews with employers and alumni, their poor ability to read drawings was noted. Learning the basics of descriptive geometry and engineering graphics is an important aspect of training future engineers. The absence of this discipline among the mandatory ones allowed it to be excluded from the RUEs, however, this fact significantly affects the quality of training of specialists. At the same time, it was noted that the lack of discipline»Descriptive geometry and engineering graphics" (NGiIG) is especially felt in the curricula of the EP» Heat power engineering». The syllabus of the discipline»CAD in Heat power engineering» also does not include sections related to NGiIG, the topic begins immediately with the study of the AutoCAD software environment.

According to the results of interviews with employers, a lack of practical skills among graduates was revealed. The students themselves also noted the desire for greater mastery of the practical aspects of the modules studied. In the Centers for blue-collar occupations, students receive the necessary qualifications in industrial practice after the 2nd year, which allows them to undergo industrial practice in full-time workplaces. This is an indisputable advantage of students and graduates of the considered EP.

It should be noted that preparatory work was carried out for the educational program» Heat power engineering», regarding the programs of double-diploma education, as already noted in the section related to the implementation of the recommendations of the previous EEC, the agreements of intent were signed, the working curricula were agreed. However, a full-fledged agreement between the universities was not concluded and the enrollment was not made according to the program.

A questionnaire survey of students conducted during the visit of the IAAR EEC showed that:

- the level of responsiveness to feedback from teachers regarding the educational process is fully satisfied - 77.2%; partially - 17.3%; partially dissatisfied - 3.1%.

Strengths / best practice for EP»5B071700- Heat power engineering",»6M071700- Heat power engineering",»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering":

- *The presence of a center for blue-collar occupations operating at the department, with the issuance of certificates.*

Recommendations for EP»5B071700- Heat power engineering",»6M071700- Heat power engineering",»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering":

- *to expand cooperation with key employers and backbone enterprises of the energy complex in the development and quality assurance of EP;*

- *to include the discipline»Descriptive geometry and engineering graphics" in RUE EP, or integrate it with the discipline»CAD in Heat power engineering" and»CAD in power engineering";*

- *to complete the approval procedure and conclude an agreement on double-diploma education under the EP» Heat power engineering».*

Conclusions of the EEC on the criteria:

According to the standard»Development and approval of educational programs" educational programs»5B071700- Heat power engineering",»6M071700- Heat power engineering",»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" have 1 strong and 11 satisfactory positions.

6.4 Standard “Continuous monitoring and periodic evaluation of educational programs”

Evidential part

In order to improve the EP, ensure the achievement of the EP goal and meet the needs of students and society, the university regularly monitors and periodically evaluates. Ensuring and constantly improving the quality of educational programs is the most important task of the departments, faculty and the entire university as a whole. Continuous monitoring and periodic assessment of EP at the university is carried out by three methods: the method of questioning and interviewing, the method of systematic and direct tracking of results, the method of external expert assessments.

At the departments of APP and ES, to assess the satisfaction of students in the EP» Heat power engineering» and»Power Engineering", questionnaires are conducted. The analysis of the results of the questionnaire shows a high score for assessing the disciplines studied related to automation, modern trends in energy, information technology, modeling, etc.

Educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" is updated through the introduction of new directions, elective courses and are approved by the employers university council. The EP is updated both structurally and in content, taking into account the requirements of the labor market and employers. The head of the department and teaching staff creates conditions for employers in order to involve them in the development of EP, coordination of QEDs, leadership of professional practices, methodological developments of teaching staff, as well as reviewing graduate works and projects.

The university leadership, together with the department, creates conditions for employers in order to involve them in the development of EP, coordination of QEDs, guidance of professional practices, methodological developments of teaching staff, as well as reviewing graduate works and projects. For example, experts in the field of energy from different universities in Kazakhstan are involved as reviewers for master's projects.

Analysis and monitoring of the application of innovative teaching methods takes place at the meetings of the department and during the discussion of the classes attended by teachers. The use of the most successful methods is demonstrated by the teaching staff in open classes. The teaching staff of the Department of APP and ITPS in the classroom widely use a variety of traditional, innovative technologies. Classes are conducted using interactive whiteboards, also using digital educational resources.

In order to assess the effectiveness of the implementation of the EP, the university takes into account the opinion of employers and consumers of educational services through a questionnaire.

Achievements of EP goals and satisfaction results are revealed in the process of questioning students and teaching staff, carried out in the information system»Univer 2.0" on the KSTU website.

The mechanism for the formation, regular revision of the development plan of the EP» Heat power engineering»,»Power Engineering" and monitoring of its implementation was developed by the Department of Academic Affairs (DAV). This mechanism involves regular monitoring, emergency adjustments when changing the regulatory framework of the superior controlling organization (MES RK). Information about changes in the EP» Heat power engineering» and»Electroenergetics" is carried out at field meetings held at enterprises, including those that are part of the Corporate University (<http://repository.kstu.kz/xmlui/handle/123456789/748>).

Analytical part

Monitoring the progress of the practice, tracking the quality of its organization is carried out by the heads of the practice from the department and the Career Development Center. Based on the results of all types of internships, reporting conferences are held, recommendations are developed to improve the organization of internship and a consolidated report is formed, which includes sections: organization of internships; research topics conducted by students during the period of practice; analysis of the implementation of practice programs, conclusions and proposals. After passing a certain type of practice, a survey of students is carried out in order to identify an assessment of students' satisfaction with places and the organization of internship, as well as a survey of managers of practice bases in order to assess satisfaction with the level of training of students.

To assess the satisfaction of the EP among students, a survey is carried out on the KSTU website in AIS Univer. The subject of the questionnaire is "Satisfaction with the quality of the organization of the educational process", "Satisfaction with the teaching staff", "Satisfaction of students of 2-4 courses", "Satisfaction of 1st year students".

The results of the survey are processed by the Center for Quality Management and Accreditation and sent to the department to develop corrective actions.

However, the EEC Commission noted the lack of feedback on the analysis of recommendations in the context of accredited EP, development of corrective actions in the context of EP, in particular, based on the results of the questionnaire»Satisfaction with the teaching staff."

Strengths / best practices

- not identified according to this standard

Recommendations for EP»5B071700- Heat power engineering",»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering":

- The supervising structural unit of the university to develop a mechanism for conducting regular questionnaires (at least 2 times a year) in the context of EP and a mechanism for periodically analyzing the results of the questionnaire with the development of a corrective action plan in the context of educational programs and ensuring control over their implementation.

Conclusions of the EEC on the criteria:

According to the standard»Continuous monitoring and periodic evaluation of educational programs" educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" and 1 position of 9 satisfactory suggesting improvement.

6.5. Standard "Student-Centered learning, teaching and assessment of progress»**Evidential part**

Educational programs»Power Engineering" and» Heat power engineering» provide all students with equal opportunities, regardless of the language of instruction, to form an individual educational program aimed at the formation of professional competencies. Individual characteristics, needs and cultural experience of students are taken into account in various aspects of scientific and educational activities: when choosing elective courses; when choosing a practice base; with the participation of students in research work.

An individual educational trajectory is reflected in modular educational programs, working curricula and individual curricula, where, along with general education, basic disciplines of the compulsory component, there are elective courses and various types of practices that are aimed at ensuring professional competencies.

Operative presentation of students about the results of knowledge assessment is carried out using the «UNIVER-2.0» system (KSTU). The Center for Quality Management and Accreditation conducts annual questionnaires of students and undergraduates of all courses, in which, among other issues, it is proposed to assess the state of the student support service.

Gifted students and undergraduates are involved in scientific activities to meet their needs for in-depth study of a number of disciplines.

In order to identify the needs of various categories of students, data from a regularly conducted analysis of progress in the context of courses, groups, faculty are used; information is used on the nature of students' appeals to the dean's office, registrar's office, and other structural divisions. So, for example, the application of this approach revealed the need of some foreign students to study additional courses in the EP «Power Engineering» and «Heat power engineering».

To identify the needs of students with disabilities and special educational needs, the university periodically conducts a survey. Disabled students with disabilities are provided with an individual differentiated approach in all types of classes. Through the UNIVER system, individual student training plans, class schedule, RUP disciplines, as well as all the necessary educational and methodological support are available <http://repository.kstu.kz/xmlui/handle/123456789/10005>. In multilingual groups, where training is carried out on the basis of the distribution of disciplines by languages of instruction, conditions have been created when it is possible to change the language in any complex course (for example, in the discipline «Power converting devices», «Digital technology» and others).

All of these methods allow students with disabilities to fully study the required disciplines.

The policy of forming a contingent of students is focused on continuous career guidance work with schools and colleges, including the admission of persons with disabilities. For students of various groups, regardless of the language of instruction and distance form, annually updated catalogs of elective disciplines and modular reference books are available, which allow students to implement the conditions for the election of a teacher and an individual learning path.

In accordance with the QMS-2018 KSTU is regularly evaluating and adjusting the forms of education and pedagogical methods <http://www.kstu.kz/norm/>. When internal audit reveals deficiencies and inconsistencies, corrective and preventive actions are applied to establish and eliminate their causes.

