CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT

STUDY FIELD

ELECTRICAL ENGINEERING

at Kaunas Technical College

Expert panel:

1. **Prof. Dr. Toomas Rang (panel chairperson)** *academic,*
2. **Prof. Dr. Marko Čepin,** *academic,*
3. **Dr. Isabelle Avenas-Payan,** *international expert, representative of social partners,*
4. **Dr. Dainius Balbonas,** *academic,*
5. **Dr. Rolandas Urbonas,** *representative of social partners'*
6. **Mr. Ruben Janssens,** *students' representative.*

Evaluation coordinator – *Ms. Natalija Bogdanova*

Report language – English

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Study Field Data*

Title of the study programme	***Electrical Energy***
State code	6531EX005
Type of studies	College studies
Cycle of studies	First
Mode of study and duration (in years)	Full-time, 3, Part-time, 4
Credit volume	180
Qualification degree and (or) professional qualification	Professional Bachelor of Engineering Sciences
Language of instruction	Lithuanian
Minimum education required	Secondary
Registration date of the study programme	2011-03-18

** if there are **joint** / **two-fields** / **interdisciplinary** study programmes in the study field, please designate it in the foot-note*

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I. INTRODUCTION

1.1. BACKGROUND OF THE EVALUATION PROCESS

The evaluation of study fields is based on the Methodology of External Evaluation of Study Fields approved by the Director of Centre for Quality Assessment in Higher Education (hereafter – SKVC) 31 December 2019 Order No. V-149.

The evaluation is intended to help higher education institutions to constantly improve their study process and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI); 2) site visit of the expert panel to the higher education institution; 3) production of the external evaluation report by the expert panel and its publication; 4) follow-up activities.*

On the basis of the external evaluation report of the study field SKVC takes a decision to accredit study field either for 7 years or for 3 years. If the field evaluation is negative such study field is not accredited.

The study field and cycle are **accredited for 7 years** if all evaluation areas are evaluated as "exceptional" (5 points), "very good" (4 points) or "good" (3 points).

The study field and cycle are **accredited for 3 years** if one of the evaluation areas was evaluated as "satisfactory" (2 points).

The study field and cycle are **not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point)

1.2. EXPERT PANEL

The expert panel was completed according to the Experts Selection Procedure (hereinafter referred to as the Procedure) approved by the Director of Centre for Quality Assessment in Higher Education 31 December 2019 Order No. V-149. The site-visit to the HEI was conducted on-line by the panel on *24th November 2020.*

Prof. Dr. Toomas Rang (panel chairperson) *professor of Tallinn University of Technology, Institute of Informatics, Estonia;*

Prof. Dr. Marko Čepin, *professor at University of Ljubljana, Faculty of Electrical Engineering, Slovenia;*

Dr. Isabelle Avenas-Payan, *member of the French Quality Assurance Commission for Engineering Study Programmes (CTI),France;*

Dr. Dainius Balbonas, *lecturer of Šiauliai University, Head Engineering Study Programs Committee, Lithuania;*

Dr. Rolandas Urbonas, *Lithuanian Energy institute, Deputy Director, Lithuania;*

Mr. Ruben Janssens, *student of Ghent University, study programme in Computer Science Engineering, Belgium*

1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI after the site-visit:

No.	Name of the document
1.	KTC explanation on the discrepancy between FT and PT studies

1.4. BACKGROUND OF STUDY FIELD/STUDY FIELD PLACE AND SIGNIFICANCE IN HEI

Kaunas Technical College (KTC) is a state higher education institution that was created in 1920. Its vision is "to be a higher educational institution, providing public service, training high quality engineering specialists, meeting regional, local and global market requirements". Its mission is "to develop engineering studies, … propagate scientific knowledge, … and participate in the country and regional development and competitiveness of the economy".

The bodies of management ok KTC are:

- A Director, a Deputy Director for Studies and Science, a Deputy Director for Infrastructure
- A Board also called College Council; its President is the Rector of Vytautas Magnus University; it is composed of 3 members of the academic staff, 1 college staff, 1 student and 3 representatives of social partners
- An Academic Council: it is composed of 20 members, among which the Director and the Director for Studies and Science, as well as 3 students; the others are professors, assistants, or lecturers.

In the year 2019, the global budget of the College is almost 3.3 million Euros, and there are 1361 students. According to the Edurank organisation, in 2020, KTC is ranked 8 in Kaunas (among 11), 23 in Lithuania, and 9645 in the World among 16954 higher education institutions.

The College study area is technological science specialising in the field of engineering. It runs 6 study fields (Electric Engineering, Electronic Engineering, Civil Engineering, Aeronautical Engineering, Mechanical Engineering and Motor Transport Engineering). A total number of 8 study programmes is implemented among which Electric Energy.

The study programme "Electric Energy" prepares the Professional Bachelor's degree with the choice of full-time or part-time form of studies. During the last external evaluation, in 2014, 13 first cycle studies were evaluated. KTC ranked in the first place with a total mark of 21 for 6 evaluation areas (*Data source: Summary of external study programme evaluation results carried out by SKVC during the years 2010-2018*). The total number of students in the programme in 2019 is 88; that corresponds to a proportion of students in the College of less than 6,5 %.

II. GENERAL ASSESSMENT

First cycle Electrical Engineering study field at Kaunas Technical College is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas

No.	Evaluation Area	Evaluation of an area in points*
1.	Study aims, outcomes and content	4
2.	Links between science (art) and study activities	3
3.	Student admission and support	3
4.	Studying, student performance and graduate employment	3
5.	Teaching staff	3
6.	Learning facilities and resources	3
7.	Study quality management and publicity	4
	Total:	**23**

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;
2 (satisfactory) - meets the established minimum requirements, needs improvement;
3 (good) - the field develops systematically, has distinctive features;
4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;
5 (exceptional) - the field is exceptionally good in the national and international context/environment.

III. STUDY FIELD ANALYSIS

3.1. STUDY AIMS, OUTCOMES AND CONTENT

Study aims, outcomes and content shall be assessed in accordance with the following indicators:

3.1.1. *Evaluation of the conformity of the aims and outcomes of the field and cycle study programmes to the needs of the society and/or the labour market (not applicable to HEIs operating in exile conditions)*

(1) Factual situation

As stated on the KTC website, the aims of the study program are to train electrical engineers to acquire the knowledge and skills necessary for any electrical engineering activity as well as to develop their interest in the knowledge of engineering sciences and in maintaining their professional skills by lifelong learning.

Aims and outcomes of the Electrical Energy programme is the result of a complete skills approach that KTC has been developing for several years.

KTC is aware of the needs of the society by examining the indices that are provided by the Lithuanian Confederation of Industrialists (www.lpk.lt – LPK for Lietuvos pramonininku konfederacija). An average of 5% annual growth of the Lithuanian industry is expected from 2017 to 2025. With regard to national energy, the maximal power demand should increase by 2.4% every year until 2030. Electrical energy is important for all branches of industry all around the world. There are needs for developing new power systems, for constructing new plants and for electrical engineers.

