DOI 10.54596/2309-6977-2022-2-152-156
УДК 641.35
МРНТИ 05.05.04

М. ҚОЗЫБАЕВ АТЫНДАҒЫ СҚУ «КӨЛІК ЖӘНЕ МАШИНА ЖАСАУ» КАФЕДРАСЫ БАЗАСЫНДА «БҰЗБАЙТЫН БАҚЫЛАУ ЖӘНЕ МАТЕРИАЛДАРДЫҢ ФИЗИКА-МЕХАНИКАЛЫҚ ҚАСИЕТТЕРІН БАҒАЛАУ» СЫНАҚ ЗЕРТХАНАСЫН АККРЕДИТТЕУ МӘСЕЛЕЛЕРІ МЕН ПЕРСПЕКТИВАЛАРЫ

Жумекенова З.Ж., Кельдегулова А.Т., Абильмажинова А.С.
(e-mail: asel.seitova.84@mail.ru, zhumekenova82@mail.ru, asabilmazhinova@mail.ru)
М. Қозыбаев атындағы Солтүстік Қазақстан университеті, Петропавл, Қазақстан

Аңдатпа

Мақалада М.Қозыбаев атындағы СҚУ «Көлік және машина жасау» кафедрасы базасында сынақ зертханасын аккредиттеу рәсімінің негізгі кезеңдері көрсетілген. Сынақ зертханасын аккредиттеу рәсіміне дайындау нормативтік құжаттарға сәйкес, сынақ зертханасының белгіленген аккредиттеу критерийлеріне сәйкестігіне қол жеткізуге бағытталған бірқатар міндетті жұмыстарды орындауды білдіреді. Сынақ зертханасын (СЗ) аккредиттеу жүйесін дамыту мен жетілдірудің перспективалық әдістері негізделген. Сынақ зертханаларын аккредиттеу үшін құжаттарды дайындау кезінде мәселені зерттеудің тәсілдері мен ғылыми әдістерін таңдау жасалды. Сынақ зертханаларын аккредиттеу тәртібі мен ережелеріне терең талдау жасалды.

Түйін сөздер: аккредиттеу, сынақ зертханасы, бұзбайтын бақылау, өлшемдер, сараптама, бақылау.

ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ АККРЕДИТАЦИИ ИСПЫТАТЕЛЬНОЙ ЛАБОРАТОРИИ «НЕРАЗРУШАЮЩИЙ КОНТРОЛЬ И ОЦЕНКА ФИЗИКО-МЕХАНИЧЕСКИХСВОЙСТВ МАТЕРИАЛОВ» НА БАЗЕ КАФЕДРЫ «ТРАНСПОРТ И МАШИНОСТРОЕНИЕ» СКУ ИМ. М. КОЗЫБАЕВА

Жумекенова З.Ж., Кельдегулова А.Т., Абильмажинова А.С.
(e-mail: asel.seitova.84@mail.ru, zhumekenova82@mail.ru, asabilmazhinova@mail.ru)
Северо-Казахстанский университет им. М. Козыбаева, Петропавловск, Казахстан

Аннотация

В статье выделены основные этапы процедуры проведения аккредитации испытательной лаборатории на базе кафедры «Транспорт и машиностроение» СКУ им. М.Козыбаева. Подготовка испытательной лаборатории к проведению процедуры аккредитации, подразумевает выполнение ряда обязательных работ, направленных на достижение соответствия испытательной лаборатории установленным критериям аккредитации в соответствии с нормативными документами. Обоснованы перспективные методы развития и совершенствования системы аккредитации испытательной лаборатории (ИЛ). Осуществлен выбор подходов и научных методов исследования проблемы в подготовке документов для аккредитации ИЛ. Проведен глубокий анализ процедуры и правил аккредитации испытательных лабораторий.

Ключевые слова: аккредитация, испытательная лаборатория, неразрушающий контроль, измерения, экспертиза, контроль.

PROBLEMS AND PROSPECTS OF ACCREDITATION OF THE TESTING LABORATORY "NON-DESTRUCTIVE TESTING PHYSICAL AND MECHANICAL PROPERTIES OF MATERIALS" ON THE BASIS OF THE DEPARTMENT "TRANSPORT AND MECHANICAL ENGINEERING" SKU NAMED AFTER M. KOZYBAYEV

Zhumekenova Z.Zh., Keldegulova A.T., Abilmazhinova A.S.
(e-mail: asel.seitova.84@mail.ru, zhumekenova82@mail.ru, asabilmazhinova@mail.ru)
M. Kozybayev North Kazakhstan university, Petropavlovsk, Kazakhstan,

Annotation

The article highlights the main stages of the procedure for accreditation of a testing laboratory on the basis of the Department of Transport and Engineering of the M. Kozybaev NKU. Preparation of the testing laboratory for the accreditation procedure implies the performance of a number of mandatory works aimed at achieving the compliance of the testing laboratory with the established accreditation criteria in accordance with regulatory documents. Prospective methods of development and improvement of the system of accreditation of the testing laboratory (TL) are substantiated. The choice of approaches and scientific methods for studying the problem in the preparation of documents for accreditation of testing laboratories was made. An in-depth analysis of the procedure and rules for accreditation of testing laboratories was carried out.