The dean's office for work with complaints and suggestions of students uses special boxes installed in certain places to receive information from consumers. Conflict situations are openly discussed in study groups with the curator, the head of the department, and if the conflict is unsolvable, they are brought to the attention of the dean's office staff.

At the departments of APP and ES, NIRS, NIRM is carried out systematically, starting with junior courses. In senior courses, they are given the opportunity to express themselves individually, participating in work on projects and speaking at scientific and theoretical conferences. In the EP of the magistracy, when implementing a trilateral agreement, it is envisaged during the entire learning process to carry out a course project in a cycle of

disciplines, which is part of a master's project, and the master's student practices at an enterprise with which an agreement has been concluded on the subject of an agreed master's project.

Responsibility for the provision and systematic development, implementation and effectiveness of innovative teaching methods lies with the department. Monitoring of the effectiveness and efficiency of the application of innovations and the use of active teaching methods is carried out during the midterm, final and current control of students' knowledge.

A survey of students conducted during the EEC visit showed that: students express full and partial satisfaction with:

- the level of quality of teaching - 97.7%;
- fairness of examinations and certification - 97.7%;
- conducted tests and exams - 99.2%.

Analytical part

Analyzing the standard»Student-centered learning, teaching and assessment of progress" in accredited areas, the commission came to the conclusion that, within the framework of the implemented EP, there is the use of modern pedagogical technologies, methods and techniques for the use of such technologies as learning in collaboration, the use of new multimedia technologies, Internet resources, which helps to implement a student-centered approach to learning, provides individualization and differentiation of learning, taking into account the abilities of students.

Feedback systems are available on the use of various teaching methods and the assessment of learning outcomes. The University ensures the consistency, transparency and objectivity of the learning outcomes assessment mechanism for each EP, as well as the appeal.

The results of the survey of employers, in turn, testify to the good theoretical training of graduates of the accredited EP, the ability to apply the acquired knowledge and skills in practice. This is the basis for the growth of the demand for graduates of the specialty in the republican and regional labor market.

Strengths/best practice:

- not identified according to this standard

The recommendations of the WEC:

- none according to this standard

EEC conclusions on the criteria:

According to the standard»Student-centered learning, teaching and assessment of progress", educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-10 Power Engineering" have satisfactory positions.

6.6. Standard «Students»

Evidential party

The policy and procedures for admitting applicants to the state university are consistent with the mission, vision, strategic goals of the university and are officially

published on the university website (<http://www.kstu.kz/priemnaya-123komissiya-2/>). Admission of students to the University is carried out on the basis of the Standard Rules for admission to training in educational organizations that implement educational programs of higher education (approved by the Government of the Republic of Kazakhstan dated January 19, 2012 No. 111, amended and supplemented by the Resolution of the Government of the Republic of Kazakhstan dated June 08, 2018 No. 334) and the Rules for awarding an educational grant for paying for higher education (approved by the Government of the Republic of Kazakhstan dated January 23, 2008 N 58).

To receive documents, conduct comprehensive testing and form a contingent of students of all forms of education at the university, the Admissions Committee functions. All normative legal acts on the admission of applicants to the number of students are posted on the university website and information stands of the selection committee. In addition, the EP conducts career guidance on the pages in the popular social networks Instagram, Facebook, Vkontakte, YouTube, where information material is posted as it becomes available.

The policy of forming a contingent of students consists in admitting to the number of students those who are most prepared for studying at the university, who consciously chose the direction of training and who received the required number of points based on the results of UNT or CT. The University determines the procedure for the formation of the contingent of students based on such criteria as: social order, implementation of the needs of the region and the country in the profile of specialists with higher and postgraduate education; placement of the state educational order for the training of specialists; the number of students at their own expense and other sources. Registration and movement of students is carried out in accordance with the requirements of the State Educational Standard of the Republic of Kazakhstan 5.03.008-2009 "Education system of the Republic of Kazakhstan. The contingent of students. Basic provisions".

The analysis of students shows a noticeable increase in the contingent of students, undergraduates and doctoral students, which is reflected below:

The contingent of full-time and part-time students for EP»Power Engineering" for 2014-2019

Contingent	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
bachelor	100	150	194	140	208
master	23	10	12	46	48
doctoral study	0	2	2	7	10
total	123	162	208	193	266

The contingent of full-time and part-time students in EP» Heat power engineering» for 2014-2019

Contingent	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
bachelor	52	41	60	49	67
master	5	4	6	34	67
total	57	45	66	83	134

From the first day of their stay at KSTU, for adaptation with students, meetings are held with the dean of the faculty, curators, during which they receive a guidebook. A guidebook for each academic year is available both on paper, which was received by each

student of the university, and in electronic form, which is available on the official website (www.kstu.kz).

The guidebook serves as a guide for students and contains general information about the university, its organizational structure, the rules of the credit system of education, as well as a glossary. The information in the Guidebook is intended to help the student and acquaints students with the peculiarities of the academic life of the university, describes the procedure for organizing the educational process, rating, intermediate and final control of knowledge, the conditions for transferring from course to course, as well as their rights and obligations. All 1st year students on curatorial hours are obliged to get acquainted with the regulations of the educational process, the University Charter, the Internal Regulations, the Code of Honor of Students, the Rules of Academic Integrity of Teachers, Students and University staff, with the Rules of Residence in a Dormitory, and also in KSTU hostels duty of the teaching staff.

The most important indicator of the quality and efficiency of the educational activities of the department, recognition of its prestige at the national and international levels is the presence of foreign students or external incoming mobility. Students from Uzbekistan, Tajikistan and Russia study at the EP every year their number increases, and in 2019 it amounted to 19 people.

The department provides special adaptation, information and support programs for foreign students accepted for training, including remote documents acceptance. Training is carried out in three languages: state, Russian, English.

To provide feedback with foreign students, a group has been created in Whatsapp messengers and telegrams. A section has been created on the main page of the KSTU website for foreign students: <http://www.kstu.kz/inostrannym-studentam/>.

The University implements its actions in accordance with the Lisbon Convention on the Recognition of Qualifications Relating to Higher Education in the European Region (ETS No. 165) of April 11, 1997 (Lisbon Convention).

The EP applies procedures and mechanisms for recognizing the results of passing the academic mobility of students, teaching staff, as well as additional education. Cluster graduates undergo a nostrification procedure for further education in a master's program in the countries of near and far abroad.

In the period 2014-2019. 4 students were trained under the external academic mobility program during one semester at universities in Europe and Asia. At the moment, 1 student is studying in the Czech Republic on academic mobility. (<http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/>)

Six undergraduates were sent on academic mobility under the Shanghai Cooperation Organization University program. (<http://www.kstu.kz/mezhdunarodnoe-sotrudnichestvo-22/>).

On internal academic mobility, students of KSIU of the specialty «Power Engineering» are trained, with the issuance of a transcript, in accordance with an agreement on mutual cooperation in the provision of educational services between KSTU and KSIU dated 03.14.

In the period 2014-2019. 10 students of the specialty 5B071800 «Power Engineering» studied under the program of academic mobility; 7 students of the specialty 5B071700 «Heat power engineering»; 2 undergraduates of the specialty 6M071800 -»Power Engineering"; 1 master student of specialty 6M071700 -» Heat power engineering».

Table - data on academic mobility (exiting)

Specialty	HEI	Period of study
6M071800 – «Power Engineering»	FGBOU VPO»national research University»Moscow power	01.09.2014 r.- 30.01.2015 r

	engineering Institute"(Russia) - Zhumanov A. A.	
6M071800 – «Power Engineering»	FGBOU VPO»national research University»Moscow power engineering Institute"(Russia) - Tokbergenova A. G.	01.09.2015 г.- 30.01.2016г
5B071800 – «Power Engineering»	Warsaw University of technology (Poland) Abitova H. N.	01.10.2015 г.- 20.02.2016 г
5B071800 – «Power Engineering»	Warsaw technical University Curcubeu D. B.	01.10.2016 г.- 20.02.2017 г.
5B071800 – «Power Engineering»	Warsaw technical University Abusagit I.	01.10.2016 г.- 0.02.2017 г.
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Kaliyeva A. E.	01.09.2017 г.- 10.01.2018 г
5B071800 – «Power Engineering»	Zhezkazgan University named. O. A. Baykonurova Kaliyeva A. E.	20.01.2018 г.- 10.05.2018 г
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Bisinbaev B. N.	01.09.2018 г.- 10.01.2019 г
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Tokbaev I. T.	01.09.2018 г.- 10.01.2019 г
5B071800 – «Power Engineering»	Tomsk Polytechnic University Amanzholov S. M.	01.09.2018 г.- 10.01.2019 г
5B071800 – «Power Engineering»	Beijing Polytechnic University Argynbai J.J.	01.09.2018г.- 10.01.2019г
5B071800 – «Power Engineering»	Tomsk Polytechnic University Abzhapparov J.	20.01.2019 г.- 10.05.2019 г
6M071700 – « Heat power engineering»	University Of Trieste Italy Tatkeeva A. M.	01.09.2014 г.- 30.01.2015 г
5B071700 – « Heat power engineering»	Pavlodar state University.S. Toraigyrov Vashkevich D. V.	01.09.2015- 10.01.2016
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Kabdolla T. M.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»»	Karaganda state University.E. A. Buketov Turgunov A. K.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Bekmagambetova, N. Well.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Kerimbai E. S.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Amanzhol E.M.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Zhanabergen D.J.	20.01.2018 г.- 10.05.2018 г