As the College Council includes representatives of the socio-economic world, KTC has direct information about employer recommendations as well as trends in the labour market and education. Then the Deputy Director for studies and Science develops the academic strategy in accordance with the recommendations for all the study fields.

Furthermore, the Electrical Energy study field maintains a close collaboration with two specialised associations that represent 71 enterprises of Lithuania: LEEA (Lithuanian Electricity Association - Lietuvos elektros energetikos asociacija), NETA (National Electricity Technology Business Association - Nacionalinė elektros technikos verslo asociacija).

Lithuanian electricity enterprises have mainly three types of activity: (i) energy equipment design and installation enterprises; (ii) enterprises generating electricity from non-renewable or renewable energy sources; (iii) enterprises maintaining and operating transmission and distribution electric grids. This observation led KTC to implement three specialisations that student can select in their third and fourth year of studies: Electricity Networks and Systems, Internal Networks of Companies, Transport Electrical Systems.

(2) Expert judgement/indicator analysis

By being close to electrical companies, KTC can thus react quickly to the technological developments in industry with such a programme structure and adapt its study programme. The implementation of specialisations, starting in the third year, is especially clever; it helps graduates to find a job easily and quickly in the field of electrical engineering.

By training specialists in electrical energy, KTC is fully supportive of electrical industry in the Baltic countries. The number of graduates is still rather low.

3.1.2. *Evaluation of the conformity of the field and cycle study programme aims and outcomes with the mission, objectives of activities and strategy of the HEI*

(1) Factual situation

KTC objectives is (a) to be recognised as an elite college of higher education, (b) to contribute to the development of industry and regions of Lithuania and (c) to ensure lifelong learning regarding professional and social skills.

The programme structure is designed after the list of outcomes and expected outcomes for the field of electrical energy:

A- Knowledge and skills: the basics of science and the fundamentals of electrical engineering
B- Skills of engineering analysis: the ability to apply knowledge for solving tasks
C- Knowledge and skills for the implementation of design work
D- Skills of applied research
E- Practical skills and abilities for the solution of engineering problems
F- Personal and social skills

Acquisitions are progressive starting with technical and scientific knowledge, then implementation of a methodology, and finally complete autonomy for solving any engineering problem in the field of electrical energy.

(2) Expert judgement/indicator analysis

As seen in the previous chapter, KTC is well connected to the industrial environment of Lithuania and Baltic countries; it fully contributes to its development by training specialists in the domain.

KTC rank within Lithuanian colleges of higher education is given in the introduction part of this document. It is good but not exceptional. The low number of graduates is also a difficulty.

Lifelong learning is ensured by delivering a strong knowledge of the basics and the fundamentals, and by the part-time program. It is an important point that is not so often taken into consideration.

3.1.3. *Evaluation of the compliance of the field and cycle study programme with legal requirements*

(1) Factual situation

The study programme is compliant with the following legal requirements:

- On the approval of the General Requirements for Postgraduate and Unified Study Programmes, No V-1102 of 24 November 2014 Vilnius
- The Law on Higher Education and Research of the Republic of Lithuania, 30 April 2009 No XI-242 Vilnius
- The Regulations of the harmonisation of the study programmes of KTK and the European Credit Transfer and Accumulation System (ECTS), which was approved by resolution No. V1-75 of January 26, 2011 of the academic Council of KTK

The Electrical Energy programme is available under a full-time mode for a duration of 6 semesters, and under a part-time mode for a duration of 8 semesters. Part-time students have two sessions of study per semester; each session lasts for two weeks.

For both modes, the programme is composed of:

A- General subjects (foreign languages, Law, Philosophy, Sociology, Busines ethics, Professional communication) for a total of 400 hours and 15 credits
B- Study field subjects for a total of 2480 hours and 93 credits; they include:
    a. The basics of science (Physics, Mathematics, Information technology, Mechanics)
    b. The fundamentals of electrical engineering (Electrical Materials and Electronic components, Engineering graphics, Electrotechnics, Electric measurements, Automation, Energy basics)
    c. Advances subjects for electrical systems (Power stations; Electric machines, drives and transformers; Sensors, controllers, and actuators; Environmental and human safety; Distribution, transmission and grids; Diagnostics of electrical equipment; Project management; Business economics and management)
C- Study field practices for a total of 880 hours and 33 credits
D- Subjects for deeper specialisation field for a total of 560 hours and 21 credits
E- Final thesis for a total of 240 hours and 9 credits
F- Optional subjects for a total of 240 hours and 9 credits

The main difference between the two study modes is the time granted for independent work, which is more important in part-time mode, 3428 hours versus 2400 hours in full-time mode. Another difference is the volume of theory classes, 450 hours for part-time mode versus 760 hours for full-time mode, and the volume of practical training, 602 hours for part-time mode versus 1164 hours for full-time mode.

Credit allocation is proportional to the time spent for contact hours and for expected individual work.

(2) Expert judgement/indicator analysis

The structure of the programme is clear, and it prepares the students for electrical energy jobs correctly. Yet the volume of studies per week is high, 30 hours for contact work and 10 hours of expected individual work.

Credits are well distributed. Nevertheless, credits for soft skills (Foreign languages, Law, Philosophy, Sociology, Business ethics, Professional communication, Project management,

Business economics and management) correspond to a proportion of only 13% of the programme; it could be strengthened. Furthermore, soft skills are mainly taught at the end of the cursus, except for foreign languages; they deserve to be programmed earlier in the cursus because students need to be aware soon, especially before any period of practice in an enterprise.

The allotted time for theory is less than 33% of the total time for contact training. It leaves a large part for practical training.

3.1.4. *Evaluation of compatibility of aims, learning outcomes, teaching/learning and assessment methods of the field and cycle study programmes*

(1) Factual situation

The aim of the study programme is to train electricity engineers possessing knowledge and skills for electrical engineering activity.

Learning outcomes are grouped in seven categories that rely on the Descriptor of the study field of engineering: Knowledge and skills; Skills of engineering analysis; Knowledge and skills for the implementation of design work; Skills of applied research; Practical skills and abilities for the solution of engineering problem; Personal and social skills.

These seven categories are developed in 21 expected learning outcomes. They are listed on KTK website.

From there, a list of subjects is defined in order to complement each other. For each subject, one or several activities are chosen among practical classes, seminars, discussions, tours, semester work, laboratory work, and modelling. Then study methods are selected: case analysis, problem-oriented teaching and learning, discussions, research and project activity, activity modelling and imitational modelling. Finally, assessment methods are chosen for each study method among exam, test, accounts of individual and team projects, presentation and defence of laboratory work, problem solving tasks, semester work and its defence, presentation and defence of practical work.

