Report
on the scientific activities of the department "Technologies and Communication Systems" for the 1st half of 2022

1. Scientific work in progress

1) Name of the topic: "Improvement of technology and communication systems."
*Reason for doing:*grant funding AP09562222 "New generation information and measurement system based on fiber optic sensors" for 2021.
Scientific adviser: Kaliaskarov N.B.
*Direct results:*scientific research was carried out in the field of fiber-optic sensors for monitoring the state of remote objects and systems for processing information received from them based on neural networks and artificial intelligence algorithms. A distributed system for monitoring metrological indicators, as well as dust indicators, has been developed.
Indirect results:
The amount of work done on this topic:
a) Number of submitted articles - 3 (No. 2.2 4,7,8)
b) Number of published articles - 1 (No. 2.3 3)
c) Number of utility model patents - 0
d) Number of prepared utility model applications – 0
e) Number of copyrights for SIS - 2 (No. 4.3 1.4)
f) Number of reports at conferences - 8 (No. 2.4 4,5,6,7,19,20,21,28)
g) The number of theses - 5

2) Name of the topic: "Electrical engineering and electronics"
*Reason for doing:*research plan of the department for the 2021-2022 academic year
Scientific adviser: Yakovlev E.A.
*Direct results:*carried out laboratory studies on computer simulation to build a communication channel with remote objects in the MIMO mode. Studies have been carried out on the implementation of traffic protection based on IPSEC VPN technology, computer network modeling has been carried out in the ENSP software environment.
Indirect results:
The amount of work done on this topic:
a) Number of submitted articles - 1 (No. 2.2 6)
b) Number of published articles - 1 (No. 2.3 2)
c) Number of utility model patents - 1 (No. 4.2 2)
d) Number of prepared utility model applications - 1 (No. 4.1 2)
e) Number of copyrights for SIS - 2 (No. 4.3 3)
f) Number of reports at conferences - 7 (No. 2.4 2,9,16,22,23,24,26)
g) Number of theses - 6

3) Title of the topic: "Improving the technical level of structural parts of electromechanical equipment in order to ensure their reliability and service life"
Basis for implementation: research plan of the department for the 2021-2022 academic year
Scientific adviser: Kaliaskarov N.B.
*Direct results:*analytical studies based on a systematic approach for the development of new designs and circuit solutions for the designs of brake devices of mine hoisting machines based on an experimental installation were carried out.
Indirect results:
a) Number of submitted articles - 2 (No. (No. 2.2 1.5)
b) Number of published articles - (No. 2.3 1)
c) Number of utility model patents - 1 (No. 4.2 3)
d) Number of prepared utility model applications – 0
e) Number of copyrights for SIS - 0
f) Number of reports at conferences - 2 (No. 4.2 12.17)
g) Number of theses - 3

4) Title of the topic: "The use of energy-saving and science-intensive technologies in energy supply systems"
Basis for implementation: research plan of the department for the 2021-2022 academic year
Scientific adviser: Esenzholov U.S.
*Direct results:*designed: a device for wireless charging of batteries AA (14500) and AAA (10440) and an induction heater for clothes.
Indirect results:
The amount of work done on this topic:

a) Number of submitted articles - 2 (No. 2.2 2.3)
b) Number of published articles - 1 (№2.3 4)
c) Number of utility model patents - 1 (No. 4.2 1)
d) Number of prepared utility model applications – 1 (No. 4.1 1)
e) Number of copyrights for SIS - 1 (No. 4.3 2)
f) Number of reports at conferences - 3 (No. 4.2 1,25,29)
g) Number of theses - 6

2. Publication of research results

2.1 Books (monographs)

1. "Intellectualdy kadagalar negizinde olsheu tekhnologiyaly, kuraldary men principteri". Authors: Yurchenko A.V.(TPU); Mekhtiev A.D. (KazATU); Yugay V.V.; Aldoshina O.V.; Alkina A.D.; Karaganda KarTU, 2022.