Table - data on academic mobility (incoming)

Specialty	HEI	Period of study
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5B071800 – «Power Engineering»	Zhezkazgan University named O. A. Baykonurova Toksambaeva J. W.	01.09.2014- 30.01.2015 г
5B071800 – «Power Engineering»	Zhezkazgan University named O. A. Baykonurova Tr Sh.N.	01.09.2014- 30.01.2015 г
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Taurbaeva M. J.	01.09.2017 г.- 10.01.2018 г
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Baikanov D	01.09.2018 г.- 10.01.2019 г
5B071800 – «Power Engineering»	Kazakh agrotechnical University.S. Seifullin Gabdullin D	01.09.2018 г.- 10.01.2019 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Azatbek Sh.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Zhanbaeva A. O.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Amantay M.	20.01.2018 г.- 10.05.2018 г
5B071700 – « Heat power engineering»	Karaganda state University.E. A. Buketov Sagingalieva A.	20.01.2018 г.- 10.05.2018 г

Industrial practice is carried out in accordance with the curriculum in the 4th semester, duration - 7.5 weeks. The purpose of the practice is to obtain a working specialty by students in the professions «Instrumentation fitter" or «Assembler of RA and P", «Electrical installer of the 2nd category", as well as to consolidate the knowledge gained for the I and II courses of study, familiarization with integrated development environments software tools used in further training. A certificate is issued with the assignment of a working specialty in the professions «R&P installer" or «instrumentation locksmith".

After passing a certain type of practice, a survey of students is carried out in order to identify an assessment of students' satisfaction with places and the organization of internship, as well as a survey of managers of practice bases in order to assess satisfaction with the level of training of students. As a result of monitoring, the graduating departments formulate recommendations for improving the organization of internship.

Since 2000, an annual alumni fair has been held at the Karaganda State Technical University. Representatives of enterprises and institutions of the region take part in the job fair. Among them are employers from Arcelor Mittal Temirtau JSC, Ugleservice JSC, Shubarkul Kumor JSC, Kazakhtelekom JSC, Kazpromavtomatika LLP, Energy System LLP LLP, Kazakhmys Corporation LLP, KF JSC Natsseks, KF RSE «KazInMetr".

During the academic year, the EP regularly organizes meetings of 3rd and 4th year students with employers. The result of these meetings is an invitation to industrial, pre-diploma practice with subsequent employment. for students. So, for example, in 2017, trainings were held on such topics as: «How to write

To assist the graduates of the department, the Career Development Center, together with the faculties, holds a number of events for senior students. Particular attention is paid to

coaching an effective resume", a master class»The rules of an ideal interview with an employer."

Information on the employment of graduates of bachelor OP 5B071800 –»Power Engineering»

Indicator	2014-2015	2015-2016	2016-2017	2017-2018
Number of graduates, people	0	2	1	2
On a budget basis	0	2	1	2
On paid basis	0	0	0	0
Employed, %	0	100	100	100

Information on the employment of undergraduate graduates OP 5B071700 -» Heat power engineering»

Indicator	2014	2015	2016	2017	2018
Number of graduates, people	12	41	37	19	41
Full-time training	1	30	31	16	31
Distance learning	11	11	6	13	10
Employed, %	82	90	80	84	80

Information on the employment of graduates of magistracy OP 6M071700 -» Heat power engineering»

indicator	2014-2015	2015-2016	2016-2017	2017-2018
Number of graduates, people	5	4	6	34
On a budget basis	4	4	6	34
On paid basis	1	0	0	0
Employed, %	100	100	100	100

The indicators on the employment of EP graduates show the demand for young specialists. The members of the EEC notes that the bulk of the graduates get a job in the EP profile.

Analytical part

The commission, in the course of analyzing the contingent of students, observes an upward trend. The current policy of the formation of the contingent at the university complies with the legislation of the Republic of Kazakhstan. To popularize accredited programs, the university conducts career guidance work, attracts alumni (open day, round tables). The EP's management conducts special adaptation and support programs for applicants and foreign students.

The University provides EP graduates with documents confirming the acquired qualifications, regular monitoring of employment and professional activities of EP graduates is carried out.

Within the framework of EP»Power Engineering", students undergo industrial practice in such enterprises, where it does not fully cover the training of specialists in the content of EP, in this regard, for complete satisfaction of students, it is necessary to expand the base of practices.

Analysis of the data provided in the self-assessment report on academic mobility for EP» Heat power engineering» showed its low level, moreover, there are years when student mobility was completely absent.

Support for gifted students is provided by the leadership of the university, EP, members of the consortium of the Corporate University, but at the same time experts noted

the absence of a single document, which spelled out all the mechanisms and ways to support gifted students.

As part of measures to enhance academic mobility, new agreements were concluded with both domestic and foreign universities. However, the share of existing contracts under which external and internal mobility is carried out remains low.

According to the results of the questionnaire survey carried out during the EEC visit, it showed that: students express full and partial satisfaction:

- the availability of academic consulting - 93.7%;
- availability of healthcare services - 88.2%;
- availability of library resources - 97.4%.
- satisfaction with existing educational resources - 99.3%;
- the overall quality of educational programs - 95.3%.
- the ratio between student and teacher - 96.1%.

Strengths/best practice:

- not identified according to this standard

Recommendations for EP»5B071700- Heat power engineering",»6M071700-Heat power engineering»:

- To intensify efforts to develop the academic mobility of students.

Recommendations for EP»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering":

- Expand the base of trainees' practices in regional power grid enterprises.

Conclusions of the EEC on the criteria:

According to the standard»Learning" educational programs»5B071700- Heat power engineering",»6M071700- Heat power engineering",»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" have 12 satisfactory positions.

6.7. Standard "Faculty"

The evidentiary part

The University developed and implemented personnel policy, ensuring the formation of quality staff PTS, its efficient operation according to»Regulations about the personnel policy", approved by the academic Council of the University (Protocol №1 from 28.03.2018 g) (see <http://www.kstu.kz/dup/>).

Amendments to The regulations on personnel policy of KSTU are carried out based on the results of monitoring of personnel, the results of the University and its management system.

The recruitment process, compliance training of employees, registration of their reception, transfer and dismissal, preparation of documents for the approval of appointments of employees administered by the Department of human resources (DKV) University jointly with the heads of departments, guided by the staffing.

Management and regulation of employment of FM is carried out on the basis of contract-competitive form, the order of which is regulated by the Regulation on competitive elections of FM, job descriptions. They are approved by the rector of the University.

Rules of competitive substitution of positions of scientific and pedagogical staff of the University at the University created a competition Commission. The election for the vacant positions of the faculty on a competitive basis in accordance with the»Rules of competitive

replacement of posts of the teaching staff and scientific employees of universities" and the results of secret voting of the competition Commission (see: <http://www.kstu.kz/dup/>).

The staff of the EP is staffed in accordance with the legislation of the Republic of Kazakhstan and the »Rules of competitive replacement of positions of scientific and pedagogical staff of higher educational institutions."

Personnel policy of EP »heat power" and »electric power" is implemented in accordance with the main priorities of the development strategy of the University through the implementation of educational, teaching, research and educational work, as well as the implementation of continuous monitoring, monitoring and management of research work of students.

Personnel EP »the Power" and »power" are completed in accordance with the law and »Rules of competitive replacement of positions of scientific and pedagogical staff of higher educational institutions".

Faculty EP »Power" and »power" meets the qualification requirements for licensing of educational activities (including on indicators: »degree is a degree"; »the passage of courses of improvement of qualification for subjects taught" proved by a certificate; »experience working on modern (advanced) enterprises according to the subjects taught"; »the scientific and scientific-methodical works on the profile of educational programs"). Basic education have 100% of faculty of departments on OP »Heat Power engineering" and »Electric power engineering".

The tables provide a numerical description of the composition of the FM on EP »electric power" and »heat Power" for the period 2014-2019, as well as the composition of the FM departments.

