Report on the work of the dissertation Council

Dissertation Council on metallurgy and materials science the Kazakh national research technical University named after K.I.Satpayev on specialties (direction of training):

6D071600 – « Instrumentation»

8D07106 – «Robotics and Mechatronics»

8D07105 – «Biomedical Engineering»

1. Data on the number of meetings held– 2 meetings.
2. Full name of members of the dissertation Council who attended less than half of the sessions: none.
3. List of doctoral student indicating the organization of training:

- Rakhmetova Perizat- Kazakh National Research Technical University named after K.I. Satpayev
- Asylbekova Laida- Kazakh National Research Technical University named after K.I. Satpayev

Brief analysis of dissertations considered by the Council during their porting year

№	Full name of the Doctoral student	Topics of work	Code and title of specialty
1	Rakhmetova Perizat	Development and Research of a Pipeline Defect Detection System Based on Machine Vision for Mobile Robots	6D071600 – Instrument Engineering
2	Asylbekova Laida	Development of Thermoelectric Cooling Devices Based on the Peltier Element for Local Medical Applications	8D07105 – Biomedical Engineering

4.1 Analysis of the dissertation topic of Rakhmetova Perizat Maratkyzy "Development and Research of a Pipeline Defect Detection System Based on Machine Vision for Mobile Robots", submitted for the degree of Doctor of Philosophy (PhD) in the educational program 6D071600 – Instrument Engineering.

The dissertation research addresses the development of automated systems for detecting internal pipeline defects aimed at improving the efficiency and reliability of inspection processes. The relevance of the topic is обусловлена the need to ensure safety and operational reliability of engineering and industrial infrastructure facilities, increase the efficiency of technical condition monitoring, and reduce the influence of the human factor. The use of machine vision technologies within mobile robotic platforms enables inspections in hazardous and hard-to-access environments.

The dissertation focuses on the development and research of a machine-vision-based pipeline defect detection system, taking into account the requirements of mobile robotic platforms and real operating conditions. The scientific and practical significance of the work lies in the development of a hardware–software solution that enables defect detection based on visual inspection data and the formation of diagnostic conclusions for further analysis and maintenance decision-making.

Connection of the dissertation topics with the directions of science development, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18

of the Law "On Science" and (or) state programs.

The topic of the dissertation corresponds to the scientific direction "Advanced production, digital and space technologies" of the National Scientific Council under the Government of the Republic of Kazakhstan.

Analysis of the level of implementation of the results of the dissertation in practice.

The level of approbation and implementation of the dissertation results is confirmed by the availability of the doctoral candidate's scientific publications. In particular, the research results were published in one article in a journal indexed in the Scopus database (Q3, 36th percentile), two articles in scientific journals recommended by the Committee for Quality Assurance in Science and Higher Education, as well as three publications in the proceedings of international scientific conferences. The published works fully reflect the main provisions submitted for defense and the results obtained during the dissertation research.

4.2 Analysis of the dissertation topic of Asylbekova Laida Ramazankyzy "Development of Thermoelectric Cooling Devices Based on the Peltier Element for Local Medical Applications", submitted for the degree of Doctor of Philosophy (PhD) in the educational program 8D07105 – Biomedical Engineering.

The dissertation addresses the development of portable and controllable devices for local thermal effects in medicine. The relevance of the topic is determined by the growing demand in medical practice for technologies requiring precise temperature control, as well as for compact, reliable, and energy-efficient devices. Thermoelectric cooling based on the Peltier element offers significant engineering advantages for medical applications.

The research includes substantiation of design solutions, operating modes, and parameters of thermoelectric modules, as well as thermal-physical modeling and experimental studies. The practical significance of the obtained results lies in the possibility of their application in the design, improvement, and further clinical approbation of local thermotherapy and thermocorrection medical devices.

Connection of the dissertation topics with the directions of science development, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.

The topic of the dissertation corresponds to the scientific direction "Advanced production, digital and space technologies" of the National Scientific Council under the Government of the Republic of Kazakhstan.

Analysis of the level of implementation of the results of the dissertation in practice.

The level of approbation and implementation is confirmed by the set of presented scientific publications and intellectual property documents. The research results were published in two articles in foreign journals indexed in the Scopus database (Q3 – 50th percentile, Q4 – 34th percentile) and two articles in scientific journals recommended by the Committee for Quality Assurance in Science and Higher Education. In addition, two patents of the Republic of Kazakhstan for utility models were obtained based on the dissertation research results. The presence of patents and publications confirms both the scientific validity and applied orientation of the obtained results..

5 Analys is of the work of official reviewers (with examples of the most low-quality reviews)

№	Full name of the doctoral student	Reviewers	
		Full name of the first reviewer (position, academic degree, title, number of publications in the Specialty for the last 3 years)	**Full name of the second reviewer** (position, academic degree, title, number of publications in the

			specialty for the last3years)
1	Rakhmetova Perizat	Asylbek Dzhomartov, Doctor of Technical Sciences, Professor, Institute of Mechanics and Engineering named after Academician U.A. Dzholdasbekov. Over the past five years, the reviewer has more than ten publications related to the dissertation topic	Madina Mansurova, Candidate of Physical and Mathematical Sciences, Professor, Al-Farabi Kazakh National University. Over the past five years, the reviewer has more than nine publications related to the dissertation topic.
2	Asylbekova Laida	Aibek Nietkaliyev, PhD, Associate Professor, Nazarbayev University. Over the past five years, the reviewer has more than five publications related to the dissertation topic.	Beibit Abdikenov, PhD, Associate Professor, Astana IT University. Over the past five years, the reviewer has more than five publications related to the dissertation topic.

Data on the considered dissertations for the degree of doctor of philosophy PhD, doctor of profile

Dissertation Council	**Code and title of specialty**		
	6D071600 – «Instrumentation»	**8D07106 – «Robotics and Mechatronics»**	**8D07105 – «Biomedical Engineering»**
Dissertationsacceptedfor defense	1	-	1
Includingdoctoralstudents fromother universities	-	-	-
Dissertationswithdrawnfromconsideration	–	–	–
Including doctoralstudents fromother universities	–	–	–
Dissertations that received negative reviews fromreviewers	–	–	–
Including doctoralstudents fromother universities	–	–	–
Dissertationswithanegativedecisionontheresultsofthe defense	–	–	–
Including doctoralstudents fromother universities	–	–	–
Dissertations aimed at completion	–	–	–

Including doctoralstudents fromother universities	–	–	–
Dissertations aimed at repeated defense	–	–	–
Including doctoralstudents fromother universities	–	–	–

Chairman of the dissertation Council **K. Ozhikenov**

Scientific Secretary of the dissertation Council **Zh. Alimbayeva**