2.2 Submitted articles for publication in journals

No. p/p	FULL NAME. author(s)*	Article title	Country, journal name	Scientometric indicators of the journal
1.	Kaliaskarov N.B. Yugay V.V. Bulatbaev F.N. (ES) Bulatbaeva Yu.F. (APP)	Development of a structural and functional diagram of a distributed wi-fi system for monitoring bridge structures and building buildings	Kazakhstan, AUPET Bulletin	0.105 (base of KazBC) (included in the COXON list)
2.	Kaliaskarov N.B. Esenzholov U.S.	Implementation of traffic protection based on ipsec vpn technology and network modeling on ensp software environment	Kazakhstan, Bulletin of the National Engineering Academy of the Republic of Kazakhstan	0.061 (base of KazBC) (included in the COXON list)
3.	Sagyndyk A.B. (Toraigyrov University) Serikov T.G. (KazATU named after S. Seifullin) Kaliaskarov N.B.	Overview of Modern MAC Procedures for RFID Systems	Kazakhstan, Bulletin of PSU	0.012 (base of KazBC) (included in the COXON list)
4.	Kaliaskarov N.B.	Development of a distributed wireless wi-fi system for monitoring metrological indicators	Ukraine, Eastern-European Journal of Enterprise Technologies	S (40th percentile)
5.	Kaliaskarov N.B.	Development of a structural and functional diagram of a distributed wi-fi system for monitoring bridge structures and buildings	Ukraine, Eastern-European Journal of Enterprise Technologies	S (40th percentile)
6.	Gavrilova M.A. Khaibullin R.R. (PT) Kaliaskarov N.B.	MIMO mode as a solution for building a communication channel with remote objects.	Kazakhstan, Bulletin of the National Engineering Academy of the Republic of Kazakhstan	0.061 (base of KazBC) (included in the COXON list)
7.	Kaliaskarov N.B.	Development of a distributed wireless wi-fi system for monitoring metrological indicators	Kazakhstan, Bulletin of KarSU. Series Physics	SA (Q4)
8.	Kaliaskarov N.B.	Development of a distributed wireless wi-fi system for monitoring the technical condition of remote objects	Kazakhstan, Bulletin of KarSU. Series Physics	SA (Q4)

Total articles prepared, total - 8, of which: in rating journals - 8
D/Z – -
CIS - 2
RK - 6, including KarTU - 0
Students / with students – -/-

Undergraduates / with undergraduates – -/-
Doctoral students / with doctoral students - -/-

2.3 Published articles in journals

No.	FULL NAME. author(s)	Article name	Country name of the journal, year number	Scientometric indicators of the journal
1.	Yugay V.V. (APP), Mekhtiev A.D. (KazATU), Ozhigin S.G. (MDiG), Aimagambetova R.Zh. (ITB), Neshina E.G. (ES), Sarsikeev E.Zh. (KazATU)	Using optical fibers (of) to control the stress-strain state of steel structures subject to fatigue failure	Croatia, METALURGIJA 61 (2022) 2, 351-354	CA (Q2)
2.	Yakovlev E.A., Yugay V.V. (APP) Zinoviev L.A. (KarU named after Buketov) Kashlev A.R. (RET-17-3) Bezrukov V.O. (RET-17-3)	Study of radiative characteristics of a completed partial discharge	Journal of Physics: Conference Series, 2064 (2021)	S (18th percentile)
3.	Yugay V.V. (APP) Kaliaskarov N.B.	Investigation of explosion-proof fiber-optic pressure sensors using the method of controlling additional losses	Bulletin of the National Engineering Academy of the Republic of Kazakhstan No. 1 (83), 2022	0.142 (COXON)
4.	Manat S. (APP) Yugay V. V. (APP) Kaliaskarov N.	Analysis of power losses in multilevel pulse-width modulation inverters	Ukraine, Eastern-European Journal of Enterprise Technologies, No. 2 (5 (116)), 2022	S (40th percentile)

Total: published articles, total - four
of which: in rating journals - four
Kartu - -
RK - one
CIS - one
D/W - 2
Students / with students – -/one
Undergraduates / with undergraduates - no no