Qualitative and quantitative composition of teachers on EP »Electric power engineering"

№	Gr. year	The total number of FM on the staff list, people	including full-time teachers, people (%)	Including part-time people (%)	Degree of maturity, People (%)	Average age, years
1	2014-2015	43	27 (63 %)	16 (37 %)	21%	41
2	2015-2016	44	26 (59 %)	18 (41 %)	21%	41
3	2016-2017	63	30 (48 %)	33 (52 %)	32%	44
4	2017-2018	60	31 (52%)	29 (48%)	28%	41
5	2018-2019	48	34 (71%)	14 (29%)	33%	40

Qualitative and quantitative composition of teachers on EP »Heat Power engineering"

№	Gr. year	The total number of FM on the staff list, people	including full-time teachers, people (%)	Including part-time people (%)	Degree of maturity, People (%)	Average age, years
1	2014-2015	32	26 (77 %)	6 (23 %)	46%	45
2	2015-2016	32	26 (77 %)	6 (23 %)	46%	46
3	2016-2017	36	32 (87 %)	4 (13 %)	50%	49
4	2017-2018	31	27 (85%)	4 (15%)	44%	49
5	2018-2019	36	30 (80%)	6 (20%)	37%	48

Qualitative and quantitative composition of the teaching staff of the departments

Department	Middle	Only	Number	Faculty with academic degrees
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	age	faculty	staff faculty	Number of staff Faculty with academic degrees	doctor of science	candidate of Sciences	% settling down
«Energy system»	49	37	30	11	2	9	50
«Automation of productions»	45,9	47	33	18	9	5	54,5

Assessment of the competence of teachers to establish compliance with the PPS position is carried out by all staff members of the Department according to the quality assessment procedures and Regulations on the point-rating system of evaluation of the PPS.

The analysis of the qualitative indicator of staffing showed that the percentage of the degree corresponds to the standard established by the license. The qualitative composition of teaching staff at the departments with academic title and academic degree is 50% and 54.5% respectively.

For teachers actively working in the framework of »student-centred learning", is designed by the rectorate of the University system of material 104 promotion and social support FM according to the results of differentiated pay in accordance with the Regulation on the ranking of the faculty of RSE on REJ»Karaganda state technical University" (see: <http://difoplata.kstu.kz/web/>).

Leading specialists and teachers participate in the development of Emona, CEDAW, guidelines and manuals, lectures on elective subjects for students and undergraduates of EP.

At the Department of energy systems as a full-time teacher works Isaev V. L., for a long time held engineering positions at the energy facilities of the city. Currently, the problem of providing the Department with scientific personnel is solved through targeted training of teachers through PhD doctoral and postgraduate Universities of Kazakhstan and Russia.

The University provides advanced training courses for young teachers and staff in various areas of educational programs. EP teachers with less than 5 years of experience are trained In the center of engineering pedagogy, where they study innovative methods and technologies of training with a certificate of completion of advanced training courses.

Every year there are competitions »Best young scientist", »Best young innovator", in which young scientists up to 35 years take part.

FM departments of the EP, in order to introduce innovative technologies organize and participate in the production of teaching materials; training workshops for faculty; online lectures of leading teachers of the departments and the international joint EP; lectures of invited professors in the University and abroad; lectures, consultations and seminars of the heads of International training programs ("synergy" University, TEMPUS, Erasmus+, etc.).

At the Department of APP functioned 6 circles in accordance with the decision of the Department (minutes of meeting of the Department №1 of 11.09.2018 g). Two circles in the official language and one circle in English. Research work is carried out under the guidance of experienced teachers. Research work at the Department of »Energy systems" is carried out in various areas, diploma and master's projects have a variety of topics.

As part of academic mobility a number of teachers have participated and are participating in various academic mobility programs. Improvement of teachers' skills is conducted through courses, seminars, individual internships, trainings, master classes.

One of the forms of involvement in the scientific sphere is the participation of the faculty of the Department of the APP as experts attracted by ministries, departments and other organizations. This indicates a high degree of trust in the University, recognition of its expert potential by both national authorities and the population. For the period from 2016 to 2018, 8 people from the faculty were involved as experts.

Conditions have been created for full-fledged research activities of faculty members, participation in funded research projects, research, publication of the results of their research in the framework of contracts with Kazakh and foreign organizations. Planning and evaluation of scientific activity of the faculty is carried out according to individual plans and is reflected in the annual reports of teachers.

Number of faculty of the Department who have passed courses of improvement on educational programs

Educational program	2014-2015 у.ч.г.			2015-2016			2016-2017			2017-2018		
	All full-time faculty	Upgraded qualifications of teaching staff	Percent, %	All full-time faculty	Upgraded qualifications of teaching staff	Percent, %	All full-time faculty	Upgraded qualifications of teaching staff	Percent, %	All full-time faculty	Upgraded qualifications of teaching staff	Percent, %
5B071700 – «Heat power engineering»	25	6	24	24	6	25	28	7	25	32	11	34
5B071800 – «Electric power engineering»	35	16	46	36	8	31	36	14	39	36	13	36
TOTAL	60	22	70	60	14	56	64	21	64	68	24	70
5M071700 – «Heat power engineering»	16	6	38	17	5	29	17	6	35	17	4	24
5M071800 – «Electric power engineering»	16	5	31	16	4	25	16	5	31	7	5	29
TOTAL	32	11	69	33	9	54	33	11	66	24	9	53
6D071800 – «Electric power engineering»	-	-	-	7	6	86	5	4	80	5	3	60
TOTAL												

At the above departments, research work is actively carried out, the results of which are published in collections of various conferences and other scientific events. Graduate students, undergraduate and students are involved in work by qualified teaching staff of the listed departments. The number of papers published in recent years is given in the table.

Publication activity of academic staff by cluster	2015/2016	2016/2017	2017/2018
In international scientific publications Thomson Reuters, Scopus	14	16	27
Top-rated journals (RISC, etc.)	9	14	22

The journals recommended KKSON MES RK	10	14	20
Journals of near and far abroad	15	10	21
International conference	99	84	89
Monographs	4	5	7
Study guides	15	5	13
Electronic textbook	80	47	36
Subtotal	246	195	235

It should be noted that research works are carried out in the form of grant works commissioned by the MES, initiative works and contractual works on orders of the production sector. The analysis by year and funding by source is given in the table.

Funding research on cluster, KZT

Year	Research funding, million	Commercial contracts (thousand KZT)	By order of MES RK (thousand KZT)
2016	27,862	11862	16000
2017	17,115	6115,3	11000
2018	37,910	18910	19000

Analytical part

After analyzing the standard «Teaching staff» in accredited areas, the Commission concluded that the University has an objective and transparent personnel policy, including recruitment, professional growth and development of staff, ensuring the professional competence of the entire staff. The management of EP demonstrated awareness of responsibility for its employees and ensuring favorable working conditions for them. The contribution of EP faculty to the implementation of the development strategy of the University is defined in KSTU.

The management of the EP involves practitioners of relevant industries in teaching and provides targeted actions for the development of young teachers. KSTU EP management has demonstrated motivation for professional and personal development of EP teachers, including the encouragement of the integration of scientific activities and education, and the use of innovative teaching methods.

The personnel policy in the context of the considered EP can be considered balanced. On the one hand, experienced practitioners from production are involved; on the other hand, young personnel are supported in obtaining their academic degrees.

An important factor to maintain the high quality of the graduation work is to attract scientists from enterprises and scientific organizations to direct and not only the staff of the Department. This fact was also noted by the members of the last EEC.

Strengths/best practice for EP»5B071700-Heat Power engineering",»6M071700- Heat Power engineering",»5V071800-Electric power engineering, 6M071800-Electric power engineering, 6D071800 Electric power engineering»:

- involvement of teachers with long experience at the TPP;
- implementation of targeted work on training of young teachers through PhD, doctoral and postgraduate studies of the Russian Federation.

Recommendations for EP»5V071700-heat Power engineering",» 6M071700-heat power Engineering»:

- Involvement of practitioners and scientists from enterprises and scientific organizations in the directing of diploma and master's projects.

The conclusions of the EEC according to the criteria:

Standard»Faculty" educational programs 5B071700-Heat Power engineering",»6M071700- Heat Power engineering",»5B071800-Electric power engineering, 6M071800-Electric power engineering, 6D071800 Electric power engineering» have 2 strong and 10 satisfactory positions.

Conclusions of the EEC on the criteria:

According to the standard»Learning" educational programs»5B071700- Heat power engineering»,»6M071700- Heat power engineering»,»5B071800-Power Engineering",»6M071800-Power Engineering",»6D071800-Power Engineering" have 12 satisfactory positions.

6.8. Standard “Educational resources and student support systems»

The evidentiary part

An important factor in ensuring the quality of education and the guarantee of sustainable development of KSTU is the constant improvement of material, technical and information resources. The University has all the conditions for educating students, conducting research, publishing the results research work of faculty members, staff and students.

The University has a material and technical base, providing all kinds of practical training and research work of students, provided by the curriculum of the University and corresponding to the current sanitary and epidemiological and fire regulations.

The University operates structural units, student support services that assist students in the learning educational programs. The necessary assistance is provided by qualified advisors, curators, for psychological assistance, a psychologist works.

Technological support in accordance with the software used is provided for students and faculty. Online training in the international master's degree in»automation and control" in the framework of the project Synergy is implemented.

All laboratories are certified, provided with means of fire extinguishing, individual means of protection.

