

# Expert group joint opinion

Evaluation Procedure: Assessment of Study Field

Higher Education Institution: Profesionālās izglītības kompetences centrs "Rīgas Tehniskā koledža"

Study field: Mechanics and Metal Processing, Heat Power Engineering, Heat Technology, and Mechanical Engineering

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# Summary Assessment of the Study Field

## Summary Assessment of the Study Field

The given summary was prepared for Vocational Education Competence Centre Riga Technical College (hereafter referred as HEI, college, institution), study field "Mechanics and Metal Processing, Heat Power Engineering, Heat Technology, and Mechanical Engineering", considering information provided in self-assessment report, home page, information shared during site visits and interviews, as well as additional documents provided upon request after the HEI visits. Most of the information retrieved came from the interviews, the homepage and the site visit.

The major negative aspect identified was that the self-assessment report (hereafter referred as SAR) was written particularly poor, and the weakest point were Annexes of study programs. Some text parts and Annexes appeared multiple times in the SAR. For some criteria information provided did not answer criteria in the section heading and therefore made evaluation process difficult. It is strongly recommended to improve this for the next evaluation by assigning a bigger team or more time for preparation. In general, after the interviews and HEI branches visits, the evaluation became significantly higher than the opinion that was developed before the visits by reading the SAR report documentation.

On a positive side, the field of study and study programs are recognized as sustainable, well provided with resources, have highly professional and enthusiastic teaching staff, with a good balanced study content and provided internship possibilities to achieve the goals and objectives sets, to prepare the specialists appropriate to the study level, requirements and normative regulations.

Positive aspects identified:

1. Ecosystem of motivated and loyal employees, graduates and employers was created over years by HEI. Loyal graduates are a great strength to HEI. Graduates participate in college processes: development of study programs, guest lectures, student excursions to their companies, internship offers.
2. Infrastructure with modern equipment and renovated facilities is available for students thanks to ERAF and SAM projects.
3. Regional branches fulfil important regional social functions including indirect lifelong learning possibilities for the community.
  - 3.1. Studies take time on Fridays and Saturdays, therefore students from all branches attend practical works in Riga and are invited to use college dormitory. Students confirmed that they are using this opportunity.
  - 3.2. Resources are shared efficiently for branches, including regular travelling of teaching staff to give lectures in branches. Electronic library databases are available for students according to best practices in higher education.
4. The employment prospects of students are clearly defined, and career prospects are good after graduation.
5. Traineeship of the students is efficiently organised via MASOC agreement. Working students are allowed to choose their existing employer company for traineeship, but during interviews directors shared that they advise students to choose different companies to broaden experience. Companies provide students with topics for final study projects, which corresponds to student-centred learning practices.

Weak points and aspects identified:

1. Functioning of study quality assurance system is more by inertia and not formal. This is to a great deal due to the motivated and responsive teams in the study programs. There is a lack of documentation and procedure descriptions, therefore, the panel was surprised to find that

improvements usually accredited to a well functioning quality system did take place. Quality procedures were not submitted upon request after visits, so procedures are assumed missing and need to be developed additionally to ensure efficient coordination of branches operation from Riga.

2. Research activities are not documented well enough, according to additional documents submitted upon request it appears that research activity is low. There is no motivational system for academic staff which would lead to more active applied research and publication activities.

3. Mobility activities are not documented clearly, and therefore it appears that mobility is low, although good examples were provided.

4. The feedback culture. There is not sufficient proof that student feedback is being taken into actual curriculum and teaching process in a systematic manner.

Based on the submitted documents and during the visit received information evaluation the short-time and long-time recommendations are provided for elimination of the identified shortcomings and further development of the study field and study programmes within. The study field and study program-specific recommendations are available in the joint report.

Out of four study programs, submitted for evaluation, all four study programs "Automotive Transport", "Heat Power Engineering", "Refrigeration Engineering" and "Engineering Mechanics" were evaluated as "Average", because comparison to professional standards and program-specific diplomas was missing. These documents must be provided before Study Quality Committee meeting.

For all programs only full-time study option was evaluated, because SAR report provided documents (e.g. Curriculum of the study programme) only for full-time study option, and during interviews management of the study field confirmed that only full-time studies will be available in the future. During interviews Experts learned that learning schedules are designed to fit needs of students, who are already employed. At present (Spring 2022 semester) schedules show that studies are organised three or four days per week, from 15:20 or 16:00 till late evening. Given that Cabinet Regulation No. 141 requires 40 working hours of student each week for full-time studies, attention should be made to ensure that the working hours and contact hours are sufficient.