2.4 Published reports (abstracts) at conferences

No.	FULL NAME. author(s)	Article name	Country, status and name of the conference, date and venue
1.	Galimyanov I.R. (RET 19-2) Kaliaskarov N.B.	Wireless charger for AA(14500) and AAA(10440) batteries	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
2.	Galimyanov I.R. (RET 19-2) Kaliaskarov N.B.	Decoder and Morse encoder	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
3.	Omirkhan Didar (RET 18-1)	Tacacs + authentication	Kazakhstan, Republican student scientific

	Esenzholov U.S.	protocols	conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
4.	Surapova A. (RET 18-1) Esenzholov U.S.	Virtual machinear negizinde DNS serverinnin atkaratyn rolin anyktau zhane configurationlaudy zhasau	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
5.	Shomen T. Қ. (RET 18-1) Esenzholov U.S.	Virtual Machines	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
6.	Shaikenov E. D. (RET 18-1) Esenzholov U.S.	Corporate Active Directory function son configuration	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
7.	Bayarkhan A. (RET 18-1) Esenzholov U.S.	Jeli aralyk baylanysty kamtamasyz etu ushin IPsec VPN protocolsnow configuration son zhasau zhane eNSP bagdarlamalau ortasynda modeldeu	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
8.	Tazhiev R. (RET 18-1) Esenzholov U.S.	Virtual machines	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
9.	Altaev B. (RET 19-1) Amanbek B. (RET 19-1) Kaliaskarov N.B.	Weather stationlarda koldanylatyn meteorology	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
10.	Taubaev U (RET 19-1) Sagataev S. (RET 19-1) Kaliaskarov N.B.	CCTV beinekameralary	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
11.	Kabiden A. (RET 18-2) Gavrilova M.A.	Private and virtual networks based on IP/MPLS technology	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
12.	Kurilkin D.V. (RET 18-2) Gavrilova M.A.	The system for accounting and monitoring the health of equipment on the example of a city local network	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
13.	Zaitsev A.S. (RET 21st) Gavrilova M.A.	Construction of an infocommunication system for information transmission based on DWDM	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022,

			KarTU
14.	Iskakova M.E. (RET 21-2) Gavrilova M.A.	Study of the quality of information transmission in radio-relay communication systems	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
15.	Orazbekova A. (RET 19-1) Tolepbek A. (RET 19-1) Kaliaskarov N.B.	Sandyk beinecamera	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
16.	Amantayeva D. (RET 19-1) Shegova A. (RET 19-1) Kaliaskarov N.B.	weather station	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
17.	Bay N.A. (RET 18-2) Gavrilova M.A.	Development of complex protection of the automated system of the enterprise	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
18.	Shapagatov A.S. (RET 18-2) Gavrilova M.A.	Application of MPLS L2VPN technologies in the city of stepnyak	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
19.	Maykenov Zh. (RET 19-1) Meyramkulov N. (RET 19-1) Kaliaskarov N.B.	Temperature	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
20.	Amangali D. (RET 19-1) Kaliaskarov N.B.	Temperature Zhane ylgaldylyk sensorteri	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
21.	Dankevich V.V. (RET 18-2) Gavrilova M.A.	Configuring remote access based on the SSH protocol for devices of the 2nd and 3rd levels of the corporate network	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
22.	Azanbaev J. (RET 19-1) Aliaqpar A. (RET 19-1) Kaliaskarov N.B.	Weather station BRESSER	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
23.	Zhantleuov N. (RET 19-1) Ermekbaev M. (RET 19-1) Kaliaskarov N.B.	Hygrometerler	Kazakhstan, Republican student scientific conference “The contribution of youth science to the implementation of the Strategy “Kazakhstan-2050”, April 14-15, 2022, KarTU
24.	Abakhanov N.E. (RET 19-1) Kaliaskarov N.B.	"Arduino" weather stations	Kazakhstan, Republican student scientific conference “The contribution of youth science to the

			implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
25.	Alimov T.K. (RET 19-2) Aldoshina O.V.	wifi. Power transmission via WIFI	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
26.	Konekova Zh.M (RET 21-2) Gavrilova M.A.	Investigation of the transverse mode composition in optical waveguides	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
27.	Orlov P. (RET 18-2) Gavrilova M.A.	Research on the modes of operation of the transit network of operators to increase their throughput	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
28.	Buketaev.K. (RET 19-1) Elena.Қ. (RET 19-1) Kaliaskarov N.B.	Temperature Zhane ylgaldylyk sensorteri	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
29.	Bakirov E. V. (RET 21-2) Gavrilova M.A.	Optimization of base station placement algorithms for wireless access networks	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
30.	Toysan M. (RET 20-1) Zhumanbetova M.A.	Ақпараттық-communicationық technologylar	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
31.	Kisamiden I.S. (RET 20-1) Zhumanbetova M.A.	Jelilik akparattyk tekhnologiyalar	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
32.	Kirichenko A.A. (RET 21-2) Gavrilova M.A.	Research on Methods for Improving Transmission Efficiency in a Mobile Communication System	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU
33.	Samyratov A.N. (RET 20-1) Turgimbaev E.E. (RET 20-1) Zhumanbetova M.A.	Information and Communication Technologies	Kazakhstan, Republican student scientific conference "The contribution of youth science to the implementation of the Strategy "Kazakhstan-2050", April 14-15, 2022, KarTU

Total: reports published, total - 33
of which: on international -
Kartu - 33
RK - -
CIS - -
D/W - -
Students / with students – -/33

Undergraduates / with undergraduates - no no

3. Participation in exhibitions - no

4. Inventive activity

4.1 Applying for a patent

No. p / p	FULL NAME. author(s)*	Name of the invention	Applicant	Registration number
1.	Galimyanov I.R. (RET-19-2), Galimyanov F.G. (side) Galimyanova R.I. (side) Galimyanova A.R. (side) Ovtsynova I.N. (side)	Induction heater for clothes	Galimyanov I.R.	No. 2022/0016.2 from 12.01.2022
2.	Yakovlev E.A. Esenzholov U.S. Kaliaskarov N.B.	Wireless speaker device	Yakovlev E.A.	No. 2022/0403.2 from 12.05.2022

4.2 Obtaining patents

No. p / p	FULL NAME. author(s)*	Name of the invention	Patentee	Patent number
one	Galimyanov I.R. (RET 19-2) Belik G.A. Yugay V.V. (APP) Kaliaskarov N.B.	Wireless charger for AA(14500) and AAA(10440) batteries	Belik G.A.	utility model patent No. 7145 from 27.05.2022
2	Yakovlev E.A. Zinoviev L.A. (KarU named after Buketov) Kaliaskarov N.B.	Pulse plasma generator	Yakovlev E.A.	utility model patent No. 7160 from 03.06.2022
3	Yurchenko V.V. (ITB) Belik G.A. Kapzhapparova D.U. (ITB) Bezkorovainy P.G. (Mechanics)	Open-circuit voltage reduction device for welding transformers	Yurchenko V.V. (ITB)	utility model patent No. 7200 dated 22.03.2022

4.3 Obtaining certificates of state registration of rights to objects of copyright

No. p / p	FULL NAME. author(s)*	Name of copyright object	Copyright owner(s)	Certificate number, date
one	Kaliaskarov N.B. Esenzholov U.S.	The results of the study on the measurement of temperature and humidity based on Dual Wi-Fi System	Kaliaskarov N.B. Esenzholov U.S.	№24253 from 10.03.2022
2	Aldoshina O.V. Gavrilova M.A. Zhumanbetova M.A. Kaliaskarov N.B.	Estimation and prediction of solar radiation for energy-based management neural networks	Aldoshina O.V. Gavrilova M.A. Zhumanbetova M.A. Kaliaskarov N.B.	No. 24392 from 16.03.2022
3	Gavrilova M.A. Khaibullin R.R. Kaliaskarov N.B.	MIMO mode as a solution for building a communication channel with remote objects	Gavrilova M.A. Khaibullin R.R. Kaliaskarov N.B.	No. 24852 dated 07.04.2022
four	Belik G.A. Kaliaskarov N.B.	The results of a study on measuring temperature and humidity based on a dual-processor Wi-Fi system	Belik G.A. Kaliaskarov N.B.	No. 24518 from 03/24/2022