(2) Expert judgement/indicator analysis

A great job has been done for defining the study structure, adhering to Bloom's taxonomy, with the help of a Leuven (Belgium) team. A matrix of the relationships between subjects and study outcomes exists. It shows the evolution in the learning outcomes, from knowledge and understanding to engineering analysis, design and activity, that is from simple to complex.

Precisions about study and assessment methods are given for only one subject as an example. It includes all the necessary details that are needed for a student to decide whether she/he is interested in taking the subject.

3.1.5. *Evaluation of the totality of the field and cycle study programme subjects/modules, which ensures consistent development of competences of students*

(1) Factual situation

The study programme is structured as a sequence of subjects that is to be followed in a specific order. The volume of a subject is 3 or 6 credits for 80 or 160 hours. Each subject allows to gain new competences that can be used as a prerequisite for another subject. During the first year, students gain theoretical and practical background; gradually they may select free choice subjects for individual development, possibly from another study programme at KTC. During the third year, students choose one specialisation among 3, for a volume of 18 credits and 192 hours.

Several periods of practice are planned all along the cursus:

- A cognitive practice of professional activity, during the first semester, for a volume of 3 credits and 80 hours
- A practice of electric works, during the third semester for a volume of 6 credits and 160 hours
- A professional practice, during the fourth semester, for a volume of 12 credits and 320 hours
- A technological practice, during the fifth semester, for a volume of 6 credits and 160 hours
- A final practice, during the sixth semester, for a volume of 6 credits and 160 hours
- A semester work, during the fourth semester, for a volume of 3 credits and 80 hours
- The professional Bachelor graduation thesis, during the third and last year of studies, for a volume of 9 credits and 240 hours

The programme is built in such a way that any student who graduates from high school may enter it and, in the end, students have acquired all the necessary skills for an electrical energy specialist.

(2) Expert judgement/indicator analysis

The structure of the Electrical Energy programme is rather classic, against the tendency to promote individualised cycle study programs.

The technical subjects are complete and well-sequenced with regular practices which helps to better understand theoretical courses.

Soft skills, especially Ethics, Communication, Project management, and Business economics and management, are concentrated at the end of the cursus. An earlier approach of these subjects could be considered.

3.1.6. *Evaluation of opportunities for students to personalise the structure of field study programmes according to their personal learning objectives and intended learning outcomes*

(1) Factual situation

Most subjects are mandatory. Students can make some choice on the following subjects:

- Foreign languages are taught in semester 1 and semester 2, for a volume of 6 credits and 160 hours; students have the choice between English, German and Russian
- During semester 3, students can choose between "Philosophy" and "Sociology", for a volume of 3 credits and 80 hours
- During semester 6, students can choose between "Business Ethics" and "Professional Communication", for a volume of 3 credits and 80 hours
- During semester 6, students can choose between "Transport Communications and Telematics" and "Installation of Electrical Equipment", for a volume of 3 credits and 80 hours
- Students choose a specialisation, during semesters 5 and 6 for full-time mode, during semesters 5, 6 and 7 for part-time mode, for a volume of 15 credits and 480 hours
- Students choose 3 options out 26 subjects from the section of the field of studies, for a volume of 9 credits and 240 hours, during semesters 3, 4 and 5 for full-time mode, during semesters 5, 6 and 7 for part-time mode

The part of personalisation corresponds to a total of 39 credits, that is almost 22%.

Practices, the semester work and the final thesis are also means for the students to personalise their study programme.

(2) Expert judgement/indicator analysis

The part of personalisation is correct although the choices are constrained since subjects can only be chosen within the study field. The two alternatives "Philosophy"/"Sociology" and "Business Ethics"/"Professional Communication" are curious since the four subjects have an equal importance. If the choice were open to subjects from other field studies, the personalisation would be even richer.

3.1.7. *Evaluation of compliance of final theses with the field and cycle requirements*

(1) Factual situation

Theses are following a unique model for its written version:

- A cover page with the College name and the thesis title
- Summary and keywords, in Lithuanian and in English
- A page with names (student, project manager, advisor), dates of realisation
- A description of Electrical Energy studies: goals and study outcomes
- The table of contents:
    1. Introduction
    2. Analytical part
    3. Project part
    4. Elements of safety and ecology
    5. Elements of economy
    6. A summary of the results

7. Conclusions and recommendations
8. Literature references
9. Graphics, appendices

Theses from years 2017-2018 and 2018-2019 contain the result of the evaluation: learning outcome evaluation, comments, and the final grade.

The final review includes the evaluation of the learning outcomes as well as a written and oral evaluation.

Topics are all related to electrical energy: design, reconstruction or manufacturing are applied to a power plant, power networks, transformer substation, water pump unit.

(2) Expert judgement/indicator analysis

Topics of the provided bachelor final theses are in the scope of the Electrical energy study filed. Traditional as well as renewable energy are analysed which is a good point.

The structure of the thesis itself is very clear; the topic, the raised issues, the goals and the work done are easily visible. The initial summary helps to understand the topic correctly. Thanks to the summary of results and conclusions, several readings are possible, from light to detailed. Literature references is always given at the end with many references to internet documents; for a bachelor thesis, it is important to get familiar with the habit of naming the references.

The final review for theses of year 2017-2018 and year 2018-2019 is joined to the thesis itself and is compliant. The final review for theses of year 2019-2020 is not joined, only the final grade; it is thought that the same review pattern as in the previous years is used and therefore it is compliant too.

Recommendations for this evaluation area: see recommendation number 1.

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDY ACTIVITIES

Links between science (art) and study activities shall be assessed in accordance with the following indicators:

3.2.1. *Evaluation of the sufficiency of the science (applied science, art) activities implemented by the HEI for the field of research (art) related to the field of study*

(1) Factual situation

During the last 3 years, KTC has run applied research in the fields of the development of electronic and electric engineering systems and their analysis. It contributes to the study quality and the harmony between science and studies.

In 2012, KTC created the internal journal "Engineering and Educational Technologies" (Inžinerinės ir edukacinės technologijos in Lithuanian). It publishes teachers' and students' papers. It is an opportunity to promote the results of research.

In the field of Electrical energy, 8 teachers contributed to the publication of their research work between 2016 and 2018. KTC internal journal published 5 papers, 2 papers were published in a magazine and 1 paper in an international conference.

Research is integrated into the study programme. The list of these research is:

- Definition of the Characteristics of Direct Current Electric Machinery by Using Matlab. This programme is applied in the module "Electric machines, Drives and transformers"
- The Impact of Static Electricity Discharges on the Microprocessor Systems of High Voltage Substations. Results of the research are a learning material in the module "Electric Power Stations and Substations II"
- Research of Non-Traditional Training when Developing the Practical Skills of the Students of KTK study programme of Electric Energy
- Diagnostics of the Insulation of High Voltage Electric Machinery. The methodology is integrated into the module "Diagnostics of Electrical Equipment"
- Modelling of the Formation of Partial Discharges in the Insulation of Electric Machinery. The methodology is integrated into the module "Diagnostics of Electrical Equipment"
- Evaluation of the Current Internal Electricity Network of the Sewage Treatment Plant of UAB Kauno Vandenys and the Increase of its Efficiency. Results of this work is applied in the development of the assignments to students for final theses, semester work, group, and problem-level assignments.