Training on accredited EP is conducted in accordance with the State compulsory standard of higher education, approved by the order of the Minister of education and science of the Republic of Kazakhstan dated October 31, 2018 № 604. Registered in the Ministry of Justice of the Republic of Kazakhstan on November 1, 2018 № 17669 standard and working curricula of specialties, standard and working curricula of disciplines and educational and methodical complexes.

In the period 2014-2018 staff of the APT Department developed 348 new EED, 75 textbooks. Faculty of the Department of PS annually develops, certifies and implements electronic textbooks in the educational process. The number of developed EED is presented in the table. EED certification is confirmed by the certificate.

Table– Number of developed EED 2015-2019

Academic year	EP» Heat power engineering»	EP»Power engineering»
2014-2015	7	39
2015-2016	80	80
2016-2017	11	36
2017-2018	15	21
2018-2019	4	18

The available laboratory base of the APT Department is based on the software and hardware of leading manufacturers of automation: Siemens, Festo, Advantech, Mitsubishi Electric, Schneider Electric, Owen and is similar to those used in the relevant industry.

The training process uses specialized software for automation systems, also widely used in the industry: Simatic Step 7 Lite; LOGO! SoftComfort 6.0; SCADA WinCC V6; V10 MatLab; Visual C++; PC»Bauman" V3; V16 AutoCAD Electric; Compass 3D V16; Trace Mode V6 (demo version) Genesis V7; VisualBasic 6.0; MiltiSim V 13; COSIMIR; CodeSys 2.3, Proteus 7, GX Developer V7.04 IEC Citect Scada V7.40, Mitsubishi Alpha Programming 2.7, MPLAB 8_92.

In the implementation of»Power engineering" and» Heat power engineering» EP Internet learning technologies in the framework of the International University network project»Synergy" are used. The discipline is divided into modules, lectures are made over the Internet by best teachers of the partner universities (NRU Moscow power engineering Institute (Moscow), MOSCOW SPbSU, Russia of Peter the Great (St. Petersburg), Baltic state technical University (St. Petersburg), Omsk state technical University (Omsk) and KSTU). Lectures are listened to at the same time by undergraduates of the above universities. Also on the Internet is the presentation of the best master's projects. Best master's projects are presented over the Internet

During 2014-2018 positive dynamics of development of material and technical resources are observed in EP. Purchased by the administration, as well as at the expense of economic contracts, equipment from Schneider Electric for the amount of 30 million tenge, equipment from Festo for the amount of 30 million tenge. New equipment and software from Mitsubishi Electric, as well as personal computers and laptops were donated in the form of sponsorship in the amount of 6 million KZT.

The availability of Wi-Fi in the territory of University is at a high level. The information network of the Institute has a speed of access to the Internet at 600 Mb/s. Buildings has the required number of access points for high-quality coverage of the network. In interviews with students, it was also confirmed that the full coverage of the broadcasting area of the Wi-Fi network in the University and student dormitories is achieved. This confirms the provision of high-speed Internet to all students, teachers and staff of the University.

Material-technical base under EP» Heat power engineering» was created by own academic staff and students of the Department. Interviews with graduates and students showed the need to strengthen the theoretical knowledge of practical skills as part of the planned production practices, and directly during training.

Library collections are updated on an ongoing basis. In addition, they are regularly replenished with textbooks published by teachers of the University. The system of differentiated payment encourages faculty members to publish such literature. Interviews with teachers showed that there were no problems with the inclusion of textbooks in the work plan of the publishing Department. Moreover, teachers noted that if necessary, educational and methodical literature can be published outside the plan.

Analytical part

EEC confirms the presence of support systems for students, including support through the University website. During the meetings with students and faculty, it was revealed that most do not have financial opportunities for training, internships, advanced training in the world's leading universities, so it is advisable to involve students and faculty to the best online courses.

Result of visual inspection of objects of material base by members of EEC has convinced them, that University has the necessary educational and material assets to ensure the educational process of accredited educational programs.

Availability of affordable and high-speed Internet is one of the most demanded resources required for students to obtain high-quality EP. Therefore, the almost complete absence of complaints during the interview is an undeniable advantage of the resource provision of the EP.

The recommendation to update the material and technical base for «Heat power engineering» EP was given by the members of the last EEC; however, significant progress in this area currently is not noted. The stands installed in the laboratory of the Department allow giving a general idea of the main technological processes of Heat power engineering; however, taking into account the development of the latest technologies, updating the stands both physical and virtual would significantly increase the competitiveness of graduates of this EP.

Strengths/best practice for EP»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- carrying out systematic work on updating tutorials and textbooks, including obtaining copyright certificates;
- high quality and availability of Wi-Fi in the campuses and dormitories of the University were noted according to the results of the interviewing of target groups and the results of the survey of students.

Recommendations for EP»5B071700- Heat power engineering",» 6M071700-Heat power engineering»:

- accelerate the renovation of classroom equipment with the necessary training stands and virtual laboratory complexes in in the profile of EP "Heat power engineering"

Recommendations for EP»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- to expand the area of the APP Department for placement of constantly updated educational and laboratory equipment, due to the saturation of modern software and hardware of leading manufacturers.
- To increase the number of foreign internships for faculty members in order to increase motivation and improve the quality of training of EP specialists.

The conclusions of the EEC according to the criteria:

Standard»Educational resources and student support system" educational programs»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering" have 2 strong and 8 is satisfactory positions.

6.9. Standard "Informing the public"

The evidentiary part

The University determines its contribution to support the implementation of national development programs of the country through the development and implementation of the Strategic development plan of Karaganda state technical University for 2014-2023, which says that the University created and implemented a Model of Patriotic education of students on the example of the First President of the Republic of Kazakhstan N. A. Nazarbayev, which was twice discussed in Parliament and recommended for distribution in universities of the

country. In 2014, in line with the national idea «Mangilik El», it is transformed into the Model of «Formation of New Kazakhstan Patriotism.»

Also, the University developed and implemented a Comprehensive program of development of Karaganda state technical University in 2019 in light of the strategic objectives of the Messages of the President of the Republic of Kazakhstan – Leader of nation N. And. Nazarbayev to people of Kazakhstan «New possibilities of development in the fourth industrial revolution», «Five social initiatives of the President» and «Growth of welfare of Kazakhstan: increase of income and quality of life.»

In the context of the implementation of the state program «Digital Kazakhstan» the Scientific Council of KSTU adopted the Concept of transition to the model Of «Digital KSTU». In support of the state program «Digital Kazakhstan» and the national project «Intellectual nation – 2020», proclaimed by the President of the Republic of Kazakhstan Nursultan Nazarbayev. Work is underway on the functioning of the Academy of Cisco.

The organization of the educational process, the implementation of educational tasks, and the existence of a system of professional orientation require constant development and operation of information services. On this basis, the University introduced a variety of information services, each of which is designed to implement the tasks of the above activities. Successful public awareness is achieved by choosing such means and information tools that earn the highest level of trust, thus allowing getting feedback from the informed to analyze the results.

The purpose of informing the public is to create a positive image of the University in the external environment, to establish and maintain cooperation with all stakeholders by informing the General public about the various activities of the University.

Implemented EP presented on the corporate website of the University according to the academic guidance learning outcomes.

Each Department has its own section on the website of KSTU and places information about specialties, EP's, assigned qualifications at the end of the EP.

The section «Study» provides information about passing scores and educational opportunities.

Open Days are held on a regular basis. Applicants have the opportunity to personally inquire about the educational programs and activities of the Department, to get acquainted with its material and technical support.

The University has defined order of news publication on the main page and in sections. News about the activities of the University are posted on a memo to Digital University Development Department. Center of the site development is provided with information in the form of a text document with photos. If the news post does not meet the requirements, the material is sent for revision. To assess the satisfaction with information about the activities of the University a survey on Google Forms was conducted. Analysis and weekly monitoring of work in this area is carried out by the site development Center.

Link to publications: <http://> <https://www.kstu.kz/category/news/?lang=en>. Information on the implementation of the EP posted on the web pages of the departments.

Information about the results of educational and educational activities of the University, reports on public events, organized online competitions and promotions are posted the pages of popular social networks. KSTU is represented by the following accounts in:

- Vkontakte https://vk.com/kstu_life more than 3,000 subscribers
- Facebook <https://www.facebook.com/KSTUpoliteh/> - more than 400
- Instagram <https://www.instagram.com/kstu.kz/> – more than 3000
- YouTube https://www.youtube.com/channel/UCtfFz8_AOxrqrT0yHGYxA - 1200
- Twitter <https://twitter.com/KSTUpoliteh> – 300.

Field events are practiced in the regions. Every year, the APP department hosts an alumni association to organize and maintain information exchange between members of the association and the public about the achievements of the department and its alumni. Produced annually, the Newsletter of the Association <http://www.kstu.kz/ezhegodnaya-assotsiatsiya-vypusnikov-kafedry-app>, the newspaper «For Polytechnic knowledge» <http://www.kstu.kz/gazeta-za-politeh-znaniya/>, scientific and technical journal «Automation and Informatics» <http://www.kstu.kz/zhurnal-avtomatika-informatika/> magazine «University Works» <http://www.kstu.kz/zhurnal-trudy-universiteta/> other printed materials, scientific, popular scientific, technical, literary and advertising.