5. Academic degrees, titles, election to the Academy of Sciences and awards received by the faculty and staff of the department

And about. Head of the Department of TSS Kaliaskarov N.B. awarded a PhD degree in the specialty 6D071900 "Radio Engineering, Electronics and Telecommunications", by order of KOKSON No. 100 dated 03/18/2022.

6. Participation in competitions for funding R&D - no

7. Results of scientific work on cooperation agreements with organizations of Kazakhstan -*No*

8. Results of scientific work within the framework of the Corporate University

Together with JSC Kazakhtelecom: decided to jointly develop a question base for the competition in the direction of "Theory of Electrical Communication", and in the period June-August to hold an online competition between students of 3-4 courses of the specialty "Radio Engineering, Electronics and Telecommunications"; assign scientific topics for conducting research work for the new academic year, as well as compile a list of potential topics for coursework and diploma design for the future 2022-2023 academic year in problem areas of the enterprise; approve the list of elective disciplines of the educational program 6B06201 "Radio Engineering, Electronics and Telecommunications"; jointly develop a thematic plan for the discipline "Antenna-feeder devices"; send 10 second-year students, majoring in Radio Engineering, Electronics and Telecommunications, to undergo industrial practice at Kazakhtelecom JSC.

Conducted on-site practical classes, seminars on the basis of a branch of the TSS department, participated in conducting training sessions and preparing term papers and theses, supervised professional practices, raised the issue of employment of young specialists, and sent out invitations to the graduate fair.

9. Results of scientific work on projects and contracts on international cooperation - no

10. Scientific work with students and undergraduates

Organized 4 student circles:

1) Problems of improving transport and communication systems

Supervisor:head Department of TSS, PhD Kaliaskarov N.B.

Characteristics of NIRS:work is underway to develop laboratory and practical work on the improvement of transport and communication systems, the development of reference materials. Training is underway to conduct a literary analysis on the problems of transport and communication systems.

2) Introduction of high technologies into telecommunication systems, energy and energy saving

Supervisor:senior lecturer Esenzholov U.S.

Characteristics of NIRS:a prototype of a new generation with specified parameters based on high technology is being developed. Conducting a patent review in the field of telecommunications, energy and energy saving.

3) Improvement of technology and communication systems

Supervisor:senior lecturer of the department TSS Yakovlev E.A.

Characteristics of NIRS:published the results of research on the processes of ignition and combustion of a low-voltage partial discharge at the GDT-2021 conferences, the papers were published in the Journal of Physics: Conference Series, included in the Scopus database (18th percentile). Carrying out work on laboratory stands of the department in the direction of FOCL and local systems

4) Collective station UN7PWA

Supervisor:senior lecturer cafe TSS Yakovlev E.A.

Characteristics of NIRS: Work is underway to tune the radio channel to the frequencies of the collective station of the UN7PWA department and radio equipment. Materials are being prepared for scientific projects with students for the commercialization of projects.

11. Implementation of the Comprehensive University Development Program for 2022 according to the results of scientific activity for 2022

Comprehensive program indicator university development	**to r fo jr tu al st at t C o m**