Conferences in Engineering and Educational Technologies are regularly organised by KTC to present research work by teachers as well as students.

KTC signs contracts of applied research or experimental development work with enterprises. The results are applicable in various modules or practices. The ongoing contracts are:

- Reconstruction of electrical 110/10/10kV substation in Zirmunai, Vilnius City, ordered by ESO
- Analysis of forces affecting a power cable, ordered by UAB ELMOVA Ltd for 400€
- Analysis of loads on 0.4kV voltage enterprise cable panel, ordered by UAB FAZER LIETUVA Ltd for 3,000€
- Applied research of the decrease of acoustic noise in department 8 of the customer's industrial facility, ordered by UAB BAUWERK BOEN Ltd for 15,000€

KTC applied research is financed by several sources: from the state budget, from the funds of national competitions, from national and foreign entities that order a specific work.

(2) Expert judgement/indicator analysis

The students have a real opportunity to meet research projects and be part of them when in practice. Their work can even be published in the internal journal of the College. The level of involvement in research is good as only a basic scientific level is required for a Professional Bachelor.

As for the teachers, they do not publish a lot and mostly in local magazines of the College. One of them, among 5 doctors and 6 masters, published in an international conference. Yet the teachers have good relations with enterprises, and they sign contracts with them. This has two good aspects: the diversification of research financing; and the opportunity to use research results as real examples to theory modules of the corresponding theme.

3.2.2. *Evaluation of the link between the content of studies and the latest developments in science, art and technology*

(1) Factual situation

Teachers upgrade their qualification in science and technology when they participate in exhibitions, seminars, conferences, and trainings. This is mostly done within Erasmus+ mobility programme. These meetings give them material for reviewing the study field module, an operation that is done regularly.

Research projects ordered by enterprises are also a source for updating the study programme.

Some modules of the programme are given by lecturers, who work in a company. These teachers include the latest development in science, art and technology in their lectures, allowing the students to be aware of the current projects in the enterprises.

(2) Expert judgement/indicator analysis

On the teacher side, the experience that they acquire when they go out of the College opens their mind and helps them to enrich the content of the subjects that they teach. Lecturers bring to the students concrete examples of questions and solutions that they meet in their enterprise.

These are good ways of linking the content of studies and the latest development in science, art, and technology. It might not be active enough because teachers do not publish a lot and do not participate in international conferences.

3.2.3*. Evaluation of conditions for students to get involved in scientific (applied science, art) activities consistent with their study cycle*

(1) Factual situation

Students are all encouraged to get involved in applied academic research, consulting activities, projects of regional development based on orders from any type of company.

Companies suggest topics for research thesis projects. Since 2017, the best project students' solutions are regularly published in "Best Research Works of Students". Students participate in academic science competitions such as:

- EITechas, National student competition at Panevėžys University of Applied Sciences
- Annual national competitions of mechatronics run by LITExpo and Visaginas Technology and Business Professional Training Centre

The national contest for high school and university students *Geriausias elektrikas* (en. The Best Electrician) held by KTK.

(2) Expert judgement/indicator analysis

KTC develops innovative ways of involving Electrical Energy students in research projects with limited tools. It deserves to be better recognised for its actions towards the harmonious development of academic-related research projects, especially outside KTC.

No number of students or statistics is indicated in the SER, probably because the size of the promotions is rather small.

Recommendations for this evaluation area: see recommendations number 2 and 3

3.3. STUDENT ADMISSION AND SUPPORT

Student admission and support shall be evaluated according to the following indicators:

3.3.1. *Evaluation of the suitability and publicity of student selection and admission criteria and process*

(1) Factual situation

Student selection is performed nationally by the Association of Lithuanian Higher Education Institutions for Centralized Admissions (LAMA BPO – Lith. *Lietuvos aukštųjų mokyklų asociacija bendrajam priėmimui organizuoti)* under control of the Ministry of Education Science and Sports and the Admission Board of KTC. Application to a higher education institution is done on LAMA BPO site (www.lamabpo.lt). Candidates must have completed no lower than secondary education to apply for Electrical Energy study programme at KTC. They are given a competition grade by considering their academic achievements, the Lithuanian language and literature state maturing exam and the state examination of maturity in mathematics. The Admission Board of KTC gives additional points to:

- Winners of international and national Olympiads
- Lithuanian from foreign diaspora
- Graduates of one of the six Lithuanian foreign schools
- Graduates of partnering institutions of KTC (gymnasiums, schools, education/training/development centres)

- Individuals whose competition grade is lower than the minimal accepted competition grade and who have professional experience of no less than one year in the field of Electrical Energy

Candidates are admitted if their competition grade is 4.3 or above. Thus, they are enrolled in a state-funded, state-non-funded with a scholarship or a state-non-funded vacancy programme. Information on the admission requirements is available on KTC website.

Over the last three years, KTC received 567 applications of which 94 listed Electrical Energy program as priority 1 (31-23-40 respectively in 2017-2018-2019), 196 listed the programme as priority 2 or 3 (56-74-66 respectively in 2017-2018-2019), 277 listed the programme as priority higher than 3 (89-100-88 respectively in 2017-2018-2019).

In 2019, 23 candidates were admitted to the program of Electrical Energy, 14 into full-time studies and 9 into part-time studies. In 2018, 16 candidates were admitted, 7 into full-time studies and 9 into part-time studies. The number of state-funded agreements is 17 in 2019, of which 10 for full-time studies, and 10 in 2018, of which 2 into full-time studies. In 2020, 35 candidates were admitted. The number of state-funded agreements is 25, of which 14 into full-time studies. Lowest competition grades in 2017-2018-2019 were: 1.82 – 2.14 – 5.1. Highest competition grades in 2017-2018-2019 were: 8.24 – 6.6 – 8.5.

(2) Expert judgement/indicator analysis

The admission procedure is simple, clear, and efficient.

The number of students that are admitted to Electrical Energy study is increasing, for full-time as well as part-time studies, when the number of students of engineering study programmes is decreasing nationally. This is a very good point for the study.

Still, the engineering sector needs more qualified specialists because it is growing (+35% during the last 5 years). This is taken into account by the government with an increase of the number of vacancies. KTC regrets the lack of visibility of Electrical Energy study but does not give any solution yet.

3.3.2. *Evaluation of the procedure of recognition of foreign qualifications, partial studies and prior non-formal and informal learning and its application*

(1) Factual situation

The Law of Education of the Republic of Lithuania gives the procedure for the assessment and recognition of competences gained by informal, individual, or foreign learning.

For recognition of competences gained by informal or individual learning, a counsellor is nominated at KTC to follow the candidate. A committee is nominated for studying the candidate's documents and for delivering the final assessment: positive, partially positive, or negative. There was only one request in the last 3 years, and five subjects were acknowledged.