Analytical part

University always release relevant and objective information about the ongoing EP's, specifying expected learning outcomes, the qualification at the end of accredited EP's; about teaching, learning, assessment procedures.

Informing the public on this criterion is provided by posting all documents on the University's website in open access and discussion on the boards of collegial governing bodies with the participation of interested persons.

Analysis of the information provided in the media showed a sufficient level of public awareness about the implemented EP's, providing support and explanation of the national development programs of the country and the system of higher and postgraduate education.

Assessment of satisfaction with information about the activities of the University, the specifics and the implementation of the EP's is carried out annually by questionnaire, survey, feedback, as well as through the rector's blog.

The survey of students conducted during the visit to the University showed that the satisfaction of students with information about courses, EP's and academic degrees - fully satisfied - 75.6%, partially satisfied - 19.7 %, partially dissatisfied - 3.1% of students.

Strengths/best practice for EP»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- *Within the framework of the Comprehensive development program approved annually, the state programs and strategic tasks set by the First President of Kazakhstan are implemented by specific actions at the level of EP.*

The recommendations of the EEC

- *according to this standard there are none*

The conclusions of the EEC according to the criteria:

The standard of «informing the public" educational program»5B071700- Heat power engineering",»6m071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering" have 1 strong position and 12 satisfactory.

6.10. Standards in the context of individual specialties. Technical Sciences and technologies

The evidentiary part

To obtain practical skills in the specialty within the framework of the EP «Power engineering" and «Heat power engineering» in bachelor's, master's and doctoral studies in most basic and specialized disciplines, laboratory and practical classes are carried out. Industrial and educational equipment of leading manufacturers of automation and Power

Engineering systems, including Siemens, Schneider-electric, Mitsubishi-electric and others are used. Modern laboratory facilities based on software and hardware simultaneously allow gaining practical skills in the study of undergraduate, graduate and doctoral disciplines.

Bachelors, undergraduates and doctoral students receive practical skills required for different levels of education at such stands. The positive effect of obtaining practical skills in certified EP is achieved in the process of creating the laboratory base of the Department by the faculty, students, undergraduates and doctoral students.

To create laboratory work specialized software manufacturers of automation equipment, and IFR systems simulation and circuit simulation is used. Almost the entire educational and laboratory base of specialties in Department of APP was created and constantly updated by a similar technology. As a result, graduates who have completed real diploma projects for the creation of educational equipment receive not only higher education within the bachelor's degree, but also the appropriate qualification. Similarly, practical skills are acquired in masters and doctoral studies.

In addition, to obtain practical skills at various levels of training, the process of practical training after the first year of bachelor's degree, industrial and pre-diploma practices includes excursions to enterprises.

A distinctive feature of accredited EP is their focus on industrial automation and Power Engineering, which are placed in the scientific-educational complex industry - 4.0 opened in 2018: (<http://lib.kstu.kz:8300/tb/fulltext/temat/Spetsialisty%20novoy%20formatsii.pdf>),

The complex includes the Republican center of the University –Festo: Synergy (opened in 2015) (<http://www.kstu.kz/novosti-45/>), an Authorized learning center of the University–Schneider electric (open in 2016) (<https://www.elec.ru/news/2015/10/13/schneider-electric-otkryvaet-uchebnyj-centr-na-baz.html>), a Joint educational Center of KSTU-Mitsubishi electric Kazpromavtomatika (open in 2017) (<http://vestikip.kz/2017/06/16/открытие-учебного-центра-каргту-mitsubishi-electric/>) and Innovative audience the»Digital industry" (opened in 2018) (<https://pandia.ru/text/80/559/228.php>).

Department of»Energy systems" has cooperation with two enterprises on EP»Power engineering" and EP» Heat power engineering»:

- LLP»Energy System LLP" - the manufacturer of electrical equipment for energy facilities of any complexity low and medium voltage (KTP, CSR, KRU, NKU);
- LLP»NPF Ergonomics" - energy audit, design, engineering, supply of equipment, installation, commissioning, service.

Students and undergraduates can directly study the work of automated points, geothermal cooling and heating systems of the world's leading manufacturers, underfloor heating, infrared heating, instrumentation, pumping equipment and electric boilers in practice.

Implementation of master's programs is carried out within the framework of the international scientific and educational project Synergy. The project involves leading technical universities of Russia (OR Peter the Great SPbSPU, MPEI (Moscow) Baltic state technical University (Voenmekh, St. Petersburg), Omsk state technical University (Omsk) and the University (faculty APT) with lectures on the Internet by the leading professors of the universities-participants of the project.

Implementing educational programs of specialized master degree for SPIID-2 made its integration with the international project»Synergy" (<https://pandia.ru/text/80/559/228.php>).

Internships to SPbPU for graduates and teachers are organized (<http://repository.kstu.kz/xmlui/bitstream/handle/123456789/1629/>)

The following 8 full-time teachers of the Department of APP and ES who are involved in the EP, have long-term experience of working at enterprises and research institutes on the profile of accredited EP.

1) Doctor of technical Sciences prof. Breydo I. V., work experience of 14 years in the Department of electric drive IGD. A. A. Skochinsky and KNUI; engineer, senior engineer, senior researcher, head laboratory; PhD thesis on specialty 05.09.03-»electrical equipment of mining industry" protected while working in IGD. A. A. Skochinsky, specialist in the field of automation of electric drive systems of mining and metallurgical complex. Scientific title senior researcher obtained in the same specialty;

2) Ph. D., associate Professor Kaverin V. V. work experience of 14 years in the Department of electric drive IGD. A. A. Skochinsky and KNUI; senior laboratory assistant; engineer, senior engineer, Junior researcher, specialist in the field of automation of electric drive systems of mining and metallurgical complex;

3) Senior lecturer Daich L. I. work experience of 10 years in the Department of electric drive IGD. A. A. Skochinsky and KNUI; specialist in the field of automation of electric drive systems of mining and metallurgical complex;

4) Senior lecturer Ivanov V.A. work experience of 12 years in the Department of electric IGD. A. A. Skochinsky and KNUI; specialist in the field of automation of electric drive systems of mining and metallurgical complex;

5) Senior teacher A.V. Sichkarenko work experience of 8 years in the Department of electric drive IGD. A. A. Skochinsky and KNUI; specialist in the field of automation of electric drive systems of mining and metallurgical complex;

6) associate Professor Avdeev L. A., work experience 48 years in the book AND Ugleservice.

7) Senior lecturer Kritsky A. B., 9 years of experience in innovative structures; specialist in the development of application software for automation of heat supply systems;

8) associate Professor Isaev V. L., experience of 14 years at the CHP and heat networks of Karaganda specialist in the field of heat supply systems.

The main feature of the certified EP is the orientation to obtain professional knowledge, skills and abilities that allow graduates to work professionally in the areas of relevant EP.

Analytical part

Based on the results of the analysis, the EEC members came to the following conclusion. Students during the interview confirmed the wish for active use of interactive teaching methods.

Feedback analysis from employers and managers of educational and industrial practices on accredited EP indicates that there is a pronounced practical orientation of the majors.

The Departments of APP and ES have a base that contribute to the formation and development of educational, scientific and practical activities of students aimed at expanding the scientific potential, in-depth study of the chosen discipline and the formation of skills of professional activity of students in their free time.

The presence of practitioners from production in the staff of the Department APP and ES is a great advantage, which is especially important in the preparation of engineering specialists.

Strengths/best practice for EP»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- involvement of teachers with large work experience in production enterprises on the profile of EP;

The recommendations of the EEC

- according to this standard there are none

The conclusions of the EEC according to the criteria:

Standards in the context of individual specialties of the educational program»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering" 1 is strong and 4 are satisfactory.



(VII) REVIEW OF STRENGTHS/ BEST PRACTICES FOR EACH STANDARD

According to the standard “Educational program Management”

- according to this standard it is not revealed

According to the standard “Information Management and reporting”

- according to this standard it is not revealed

According to the standard “Development and approval of educational programs”

For EP»5B071700- Heat power engineering”,»6M071700-Power Energy”,»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- The presence of functioning center of working professions, in the Department with the issuance of certificates.

According to the standard “Constant monitoring and periodic evaluation of educational programs”

- according to this standard it is not revealed

According to the standard “Student-Centered learning, teaching and assessment of progress”

- according to this standard it is not revealed

According to the standard “Students”

- according to this standard it is not revealed

Standard “Faculty”

- according to this standard it is not revealed

According to the standard “Educational resources and student support systems”

For EP»5B071700- Heat power engineering”,»6M071700-Power energy”,»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- carrying out systematic work on updating tutorials and textbooks, including obtaining copyright certificates;

- high quality and availability of Wi-Fi in the campuses and dormitories of the University were noted according to the results of the target groups interviewing and the results of the students survey.