for 2021				
Provide funding for contractual R&D for the amountnot less than million tenge		6 million tenge	0	0%
Provide co-financing of state budget business projects for commercialization,at least		**one**	**0**	**0%**
Ensure the participation of teaching staff in funded R&D	**PPP,** at least	7	7	100%
	doctoral students, at least	-	-	-
	undergraduates, at least	-	-	-
Ensure the participation of teaching staff in international research projects,in quantity, not less than		one	0	0%
Ensure the preparation of articles for publication in scientific journals included in the database	**Clarivate analytics,**at least	**2**	**2**	**100%**
	scopus,at least	**2**	**2**	**100%**
	COXON,at least	**3**	**four**	**133%**
Provide publication of monographs,at least		one	one	100%
Provide the number of citations of published articles in MB Clarivate Analytics,at least		**2**	**0**	**0%**
Ensure filing of patent applications,at least		**2**	**3**	**150%**
Ensure registration of rights to copyright objects(obtaining certificates), not less than		**four**	**four**	**100%**
Ensure participation in competitions for grants for R&D(apply), not less than		one	one	100 %
Ensure student participation in R&D,at least		35	41	117.14
Ensure the participation of young scientists (under 35 years old) in R&D, at least		one	2	200%
Ensure the invitation of persons from third-party organizations to undergo a scientific internship at KarTU,at least		-	-	-

Paragraph"To provide funding for contractual R&D in the amount of at least 6 million tenge" is not fulfilled due to the fact that the MTU QUARTZ LLP contract was not concluded due to the lack of budgetary funds from this enterprise to finance contractual work.

A search is underway for a new enterprise to fulfill this paragraph of the CP. Tentative terms of negotiations are planned for the end of August.

Item"Ensure co-financing of state budget business projects for commercialization, at least 1" - an enterprise is being searched for the implementation of this paragraph of the CP. Tentative terms of negotiations are planned for the beginning of September.

Paragraph"Ensure the participation of teaching staff in international research projects, in the amount of at least 1 teaching staff" of international research projects in which teaching staff of the department can take part was not announced. This point is scheduled to close in the second half of 2022.

12. Analysis of the work of the Study Groups

The working group of the TSS department on the implementation of the initiative topic "Development of intelligent fiber-optic sensors of a new generation with high metrological characteristics" for 2022 includes 18 people, of which: 8 people from among the teaching staff, 10 people from among students. During the 1st half of the year, the following work was carried out in this area:

- In the process of work, laboratory studies and literary, article and patent reviews were carried out, components were prepared to create a test sample. A sample of wireless charging of the control device of the system has been developed.

- An article was published under the authorship of Yugay V.V. (APP), Kaliaskarova N.B.: "Investigation of explosion-proof fiber-optic pressure sensors using the method of controlling additional losses", in the Bulletin of the National Engineering Academy of the Republic of Kazakhstan No. 1 (83).

- According to the results of the research, three articles were sent under the authorship of Kaliaskarova N.B:

1) Development of a distributed wireless wi-fi system for monitoring metrological indicators - Ukraine, Eastern-European Journal of Enterprise Technologies (S 40th percentile);

2) Development of a distributed wireless wi-fi system for monitoring metrological indicators - Kazakhstan, Bulletin of the KarSU. Physics Series (CA Q4);

3) Development of a distributed wireless wi-fi system for monitoring the technical condition of remote objects - Kazakhstan, Bulletin of the KarSU. Series Physics (CA Q4).

- Based on the results of scientific activity, participation was held at the Republican student scientific conference "The contribution of youth science to the implementation of the Strategy" Kazakhstan-2050 ", held at KarTU. 8 abstracts were published.

- 2 SIS were also received:

1) The results of a study on measuring temperature and humidity based on a dual-processor Wi-Fi system - Kaliaskarov N.B., Esenzholov U.S.; SIS No. 24253 of 03/10/2022;

2) The results of a study on measuring temperature and humidity based on a dual-processor Wi-Fi system - Belik G.A., Kaliaskarov N.B.; SIS No. 24518 dated 03/24/2022.

13. Other scientific information

And about. head of department TSS Kaliaskarov N.B. is a member of the commission in the competition of scientific projects for a grant from the rector of Karaganda Technical University for young scientists.

And about. head of department TSS Kaliaskarov N.B. was the official reviewer of Zh. Manbetova's dissertation for the PhD degree in the specialty 6D071900 "Radio Engineering, Electronics and Telecommunications", which was defended on May 26, 2022.

And about. Head of the Department of TSS_____ Kaliaskarov N.B.

Head of Research Laboratory _____ Gavrilova M.A.