Students arriving from other education institutions or returning from Erasmus+ internship receive an acknowledgment for the competences that they gained by aligning them with the study content.

(2) Expert judgement/indicator analysis

The procedure of recognition of formal, individual, or foreign qualifications is clear.

Recognition of formal or individual learning is in line with the aim of the study programme that is to "sustain professional competence by lifelong learning".

Recognition of foreign qualifications is essential if the study programme is open to international mobility, for Lithuanian students going to study abroad as well as for foreigners coming to study at KTC.

3.3.3. *Evaluation of conditions for ensuring academic mobility of students*

(1) Factual situation

Academic mobility of students is possible within the Electrical Energy programme of KTC, usually in the framework of Erasmus+. Information and implementation of Erasmus+ project are handled by the Institutional Coordinator of Erasmus+ and the relevant teacher of the study programme along with the Student Representation. International mobility is available for full-time and part-time students after their first semester, and under conditions. Students who wish to study abroad must validate their credits for the first semester, select a foreign institution which study programme is aligned with KTC study programme, have good foreign language skills, have high scores at academic evaluation, and be clearly motivated.

Every year, the Electrical Energy study programme welcomes foreign students. They study in small groups, eventually with programmes prepared in English language. Foreign students are assigned a teacher curator who provides the required information. At their arrival, they take part in cultural tours as well as professional tours such as power plants visits.

Teaching staff is using mobility too. During the last 3 years, 10 teachers went on internship, and 8 arrived to work in the study programme.

(2) Expert judgement/indicator analysis

During the last 3 years, 4 students took periods of study abroad, and 9 for practice. That is a proportion of 15% students who go for an international mobility, which is rather low. Students said that they did not feel confident in travelling abroad, mainly because of the English language. Unfortunately, the sanitary crisis is not helping for progress on that subject.

The number of incoming foreign students is 3 or 4 per year which corresponds to approximately 4% of the total number of students in the Electrical Energy programme.

The teachers who go for an international mobility could promote international mobility among the students.

3.3.4. *Assessment of the suitability, adequacy and effectiveness of the academic, financial, social, psychological and personal support provided to the students of the field*

(1) Factual situation

At College level and study field level, students can find several supports:

- Financial with various scholarships
- Dormitory for up to 300 residents
- Second chance for a failed exam
- Career planning with visits of electrical energy companies, conferences, meetings with employers, exhibitions, annual Career Days
- Psychological counselling

The College has developed extensive career-related initiatives for the students, from their first to their last year. Students benefit from power plants visits, meetings with energy specialists. An exhibition of companies in the energy sector is organised annually; it is highly relevant for the preparation of the final thesis. During the annual "Career Days", students get to know more about the activities of the companies of their field; they can even find practice or job opportunities.

(2) Expert judgement/indicator analysis

Scholarships are not very high, but many students benefit from them. For the last 3 years, 50 students received financial support between 38 and 200 Euros, for a total of approximately 4000 Euros.

A Student Representation body exists at the College. According to the SER, it helps students to get the social and financial support they need. The students that the panel met did not know it very well and were not very aware of support services in general. The existence of this body is positive, but students should be made more aware of it and its services.

Career-related initiatives are a very important element of KTC support system for students that is very well organised.

Psychological counselling is not done by a dedicated person or service. The need for a trained person on the subject would be a progress.

3.3.5 *Evaluation of the sufficiency of study information and student counselling*

(1) Factual situation

First-year students get help from a curator and from second- or third-year students. They are also given general information about the study field in introductory lectures.

Regular tours to electrical energy companies are held in order to boost the motivation of studies.

Digital platforms allow exchange of information. Email, intranet and AIS are used for counselling and giving test scores and feedback. The subject descriptions contain the composition of the score for each module, along with the deadlines for assignments. In the introductory meetings of each course, teachers inform the students about the intermediate and final assessments and the scoring system for that course. The timetable for consultations is also communicated via Moodle and paper announcement near the relevant rooms. For the Bachelor thesis, the requirements are also clearly communicated when the students start the thesis.

(2) Expert judgement/indicator analysis

As the College has a modest size, it seems difficult to have specialists for all support fields. Yet, KTC and the Engineering field staff manage well to support those who need it. Introductory lectures are held at the beginning of studies; a curator per student and a mentor for a group of students are nominated; each teacher offer academic consultations to students.

The lack of psychological support has already been noted. KTC is aware of it, and is working on a solution.

Students were extremely shy at the panel meeting; two reasons may occur, either a poor knowledge of English language or insufficient access to information due to bad communication between different services inside the College.

Students are aware of the academic consultations and they use them. The academic consultations are helping students if they can't catch up on a topic and it seems very useful. Students also confirmed to the experts that the requirements and evaluation of the Bachelor thesis were clear, and that they received good support for this.

Students mentioned that the communication between teachers and students can be improved, e.g. via email. They were also not very aware of the other support services available to them.

Recommendations for this evaluation area: see recommendations number 4 and 5

3.4. STUDYING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT

Studying, student performance and graduate employment shall be evaluated according to the following indicators:

3.4.1. *Evaluation of the teaching and learning process that enables to take into account the needs of the students and enable them to achieve the intended learning outcomes*

(1) Factual situation

The description of each module is available on the Academic Information System (AIS). It includes the methods of teaching, the number of credits, the time for theory, practical and laboratory work, individual work, assessment criteria and procedures.

Classes are taught by KTC teachers and by invited lecturers who are appreciated by the students. Apart from the traditional methods of teaching, KTC applies advanced methods such as interactive classes, teamwork, literature analysis or review, work with mock-up, analysis of problem-solution, review of visual material, preparation and delivery of oral presentations. Cognitive tours, consisting in visiting power plants, are also a good complement to theory classes, and a way to put student in contact with industry.

All information about studies can be found on the virtual Moodle platform: lecture summaries, tasks of practical and laboratory work, samples of tests and exams, tasks of individual work, assessment criteria and procedures, and recommended literature,

Individual work represents at least 30% of total work. A semester work is a group work scheduled during semester 4 for full-time study, and during semester 5 for part-time study, before the final thesis.

Students take intermediate tests and assignments during the semester, and an additional week of intermediate tests is provided in the schedule.

After the Bachelor's diploma, students may continue with another Bachelor degree at KTC, or a Master at Vytautas Magnus University or Vilnius Gediminas Technical University that focus on energetics engineering.

(2) Expert judgement/indicator analysis

Students confirmed that they found the lessons interesting and the course notes sufficient. Representatives of enterprises indicated that graduates are in general well-enough prepared, indicating the learning outcomes are achieved. One exception to this are programming skills, which are not yet fully achieved.

Varied teaching methods and close contact with industry strengthen students' motivation, allowing the students to achieve the intended learning outcomes.