According to the standard “Public Information»

For EP»5B071700- Heat power engineering”,»6M071700-Power Energy”,»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- implementing by specific actions at the level of EP within the framework of the KSTU Comprehensive development program approved annually, the state programs and strategic tasks set by the First President of Kazakhstan

According to the standard “Standards in the context of individual specialties»

For EP»5B071700- Heat power engineering",»6m071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- involvement of teachers with large experience in production enterprises on the profile of EP;



(VIII) REVIEW OF QUALITY IMPROVEMENT RECOMMENDATIONS

According to the standard "Educational program management»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- Develop plans for the development of EP, taking into account the needs of the state, employers, stakeholders and students, to monitor its implementation and mechanisms for regular review;
- Develop an existing risk management system in the context of each EP, systematize risk assessment of educational programs and develop a mechanism to reduce them, including factors such as the development and improvement of EP, risk management, monitoring, decision-making based on facts;
- To develop in each EP separate development Plans in accordance with the current KSTU development Strategy and ensure transparency;
- To determine the uniqueness and advantages of these EP and their development Plans in comparison with other EP implemented in the region and in the Republic.

According to the standard "Information management and reporting»

- according to this standard there are none

According to the standard "Development and approval of educational programs»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6m071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- To expand cooperation with key employers and backbone enterprises of the energy complex in the field of development and quality assurance;
- Include the discipline»descriptive geometry and engineering graphics" in working curriculum of EP or to integrate it with the subject»CAD in engineering" and»CAD in the energy sector»;
- Complete the approval procedure and conclude an agreement on double diploma education on EP»Power system".

According to the standard "Constant monitoring and periodic evaluation of educational programs»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6M071700-Power energy",»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- The supervising structural unit of the University is to develop a mechanism for conducting regular surveys (at least 2 times a year) in the context of EP and a mechanism for periodic analysis of the results of the survey with the development of a plan of corrective actions in the context of educational programs and ensuring control over their implementation.

According to the standard»student-Centered learning, teaching and assessment of progress»

- according to this standard there are no

According to the standard "Students»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6M071700-Power energy»:

- To intensify efforts to develop academic mobility of students.

The recommendations of the EEC for EP»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- To expand the students base of practices in regional power grid enterprises.

Standard "Faculty»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6M071700-Power energy»:

- Involvement of practitioners and scientists from enterprises and scientific organizations in the management of diploma and master's projects.

According to the standard "Educational resources and student support systems»

The recommendations of the EEC for EP»5B071700- Heat power engineering",»6M071700-Power energy»:

- accelerate the renovation of classroom equipment with the necessary training stands and virtual laboratory complexes in in the profile of EP " Heat power engineering

The recommendations of the WEC for EP»5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»:

- to expand the area of the APP Department for placement of constantly updated educational and laboratory equipment, due to the saturation of modern software and hardware of leading manufacturers.

- To increase the number of foreign internships for faculty members in order to increase motivation and improve the quality of training of EP specialists.

According to the standard "Public Information»

- according to this standard there are none

According to the standard "Standards in the context of individual specialties»

- according to this standard there are none

Annex 1. Rating table "SPECIALIZED PROFILE PARAMETERS" ("5B071700-Heat power engineering", »6M071700-Power energy", »5B071800-Power engineering, 6M071800-Power engineering, 6D071800 Power engineering»)

№	№	Evaluation criterion	Organization of education Position			
			Strong	Satisfactory	Involves improving	Unsatisfactory
Standard "Educational program Management"						
1	1.	The University must have a published quality assurance policy.		+		
2	2.	Quality policy should reflect the link between research, teaching and learning.		+		
3	3.	The University should demonstrate the development of a culture of quality assurance, including in the context of EP.		+		
4	4.	Commitment to quality assurance should apply to any activity performed by contractors and partners (outsourcing), including the implementation of joint/double degree education and academic mobility.		+		
5	5.	EP management provides transparency to the development plan of EP based on the analysis of its functioning, the actual positioning of the University and focus its activities to meet the needs of the state, employers, stakeholders and learners.			+	
6	6.	The EP guide shows the mechanisms of formation and regular revision of the development plan of EP and monitor its implementation, evaluate achievement of learning objectives, meet the needs of students, employers and society, decision-making aimed at continuous improvement of EP.			+	
7	7.	The management of the EP should involve representatives of stakeholder groups, including employers, students and faculty in the formation of the development plan of the EP.			+	
8	8.	The management of the EP should demonstrate the individuality and uniqueness of the development plan of the EP, its consistency with national development priorities and the development strategy of the organization of education.			+	
9	9.	The University should demonstrate a clear definition of those responsible for business processes within the framework of the EP, an unambiguous distribution of job responsibilities of staff, differentiation of functions of collegial bodies.		+		
10	10.	The management of the EP should provide evidence of transparency of the educational program management system.		+		
11	11.	The management of the EP should demonstrate the successful functioning of the internal quality assurance system of the EP, including its design, management and monitoring, their improvement, decision-making on the basis of facts.		+		
12	12.	EP management should manage risk.			+	
13	13	The management of the EP should ensure the participation of		+		

		representatives of stakeholders (employers, teachers, students) in the collegial bodies of management of the educational program, as well as their representativeness in decision-making on the management of the educational program.				
14	14.	The University should demonstrate innovation management within the framework of the EP, including the analysis and implementation of innovative proposals.		+		
15	15.	The EP management should demonstrate evidence of openness and accessibility to learners, faculty, employers and other stakeholders.		+		
16	16.	The management of the EP should be trained in educational management programs.		+		
17	17.	The management of the EP should strive to ensure that the progress made since the last external quality assurance procedure is taken into account in preparation for the next procedure.		+		
Total for standard			0	12	5	0
Standard» Information Management and reporting”						
18	1.	The University should ensure the functioning of the information collection, analysis and management system based on the use of modern information and communication technologies and software.		+		
19	2.	EP management should demonstrate the systematic use of processed, adequate information to improve the internal quality assurance system.		+		
20	3.	Within the EP there should be a system of regular reporting, reflecting all levels of the structure, including the evaluation of the effectiveness and efficiency of divisions and departments, scientific research		+		
21	4.	The University should establish the frequency, forms and methods of evaluation of the management of EP, the activities of collegial bodies and structural units, senior management, implementation of scientific projects.		+		
22	5.	The University must demonstrate the definition of order and protection of information, including the identification of responsible persons for the accuracy and timeliness of information analysis and data provision.		+		
23	6.	An important factor is the involvement of students, employees and staff in the processes of information collection and analysis, as well as decision-making based on them.		+		
24	7.	The management of the EP should demonstrate the existence of a mechanism for communication with students, employees and other stakeholders, including the existence of mechanisms for conflict resolution.		+		
25	8.	The University should measure the degree of satisfaction of the needs of the faculty, staff and students in the framework of the EP and demonstrate evidence of elimination of deficiencies.		+		
26	9.	The University should evaluate the effectiveness and efficiency of activities, including in the context of EP.		+		
		The information collected and analyzed by the University should take into account:		+		
27	10.	key performance indicator;		+		
28	11.	dynamics of the contingent of students in the context of forms and types;		+		
29	12.	academic performance, student achievement and expulsion;		+		
30	13.	satisfaction of students with the implementation of EP and quality of education at the University;		+		
31	14.	availability of educational resources and support systems for students;		+		
32	15.	employment and career development of graduates.		+		
33	16.	Students, employees and staff must document their consent to the processing of personal data.		+		

34	17.	The management of the EP should facilitate the provision of all necessary information in the relevant fields of science.		+		
Total for standard			0	17	0	0
Standard» development and approval of educational programs»						
35	1.	The University should define and document the procedures for the development of EP and their approval at the institutional level.		+		
36	2.	The management of the EP should ensure that the developed EP meets the established objectives, including the expected learning outcomes.		+		
37	3.	Manual EP must ensure that it has developed models of graduate EP describing the learning outcomes and personal qualities.		+		
38	4.	The management of the EP should demonstrate the conduct of external examinations of the EP.		+		
39	5.	Qualifications obtained upon completion of the EP should be clearly defined, explained and correspond to a certain level of the NSC.		+		
40	6.	EP management should determine the impact of disciplines and professional practices on the formation of learning outcomes.		+		
41	7.	An important factor is the ability to prepare students for professional certification.	+			
42	8.	The management of the EP should provide evidence of participation of students, faculty and other stakeholders in the development of the EP, ensuring their quality.		+		
43	9	The complexity of EP should be clearly defined in Kazakhstan credit and ECTS.		+		
44	10.	The management of the EP should provide the content of academic disciplines and learning outcomes to the level of education (bachelor's, master's, doctoral).		+		
45	11.	The structure of the EP should include various activities that correspond to the learning outcomes.		+		
46	12.	An important factor is the presence of joint ventures with foreign educational organizations.		+		
Total for standard			1	11	0	0
Standard» Continuous monitoring and periodic evaluation of educational programs»						
47	1.	The University should monitor and periodically evaluate the EP in order to ensure the achievement of the goal and meet the needs of students and society. The results of these processes are aimed at continuous improvement of EP		+		
		Monitoring and periodic evaluation of EP should consider:				
48	2.	the content of programs in the light of the latest achievements of science in a particular discipline to ensure the relevance of the taught discipline;		+		
49	3.	changes in the needs of society and the professional environment;		+		
50	4.	load, academic performance and graduation of students;		+		
51	5.	effectiveness of student assessment procedures;		+		
52	6.	expectations, needs and satisfaction of students on EP;			+	