Keywords: accreditation, testing laboratory, non-destructive testing, measurements, expertise, control.

Introduction

Accreditation of the laboratory is one of the important mechanisms to ensure the confidence of consumers in the quality and competence of work that the laboratory can perform. Accreditation means the official recognition of the laboratory's ability to meet customer requirements in the field of testing, measurement or research, as well as its technical competence in performing certain types of tests and measurements [1].

The main aim of the laboratory accreditation is to ensure the uniformity of measurements and mutual recognition of the results of measurements, testing and research. If the laboratory has accreditation in a certain area of activity, then this means that the results of its work are accurate and reliable. The most attractive accreditation body for the test laboratory of the Department of Transport and Mechanical Engineering is the National Accreditation Body (NAB). It should be noted that thanks to the membership of the National Accreditation Body (NAB) in international accreditation organizations, accreditation entities, having signed an agreement with NAB, are entitled to use the ILAC MRA Laboratory Combined Sign on test reports [2-3].

Research methods

Today, the right to use the ILAC MRA Laboratory Combined Sign is used not only by the laboratories of the Republic of Kazakhstan, but also by foreign applicants accredited in the Republic of Kazakhstan, which indicates the status of the accreditation system of the Republic. NAB has accredited for ISO/IEC compliance 17025 3 test laboratories of Tajikistan, 1 laboratory of the Russian Federation and 1 calibration laboratory of Georgia. Another 6 applications from laboratories of the Russian Federation are in the process of work, negotiations are underway with applicants from Uzbekistan.

Today, the Department of Transport and Mechanical Engineering of NKU named after M. Kozybayev has high intellectual potential, technical and research capabilities. The activity of the department in the research direction has a wide geography (Russia, Bulgaria, Belorussia, Poland, etc.).

Nowadays, the department trains bachelors, undergraduates and doctoral students PhD in educational programs in demand on the labor market 5V071300 “Transport, transport equipment and technology”, 5V071200 “Engineering”, 5V072900 “Construction”, 6M071200 “Engineering”, 5V073200 “Standardization and certification (for industries)”, 6M073200 “Standardization and certification” and 6D071200 “Engineering”.

Throughout the existence of the department, the priority areas of activity were: high quality theoretical training; taking into account the needs of the region; practical orientation of training; cooperation with organizations and universities of near and far abroad, research work of teachers and students.

Research results

The department has real, real-virtual and virtual educational laboratories equipped with unique equipment, which allows you to conduct the educational process at a high quality level. The analysis of the material and technical support of the department showed that the department has the conditions for passing the accreditation procedure of the test laboratory “Non-destructive testing physical and mechanical properties of materials”.

Based on the results of the analysis of the procedure for accreditation of test laboratories, including non-destructive testing laboratories, several main stages were identified (Figure 1).