3.4.2. *Evaluation of conditions ensuring access to study for socially vulnerable groups and students with special needs*

(1) Factual situation

No student with special needs has come yet to KTC. If one is admitted, remote studying will be proposed. Grants should be available.

(2) Expert judgement/indicator analysis

The panel understands that it might be complicated for KTC to implement a solution for each possible case of handicap. A more concerned analysis of the situation would have been expected.

3.4.3. *Evaluation of the systematic nature of the monitoring of student study progress and feedback to students to promote self-assessment and subsequent planning of study progress*

(1) Factual situation

Assignments, tests, and exams are planned in the description of each module. Tests are scheduled several times, all along the semester. Results are available to students in the Moodle digital environment and the Academic Information System (AIS), every month for full-time students, after each session for part-time students.

After each exam session, statistics are extracted. Teachers meet with the Academic Council for possible improvement of the study quality.

(2) Expert judgement/indicator analysis

Students are regularly informed of their progress for each subject of the study through the digital platforms. Self-assessment is possible for all the students and study progress is done by the academic staff.

3.4.4. *Evaluation of the feedback provided to students in the course of the studies to promote self-assessment and subsequent planning of study progress*

(1) Factual situation

The programme descriptor that is in the Moodle platform and the AIS contains the week schedule of the semester with highlight on the task presentation and test taking, the coefficients for each test, and the assessment criteria. Teachers may add comments. When a grade is not sufficient, retaking the test and rewriting an assignment is possible.

(2) Expert judgement/indicator analysis

Students only have a role of consultation of the platform. The feedback is given to the board where a student is present. This is not really sufficient and not completely satisfactory. The panel encourages the teachers to add a comment to the grades, as giving a quality feedback, next to a grade is very useful to improve students' learning.

3.4.5*. Evaluation of employability of graduates and graduate career tracking in the study field*

(1) Factual situation

Employment data of graduates are primarily gathered, among graduates, through a written questionnaire and then through an oral survey, conducted by telephone.

KTC has been analysing the employability of its students for at least the last 6 promotions. The indicators are the years of study, the mode of studies, the number of students, the proportion of students who are employed in the field of Electrical Energy, the proportion of students who are employed outside the field of Electrical Energy, the proportion of students who are unemployed, the proportion of students who did not answer.

Another survey is done among employers to gather data regarding the level of preparation of the students for independent professional activity.

(2) Expert judgement/indicator analysis

The results of the survey have two main components: one concerns soft skills (teamwork, responsibility/initiative, motivation), the other concerns technological subjects (automated/remote control of industrial processes, renewable energy sources).
Improving the technological modification was rather simple, and some solutions were found. Soft skills subjects are important too and deserve to be further developed; they might help drastically to improve attractiveness of the programme.
KTC has a complete view of the employability of its graduates with quantitative indicators on their position (employed or not, in the field of study or not), and with qualitative indicators.

The result is that, over the last 3 years, more than 72% graduates are employed in the field of studies; the number of students in a promotion is rather low, therefore the number of students who is not working I the field of studies, or who did not answer the survey is only 2 or 3 persons.

The main weaknesses outlined by employers or representative of enterprise are:

- Inability of working in a team
- Lack of responsibility and/or initiative
- Lack of motivation
- The content of the subjects should be better aligned with the contemporary reality (more automated control of industrial processes, more automated manufacturing technologies, more remotely controlled and observed operations in manufacturing)

Employers also suggest to pay more attention on renewable energy sources in Lithuania.

The consequences of these surveys is already visible:

- Teaching methods have been renewed and motivation of students is increasing
- Two solar modules have been acquired and, in 2020, 3 students are conducting their final research thesis on this subject

Globally, employability of the Electrical Energy graduates is good, even though progress can be made.

3.4.6. *Evaluation of the implementation of policies to ensure academic integrity, tolerance and non-discrimination*

(1) Factual situation

A Code of Academic Ethics has been adopted by KTC in 2016. And students fill in the "Declaration of Academic Integrity" in order to adhere to KTC Code of Academic Ethics.

An Ethics Committee has been created with 4 members mandated by the Academic Council, 2 members delegated by the Student Representation, and 1 member of the Trade Union. Their reference document is the KTC Code of Academic Ethics, adopted by KTC in 2016.

Students fill in the "Declaration of Academic Integrity".

Procedures for the submission and handling of complaints regarding ethics violations has been approved by KTC Academic Council. They apply to all the members of the academic community, including teachers, students, and any employee.

All the principles of academic honesty, tolerance, or non-discrimination along with strategies, ethical norms and values are discussed during the first year of studies in the course "Introduction to Studies".

(2) Expert judgement/indicator analysis

During the last 3 years, no problem was registered. Procedures exist and they are used for everyone in the College.

3.4.7. *Evaluation of the effectiveness of the application of procedures for the submission and examination of appeals and complaints regarding the study process within the field studies*

(1) Factual situation

KTC adopted a descriptor of the investigation of students' appeals. Any student who thinks that violations of the order were involved, she/he has 3 days after the announcement of her/his score or the assessment procedure to submit an appeal. A committee investigates the appeal, a 3-persom committee for score issue, a 5-person committee for assessment procedure issue. The verdict is either the assessment stands or the first grade is changed; in this last case, the student is reassessed.

(2) Expert judgement/indicator analysis

During the last 3 years, no appeal or complaint were registered. Procedures exist and they are used for everyone in the College.

Recommendations for this evaluation area: see recommendations number 6 and 9

3.5. TEACHING STAFF

Study field teaching shall be evaluated in accordance with the following indicators:

3.5.1. *Evaluation of the adequacy of the number, qualification and competence (scientific, didactic, professional) of teaching staff within a field study programme(s) at the HEI in order to achieve the learning outcomes*

(1) Factual situation

Annex 6 lists the teaching staff of the Electrical Energy study programme for 98 students:

- 20 teachers of which 5 associate professors, 14 lecturers, and 1 assistant
- 13 teach in the science or technical field,
- 12 have between 10 and 28 years of experience, 6 have more than 30 years of experience
- 6 have minimum B2 level in English, 14 have minimum B2 level in Russian, 2 have minimum B2 level in German

Taking into account that some teachers are working part-time, there are 12 students per one teacher. Lecturers are working in energy enterprises in parallel. The teaching staff team is rather stable. When one retires, a young teacher replaces.

Recruitment is made by public competition and follows the national procedures. The teachers must take part in annual interviews and renew their attestations every 5 years.

(2) Expert judgement/indicator analysis

The teaching staff is clearly motivated for teaching tasks. Each teacher gives some extra time for academic consultation, one hour every 3 credits.

Almost 45% of the teaching is done by lecturers who are working in energy enterprises in parallel. Lecturers include real and recent examples in the content of their class.

All the associate professors have a B2 level in English language or higher. The situation is not as good for lecturers. Only 4 of them (out of 14) have B2 level in English language or higher.