Documents confirming that college will provide the students with the options to continue the acquisition of education in another study programme or at college in case the implementation of the study programme "Automotive Transport", "Heat Power Engineering" and/or "Refrigeration Engineering" is discontinued still need to be provided.

The evaluation considered documents provided, infrastructure demonstrated, course descriptions provided, teaching staff listed in the annex, research activities, as well as dynamics for number of students and teachers.

## **1. Management of the Study Field**

### **Analysis**

1. The aims of the study field are defined as a part of general HEI strategy. When the assessment started, the last strategic development plan was outdated, it was valid until 2020 (<https://rtk.lv/?sadala=203>). There were 3 strategic programs: Studies, cooperation and infrastructure. However, the aims and strategic development of the study field was updated upon request, and draft was published under the HEI home page (<https://rtk.lv/?fails=1645204326.pdf>). The updated strategy is valid until 2027.

In the updated strategy there are five strategic priorities: 1. Flexible study process and digitalisation;

2. Competent teachers and motivated students; 3. Life-long learning for internal and external clients; 4. Cooperation - international, regional and institutional; 5. Sustainability of resources, infrastructure and processes. For each strategic priority there are goals set. Some of the goals are clear (e.g. for Strategic priority 2, goal "Creating a digital platform for internal communication" is either achieved or not), but for some goals Key Performance indicators - KPI would be helpful to measure progress (e.g. for the Strategic priority 5, goal "Add more library resources", number of handbooks for each program can be specified).

The updated strategy states that mission of HEI is "Providing quality, dynamic and competitive vocational education and qualifications development in engineering (STEM - Science, Technology, Engineering and Mathematics) as life-long learning, in line with labor market requirements (auto-translated)." This mission is in line with the current demand for education. The social importance of short-cycle higher education programmes is pointed out in the self-assessment report (hereinafter SAR) p.1.: "Short-cycle higher education is an important stage in education that enables easier transition from secondary to higher education. This is an opportunity to advance through levels of education in achieving career goals, using the education gained during the previous stage of education." This importance was confirmed by the graduates during interviews, e.g. during interview in Liepaja experts met a student who is a working specialist. He confirmed that the opportunity to combine studies and work is very important for him. Graduates and employers stressed that HEI implements social roles important for society and the national economy, especially, manufacturing sector, because it provides enterprises with a well-prepared specialized workforce that need minor or no training at the workplace.

Thus, the aims and strategic priorities are clearly stated and are realistic, grounded in strengths (e.g. flexibility of staff) and previous achievements (e.g. agile reaction to rapid changes in field) of HEI. (Flexibility of staff was reported by students during interviews. For example, during interview in Daugavpils, student stated that teachers provided consultations after working hours upon request. The agile reaction to rapid changes in the field was specifically demonstrated by "Refrigeration" program, when study program was adjusted according to recent field developments for change in coolers used in the systems.)

2. Management of the study field underwent some changes during the assessment period (quality department added, new managers of branches hired e.g. in Liepaja branch). It is too early to see the effect of those changes, but they are supposed to bring a positive impact in the long run. The administration structure is described under <https://rtk.lv/?sadala=1457>. There is a quality management department, but no contact person for this department in contacts <https://rtk.lv/?sadala=464>. During the interviews with management, during the lab tours and from the course descriptions was found that the for study quality responsible person is highly involved in a teaching process, which creates obstacles to running this department smoothly, but not completely. Meanwhile, there are some administration staff not listed as a teaching staff (e.g. Deputy director in study process development, Deputy director in internship and production activities, Deputy director in study and upbringing activities, Deputy director in management and information work, Deputy director in study process organisation, Studies Manager). Thus, administration staff less involved in teaching might contribute to this department development without disrupting study process.

Involvement of employees in preparation of self-assessment report could be increased, in branches experts met competent employees who could contribute and help the management (e.g. by providing specific examples of good practices).