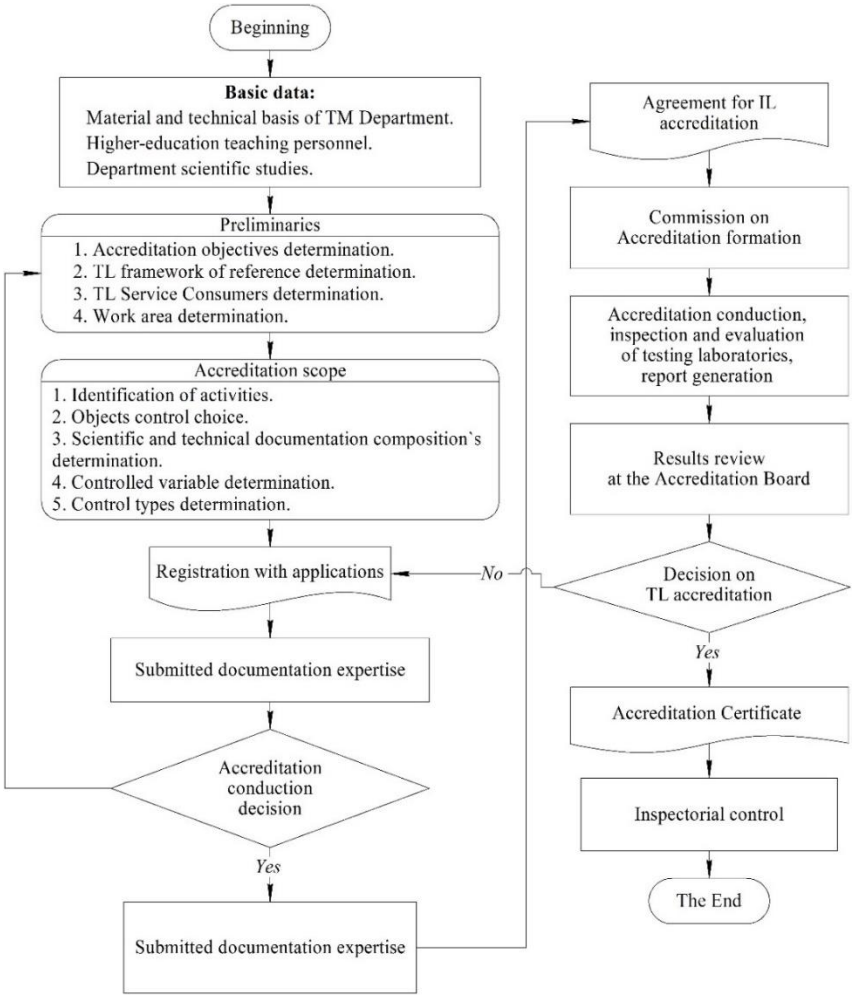

Figure 1 - Accreditation algorithm block scheme

Thus, preliminary activities should be undertaken to identify the objectives, consumers, scope and region of the testing laboratory (Table 1).

Table 1 - Preliminaries

Item No.	Preliminaries	Department "Transport and Mechanical Engineering"
1.	Accreditation objectives determination	1. Conducting scientific research on the basis of the department with the provision of reliable results. 2. Provision of consulting services. 3. Provision of nondestructive testing services to individuals and legal entities of the region and the Republic.
2.	TL framework of reference determination.	1.Non-destructive testing of industrial products produced in the region and the Republic.
3.	TL Service Consumers determination.	1. Region Industrial enterprises. 2. Universities engaged in research in related fields. 3. Individuals and legal entities producing heavy machinery.
4.	Service Consumer Work area determination.	1. North Kazakhstan region 2. Omsk, Novosibirsk, Yekaterinburg

Further, according to the block scheme, it is necessary to determine the accreditation area of the test laboratory on the basis of the department "Transport and Mechanical Engineering".

Discussion

The area of accreditation of the NDT laboratory is the list of works that allows it to perform the received document. This activity, or verification methods, is determined by the parameters defined by the regulatory documentation for the objects under study - materials, goods or products of enterprises.

The area of accreditation of the NDT laboratory is established according to classifiers and directories. For the Republic of Kazakhstan, such documents are GCEA, for work in the European Union - statistical classification of types of EA EEC. You can install objects on which monitoring is required by lists in specialized directories. Their parameters are determined according to the relevant regulatory and technical documents.

Thus, taking into account the products produced in the region, the area of accreditation of the NDT laboratory of the Department of Transport and Mechanical Engineering will be:

1. Oil and natural gas industry equipment:
1.1 Well-sinking equipment.
1.2 Well operation equipment.
1.3 Well development and work equipment.
2. Metallurgy industry equipment:
2.1 Technical equipment, buildings and structures steel construction.
2.2 Technologic gases gas pipe lines.
2.3 Pouring cars gudgeons, hot-metal ladle car gudgeons, bucket steel, casting ladles metal.
3. Rail transport facilities:
3.1 Vehicles (tanks, containers), packagings, packages intended for the transport of dangerous substances (other than liquefied toxic gases).
4. Buildings and structures (construction objects):
4.1 Metal structures (including: steel structures of bridges).
4.2 Concrete and concrete-steel constructions.

4.3 Stone and Armstone Structures.

4.4 Electrical Power Equipment.

At the same time, the following test methods are supposed to be used in the NDT laboratory: visual, ultrasonic, metal magnetic memory method, eddy current method, etc [4].

Accreditation of the testing laboratory based on the laboratory department provides a number of advantages. These benefits relate to laboratory marketing positions, internal organization of work, interactions with customers and consumers of laboratory services.

Conclusion

The main advantages of laboratory accreditation are:

- guarantees for customers and consumers to provide a quality service in the area where the laboratory is accredited;
- continuous improvement of activities through regular inspections by the accreditation body;
- market share expansion through recognition of laboratory performance by market participants;
- reducing the time required to prove laboratory competence;
- enhancement of staff skills and competencies through regular inspections by the accreditation body.

Based on the analysis of the capacity of the department and the production needs of the North Kazakhstan region, the accreditation procedure of the research laboratory on the basis of the department “Transport and Mechanical Engineering” on non-destructive testing methods (assessment of the quality of welded structures, assessment of the physical and mechanical properties of materials after repair and restoration) is expedient and timely.

References:

1. Law of the Republic of Kazakhstan № 61-IV from 5th of July, 2008 “On accreditation in conformity assessment”.
2. ISO/IEC 17025 – “General requirements for the competence of testing and calibration laboratories”.
3. ST RK ISO 9712-2014 NDT. NDT personnel qualification and certification.
4. PCI-13-2016 Technical diagnostics and non-destructive testing. Qualification requirements for personnel certification.