53	7.	educational environment and support services and their compliance with the goals of the EP.		+		
54	8.	The University and the management of the OP must provide evidence of participation of students, employers and other stakeholders in the revision of the EP.		+		
55	9.	All stakeholders should be informed of any action planned or taken with respect to the EP. All changes made to the EP must be published.		+		
56	10.	The EP manual should provide a review of the content and structure of EP taking into account changes in labour market requirements of employers and social demands of society.		+		
Total for standard			0	9	1	0
Standard» student-Centered learning, teaching and performance assessment»						
57	1.	The management of the EP should ensure respect and attention to the different groups of students and their needs, providing them with flexible learning paths.		+		
58	2.	The management of the EP should ensure the use of different forms and methods of teaching and learning.		+		
59	3.	An important factor is the availability of their own research in the field of teaching methods of EP educational disciplines.		+		
60	4.	The management of the EP should demonstrate the existence of a feedback system on the use of different teaching methods and evaluation of learning outcomes.		+		
61	5.	The EP management should demonstrate support for student autonomy while providing guidance and assistance from the teacher.		+		
62	6.	The EP management should demonstrate the existence of a procedure to respond to complaints of students.		+		
63	7.	The University should ensure consistency, transparency and objectivity of the learning outcomes assessment mechanism for each EP, including the appeal.		+		
64	8.	The University must ensure that the procedures for assessing the learning outcomes of students EP planned learning outcomes and objectives of the program. The evaluation criteria and methods of the EP should be published in advance.		+		
65	9.	The University should determine the mechanisms for ensuring the development of each graduate of the EP learning outcomes and ensure the completeness of their formation.		+		
66	10.	Evaluators should be familiar with modern methods of assessing learning outcomes and regularly improve their skills in this area.		+		
Total for standard			0	10	0	0
Standard»Students»						
67	1.	The University should demonstrate the policy of forming a contingent of students from admission to graduation and ensure transparency of its procedures. Procedures governing the life cycle of students (from admission to completion) must be defined, approved, published.		+		
68	2.	EP leadership must demonstrate the special adaptation programs and support for newly arrived and international students.		+		
69	3.	The University must demonstrate its compliance with the Lisbon recognition Convention.		+		
70	4.	The University should cooperate with other educational organizations and national centres of the»European network of national information centres for academic recognition and mobility/National academic information centres for Recognition" ENIC/NARIC in order to ensure comparable recognition of qualifications.		+		
71	5.	The management of the EP should demonstrate the existence and application of a mechanism to recognize the results of academic mobility of students, as well as the results of additional, formal and		+		

		informal learning.				
72	6.	The University should provide an opportunity for external and internal mobility of students of EP, as well as assist them in obtaining external grants for training.		+		
73	7.	The management of the EP should take maximum efforts to provide students with places of practice, promote employment of graduates, and maintain contact with them.		+		
74	8.	The University must provide graduates with the documents confirming the received qualification, including the achieved results of training, as well as the context, content and status of the received education and the evidence of its completion.		+		
75	9.	An important factor is the monitoring of employment and professional activities of graduates of EP.		+		
76	10	The management of the EP should actively encourage students to self-education and development outside the main program (extracurricular activities).		+		
77	11.	An important factor is the presence of a valid Association / Association of graduates.		+		
78	12.	An important factor is the availability of a mechanism to support gifted students.		+		
Total for standard			0	12	0	0
Standard»Faculty»						
79	1.	The University should have an objective and transparent personnel policy, including recruitment, professional growth and development of personnel, ensuring the professional competence of the entire staff.		+		
80	2.	The institution must demonstrate compliance with faculty staff potential development strategy of the University and the specificity of EP.		+		
81	3.	The management of the EP should demonstrate a sense of responsibility for its employees and provide them with a favorable working environment.		+		
82	4.	The management of the EP should demonstrate the change in the role of the teacher in connection with the transition to student-centered learning.		+		
83	5.	The University should determine the contribution of the faculty to the implementation of the University development strategy, and other strategic documents.		+		
84	6.	The University should provide opportunities for career growth and professional development of faculty EP.		+		
85	7.	The management of the EP should involve practitioners from the relevant industries in teaching.	+			
86	8.	The management of the EP should provide targeted actions for the development of young teachers.	+			
87	9.	The University should demonstrate the motivation for the professional and personal development of teachers of EP, including the promotion of both the integration of research and education, and the use of innovative teaching methods.		+		
88	10.	An important factor is the active use of information and communication technologies in the educational process (for example, on-line training, e-portfolio, MOE, etc.) by faculty		+		
89	12.	An important factor is the development of academic mobility within the EP, attracting the best foreign and domestic teachers.		+		
90	13.	An important factor is the involvement of faculty in the life of society (the role of faculty in the education system, in the development of science, the region, creating a cultural environment, participation in exhibitions, creative competitions, charity programs, etc.).		+		

			Total for standard	2	10	0	0
Standard» Educational resources and student support systems»							
91	1.	The management of the EP should demonstrate the adequacy of logistical resources and infrastructure.		+			
92	2.	EP management should demonstrate that there are procedures to support different groups of learners, including information and counselling.		+			
		EP leadership must demonstrate the conformity of the information resources of the specifics of the EP including compliance:					
93	3.	technological support of students and teaching staff in accordance with educational programs (for example, online training, modeling, databases, data analysis programs);		+			
94	4.	library resources, including the Fund of educational, methodological and scientific literature on General education, basic and major disciplines on paper and electronic media, periodicals, access to scientific databases;	+				
95	5.	access to educational Internet resources;		+			
96	6.	examination of research results, graduation papers, dissertations for plagiarism;		+			
97	7.	functioning WI-FI in the territory of the education organization.	+				
98	8.	The University should strive to ensure that the training equipment and software used for the development of EP, were similar to those used in the relevant industries.		+			
99	9.	The University must ensure compliance with safety requirements in the learning process.		+			
100	10	The University should strive to take into account the needs of different groups of students in the context of EP (adults, working, foreign students, as well as students with disabilities).		+			
			Total for standard	2	8	0	0
Standard» public Information»							
		The information published by the University within the framework of EP should be accurate, objective, relevant and should include:					
101	1.	programs, specifying expected learning outcomes;		+			
102	2.	information about the possibility of qualification at the end of the EP;		+			
103	3.	information about teaching, training, evaluation procedures;		+			
104	4.	information about passing scores and educational opportunities provided to students;		+			
105	5.	information on employment opportunities for graduates.		+			
106	6.	EP management should use a variety of ways to disseminate information (including media, web resources, information networks, etc.) to inform the General public and stakeholders.		+			
107	7.	Public awareness should support and explain the country's national development programs and the higher and postgraduate education system.	+				
108	8.	The University must publish audited financial statements on its own web resource.		+			
109	9.	The University should demonstrate the reflection on the web resource of information characterizing the University as a whole and in the context of EP.		+			
110	10.	An important factor is the availability of adequate and objective information about the FM, in the context of personalities.		+			
111	11.	An important factor is to inform the public about cooperation and interaction with partners in the framework of the EP, including		+			

		scientific/consulting organizations, business partners, social partners and educational organizations.				
112	12.	The University should post information and links to external resources based on the results of external evaluation procedures.		+		
113	13.	An important factor is the participation of the University and implemented EP in a variety of external evaluation procedures.		+		
Total for standard			1	12	0	0
Standards in the context of individual specialties						
TECHNICAL SCIENCES AND TECHNOLOGIES						
		Educational programs in the areas of »Technical Sciences and technologies", such as » Heat power engineering», »Electrical Engineering", etc., must meet the following requirements:				
114	1.	In order to familiarize students with the professional environment and topical issues in the field of specialization, as well as to acquire skills on the basis of theoretical training, the education program should include disciplines and activities aimed at gaining practical experience and skills in the specialty in General and in the majors in particular, including:: - excursions to enterprises in the field of specialization (factories, workshops, research institutes, laboratories, educational and experimental farms, etc.), - conducting individual classes or entire disciplines in the enterprise of specialization, - conducting seminars to solve practical problems relevant to enterprises in the field of specialization, etc.		+		
115	2.	The teaching staff involved in the education program should include full-time teachers with long-term experience as a full-time employee at enterprises in the field of specialization of the education program.		+		
116	3.	The content of all disciplines of the EP should be based to some extent and include a clear relationship with the content of fundamental natural Sciences, such as mathematics, chemistry, physics.		+		
117	4.	The management of the EP should provide measures to strengthen practical training in the field of specialization.		+		
118	5.	The management of EP should provide training of students in the field of application of modern information technologies.		+		
Total for standard			1	4	0	0
IN TOTAL			7	105	6	0