3.5.2. *Evaluation of conditions for ensuring teaching staffs' academic mobility (not applicable to studies carried out by HEIs operating under the conditions of exile)*

(1) Factual situation

The academic mobility of teaching staff is made possible with Erasmus+ programme at KTC. There were 3-3-4 teachers who went abroad respectively in 2017-2018-2019, in Latvian, Bulgarian or Portuguese institutions.

There were 1-5-2 teachers who came from abroad respectively in 2017-2018-2019.

(2) Expert judgement/indicator analysis

A good proportion of KTC Electrical Energy study teachers use their international mobility capacity which is good. During the panel visit no one complained about the selection

procedure or the mobility conditions. The academic year 2019-2020 was exceptional because several visits were cancelled, due to the sanitary crisis. Incoming teachers usually give classes while at KTC. One teacher participated in an internship programme.

3.5.3. *Evaluation of the conditions to improve the competences of the teaching staff*

(1) Factual situation

Teachers improve their competences according to an annual plan. It implies pedagogical as well as professional development. They participate in seminars, conferences, exhibitions, experimental development, development of training material, publication of manuals/textbooks.

According to Annex 7 in the SER, all teachers upgrade their competences each year. Over the last 3 years, they spent between 35 and 501 hours to upgrade their qualifications, with an average of approximately 73 hours/year/teacher. The continuous competences improvement of teachers is among the objectives of KTC that can be found in its Quality manual.

(2) Expert judgement/indicator analysis

The whole teaching staff is spending several hours every year for improving their skills. This is a proof of their involvement for delivering a high quality training to students.

Recommendations for this evaluation area: see recommendation number 7

3.6. LEARNING FACILITIES AND RESOURSES

Study field learning facilities and resources should be evaluated according to the following criteria:

3.6.1. *Evaluation of the suitability and adequacy of the physical, informational and financial resources of the field studies to ensure an effective learning process*

(1) Factual situation

As the audit team was not physically on campus, they had to rely on the SER and the video that shows some laboratories, study rooms, general rooms and the library.

Several rooms of different sizes are available for lectures; several laboratories are equipped with specific tools and equipment for lab works. A total of 23 rooms for 610 possible students is available.

Premises are also available in partners enterprise for practice. Three auditorium are shared with students of other studies on campus.

Laboratories are equipped with computerised workplaces or training benches, depending on the type of class. The software that are used in the equipment are interlinked with two clouds so that each student and each teacher have a unique access code to any digital system in any room.

Social partners provide some equipment, counselling, and support.

The digital system runs under Office365 and a Moodle platform. It allows distance learning.

Special funds are dedicated to the renewal of material.

Practice sessions, at KTC are often held in subgroups. Some social partners invite practice sessions to their premises.

There is no specific installation for individuals with special needs. KTC claims that it can adapt to this situation if ever it occurs.

Leisure zones have been installed for pauses and group work.

The library is run by 3 librarians who assist students, teachers, and College staff. It is connected to the College database and the libraries of VGTU and KTU.

All software licences are regularly updated. The computer environment includes O365 system, a Moodle platform and 2 interlinked Clouds; it ensures efficient communication.

As dormitories and some premises have been recently renewed, they are adapted for people with special needs.

A lunchroom opened in 2019. A room is open to students to do homework.

(2) Expert judgement/indicator analysis

The variety of laboratories and rooms is rather comfortable with a capacity that is larger than the number of students. Good cooperation with enterprises allows to benefit from their premises which is a good opportunity for students to meet the professional world.

Even old equipment, for example in the High-voltage laboratory, is not a drawback since it is still used in some industries.

The information system and digital platforms are well managed.

The panel noted that KTC develops a good cooperation with VGTU and KTU.

3.6.2. *Evaluation of the planning and upgrading of resources needed to carry out the field studies*

(1) Factual situation

Upgrade of the resources are financed via projects. KTC is involved in the programme "2014-2020 Interreg V-A Latvia and Lithuania Transborder Cooperation Programme" with the project "Enhancement of the Mobility and Employability of Lithuanian and Latvian Specialists in the Field of Electrical Engineering and High Voltage Technologies". Several equipment was purchased.

The Electrotechnical laboratory was founded during the academic year 2019-2020.

Funds for specific equipment are given by social partners. The amount for the last 2 years has exceeded 22000 Euros.

(2) Expert judgement/indicator analysis

Plans for upgrading the resources are presented until 2020. It is clever, using European projects as well as social partners. Nothing is shown for the future.

Recommendations for this evaluation area: see recommendations number 8

3.7. STUDY QUALITY MANAGEMENT AND PUBLICITY

Study quality management and publicity shall be evaluated according to the following indicators:

3.7.1*. Evaluation of the effectiveness of the internal quality assurance system of the studies*

(1) Factual situation

Quality management at KTC is described in the key document "Quality Manual" that is available online, therefore accessible to everyone. It covers all the functions of the college and all the stakeholders. Each department takes part in the general process and then applies it in its own area under the responsibility of the Study Program Committee, run by the curator of the programme and composed of 5 teachers, 1 student, and 1 representative of an enterprise. Every procedure (Study Programme Management; Internal Evaluation of Study Programme; Preparation, Defence and Evaluation of the Final Thesis; General Requirements for Practice; Internal Evaluation of Study Programmes; Study Subject Attestation; Survey and Feedback Organisation) is regulated.

The Quality Manual specifies which KTC body is responsible for every quality assurance duty. The leaders and decision-makers are the director and vice-directors. At the level of the Electric Energy Department, the responsibilities consist in implementing the activity and improving the results.

The study programme is systematically renewed as it is considered to ensure study programme improvement. Updates are done after the analysis of surveys that are answered

by social partners and students, the results of discussions with target groups, and the needs of the market. Renewal of the study environment and laboratory equipment is financed by employers, social partners, and funds earned with applied research and projects.

(2) Expert judgement/indicator analysis

The Quality Manual clearly presents the strategy of KTC in terms of quality management. The centralised organisation allows for homogeneous decisions.

The Study Programme Committee is independent enough to directly hire the teachers for the Electric Energy programme and to negotiate cooperation agreements with employers and social partners.

3.7.2. *Evaluation of the effectiveness of the involvement of stakeholders (students and other stakeholders) in internal quality assurance*

(1) Factual situation

Regular surveys of students are run to evaluate the quality of the conditions of studies. Results are analysed by the Study Program Committee where a student representative sits. This student shows good academic achievement and is preferably the head of an academic group. Each academic group of students elects one of its members as their head, who is responsible for communicating with teachers and the administration. Group meetings are also held to discuss the students' achievements related to the outcomes of the programme. Students are informed of the general results of the surveys and of the changes made by their representant in the Study Program Committee.

Cooperation agreements are signed with social partners to maintain good relationships. Regular surveys of employers are run regarding the required competences in the labour market, the knowledge and practical skills of the students, and the achievements of graduates.

Social partners review the programmes. They also run seminars and on-site training in enterprises involved in electrical energy for teachers and students.

(2) Expert judgement/indicator analysis

There are multiple ways in which the College collects the opinion of students. The heads of academic groups are able to reach out to teachers or the administration in case of serious issues. Students confirmed that they are informed; they would appreciate to receive quicker answers to their remarks. As only one student is member of the Study Programme Committee, efforts should be made to verify that students representatives are involved in all the discussions about the concrete actions taken to improve the study field programme, and that the Study Programme Committee understands all the issues raised by students.

Social partners are effectively involved in the study field quality assurance. Their opinion is taken into account for the improvement of the programme. They are active with students

through the lectures that they deliver and the programme assessment, active with teachers when they help them to upgrade their qualification.

3.7.3. *Evaluation of the collection, use and publication of information on studies, their evaluation and improvement processes and outcomes*

(1) Factual situation

Information of the study programme is listed on the website in Lithuanian and in English: Objective, minimum access requirements, mode of studies, degree and credits awarded, study programme aim, subjects taught, career possibilities. It is also stored on the Academic Information System.

The collected data is used to optimise the study programme by eliminating repeating results and merging close subjects. It is also planned to run more surveys, to involve students more actively into research, conferences, theses with enterprises, to increase student motivation, and to upgrade laboratory equipment.

(2) Expert judgement/indicator analysis

Information on studies is public. Evaluation and improvement processes as well as outcomes are not yet; the College is considering it as this would help for the promotion of the programme.

The following table lists the recommendations that were listed by experts during the previous external assessment. The column “Recommendation” gives the text of the recommendation. The column “Actions” is the answer of the College. The column “Panel Remarks” is the panel opinion on the College answer.

All the recommendations have been considered. Most of them are cleared. Yet, they need constant follow-up. Here is the list of previous recommendations, and what has been done:

1. “The accessibility of the aim and the outcomes of the study program is not sufficiently accessible to the society (website)”; the aim of the study program and its expected outcomes are publicly presented; the panel considers that information on the website is clearer, and that it will soon be complete.
2. “To encourage and assist the self-development of the staff (pedagogically, in applied scientific research, by gaining more experience in the industry and in the academic field locally and internationally)”; this is fully satisfactory; it is a continuous process.
3. “the social skills of students should be developed more”; new modules have been added; it could be emphasized.
4. “To participate in international activities, exchange with other academic and professional institutions and the industry more intensively”; Teachers of the programme take part in the activities of Erasmus+ Programme every year; this is a good response to be continued.

5. "To update the laboratory equipment with the latest technologies to the best possible and required level"; an investment of more than 182,500€, a new laboratory of Electrical Engineering, and expansion of the laboratory of Mechatronics are real enhancements.

3.7.4. *Evaluation of the opinion of the field students (collected in the ways and by the means chosen by the SKVC or the HEI) about the quality of the studies at the HEI*

(1) Factual situation

Anonymous surveys regarding subjects and teachers are individually analysed by the teacher and the study programme curator. Results are given in the SER: most students feel good at KTC. As areas of improvement, students mentioned the assessment systems of some subjects and the content of the optional subjects. Generalised results of these surveys are shared with the students and they are informed about the alterations that are made based on their results.

(2) Expert judgement/indicator analysis

According to the SER, the analysis of the survey results led to several positive upgrades of the programme. For example, based on the results of student survey, the following points have been improved: the teaching methodology of some teachers and the curriculum have been improved, study outcomes have been updated, and the content of the specialisation subjects has been supplemented. Based on the students' opinion on fulfilling the study programme, novel lecturing and study methods have been adopted in regards of ethical code. These examples are the proof of a good quality process.

Recommendations for this evaluation area: see recommendations number 9 and 10

IV. EXAMPLES OF EXCELLENCE

Core definition: Excellence means exhibiting exceptional characteristics that are , implicitly, not achievable by all.

1. The curriculum design is based on a skills approach where study outcomes, study methods and assessment methods are thought of in harmony. This way of building up the study programme ends up to an optimized list of modules that guarantees the acquisition of the expected competences.
2. The quality management is designed at the level of KTC and then declined for each department considering its specific features. The Quality Manual is a key document that covers all functions and all stakeholders. This is a very good practice in terms of management.

V. RECOMMENDATIONS

1. Strengthen soft skills education in the study programme, all along the three years of study.

2. The research excellence of the faculty can be improved. More teachers should publish in international journals with high impact and increase their research level to be compared to an international level.

3. KTC is running several research projects in which students are involved. A more regular and public communication about current projects would improve the reputation of KTC.

4. Consider a strategy for student mobility and develop adequate support for students so that the desired goal is reached.

5. Help the Student Representation Body to represent more students and more student concerns.

6. Consider a strategy to define the access to study for socially vulnerable groups and students with special needs.

7. Enhance the level of English language of the teaching staff.

8. Efforts for developing and upgrading learning facilities should be continued and put into the development plan of the College. The risk would be that the quality level of the study programme will decrease.

9. Involve more students in the quality assurance organisation, and in the process of programme reviewing and revision.

10. Upgrade KTC website to provide more public information on the study field programme.

VI. SUMMARY

The Quality Manual is a key document for KTC that covers all functions and all stakeholders at each level.

The programme structure is well balanced between general modules, basic scientific modules, and study field modules. Yet soft skills education is somewhat insufficient. The programme is offered in 2 modes, full-time and part-time, which gives a variety of student profiles.

KTC is very close to electrical companies either through collaboration contracts or by hiring lecturers. Thus, students and staff are aware of new technological trends, and study outcomes can be quickly adapted. They closely follow the labour market and the needs of the society; this is possible with the organisation of Career days, visits in enterprises, and regular meetings with professionals.

Teachers participate in several applied research projects. For some of them, students are involved, and even get promoted in KTC internal journal. Students also participate in academic science competition. Communication of these projects could be more extensive, particularly on KTC website.

The study programme is very well constructed with the alignment of study outcomes, study methods and assessment methods. It results in a very good employability with a very good evaluation of technical skills of graduates by employers.

Teachers have a particularly good mobility and continually improve their competences according to an annual plan. Their English level needs to get better.

Some facilities have been recently renewed. KTC could consider defining a development plan of the facilities to guarantee the quality level of the study programme. The library facility is very efficient with many documents available on paper and in digital format. It is connected to universities (KTU and VGTU). Its operations are defined in the Quality Manual.

KTC is very well organised due to the existence of the Quality Manual. Yet many events could be more documented, especially on the website. It would probably help promoting the programme and attracting more students, teachers and companies.

Expert panel:

1. **Prof. Dr. Toomas Rang (panel chairperson)** *academic,*
2. **Prof. Dr. Marko Čepin,** *academic,*
3. **Dr. Isabelle Avenas-Payan,** *representative of social partners,*
4. **Dr. Dainius Balbonas,** *academic,*

5. **Dr. Rolandas Urbonas,** *representative of social partners'*

6. **Mr. Ruben Janssens,** *students' representative.*