3. Admission of students is possible right after school or from other college programs, admission requirements for students are listed under the home page <https://rtk.lv/?sadala=132>. Some of the students which were interviewed (e.g. for Automotive Transport program) enrolled the program after

completing vocational secondary school with VECC „Riga Technical College”. During the interviews experts learned that good practices of recognising previous studies, both for students who graduated another HEI or just completed some courses in another HEI, are followed, which contributes to students satisfaction. Specifically, there was a student interviewed in Daugavpils who had previously learned in Riga Technical university Mechatronics program, but failed to complete it. When he enrolled into college Mechatronics program, the courses which were similar for university and college program and which he had previously passed were transferred.

4. HEI is using plagiarism checking software provided by a third party, Latvian university. There have been no cases of actionable plagiarism though. During reading the qualification projects, experts learned that in the projects more attention is paid to the practical part and documenting the practical project steps, than to theoretical research, which naturally reduces risk of plagiarism. For example, when experts looked at the final projects for programs Heat Power Engineering, projects were solving practical HVAC problems, and were added with drawings and schemes. Moreover, translations of theory materials from English, Russian and German make text unique.

5. The information on all mentioned programs is available on the web page (<https://rtk.lv/>). It detailed description of the programs is available in Latvian, because the teaching process is in Latvian (<https://rtk.lv/?sadala=175>), but some general description e.g. list of all available programs is translated to English as well (<https://rtk.lv/?sadala=1474>). The detailed schedules of studies were also available for the current semester on the web page. While candidates have access only to web page, students have access to the Moodle system as well, which was demonstrated to Experts during the second day of HEI visits. In the Moodle system the news and consulting hours for specific courses were given. There was additional information required, which types of studies are going to be accredited, because official registers show part-time studies and full-time studies are possible, but in reality only full-time studies were discussed.

## **Conclusions. Strengths and weaknesses**

The aims of the study field are a part of common HEI strategy. The strategy of HEI that was updated during the assessment, it is clear, specific and realistic. The updated strategy of HEI is valid until 2027, it is concise and is in line with the current demand for the education. The aims are clear and achievable. Management of the study field underwent some changes during the assessment period. Quality department was added and new managers of branches were hired during the reporting period. These changes are supposed to bring a positive impact in the long run. Yet, some responsible person should be assigned for a quality department. The HEI has a system for the recognition of the previous studies, which students are satisfied with. HEI is using plagiarism checking software provided by a third party, Latvian university, and this mechanism is working efficiently.

The information on all mentioned programs is available on the HEI web page in Latvian - the language programs are taught in.

Strengths:

1. The aims of study field strategy are clear and achievable.
2. The chosen strategy of differentiation (responsiveness to industry and students' needs) is realistic to pursue, because HEI has experience and culture of flexibility and responsiveness.
3. Good practices of study recognition and plagiarism checking are established.

Weaknesses:

1. The specific KPIs are missing in the strategy.

2. A responsible person is missing for the Quality department.

## 2. Efficiency of the Internal Quality Assurance System

### Analysis

1. A quality policy is established and published publicly on the institution's home page in Latvian language (<https://www.rtk.lv/?sadala=5082>). The quality assurance system published under HEI home page refers to the strategy valid until 2020, and has to be updated. In the policy there are parameters listed to monitor the study quality and development:

- Qualification exam results;
- State exam results;
- Proportion of graduates;
- Dropout rate overall and in each program separately;
- Further progress of graduates;
- Admission results;
- Employer feedback;
- Participation in competitions, projects, etc.;
- Further education of teachers and lecturers;
- Methodological materials and / or publications developed by teachers and lecturers;
- Cooperation agreements with employers and social partners.

However, criteria in form of minimal results that should be achieved are missing.

In the strategy quality is defined as the one critical value for the study direction (SAR, p. 27). As central tool for quality the EFQM model of excellence is mentioned (SAR p. 9).

Since policy states that Quality monitoring is based on: 1) Discussions and surveys; 2) Self-assessment reports of teachers, programs, departments, Experts looked for the self-assessment templates. The detailed template of teacher evaluation form is available under HEI home page for download. However, the form is for vocational education teachers - not adapted for higher education terminology - courses instead of class etc. The evaluation procedure p.1. states it is applied for professional secondary school, so it was not clear if it is the same for higher education."

Resuming the analysis, the quality assurance policy is present, but procedures (necessary to make sure that policy is implemented well) are not documented.

2. As direct consequence of the quality policy the management commits itself to various procedures like assessments, continuous monitoring, surveys, strategic planning, teachers workshops and internal exchange. Strategy of HEI states that on of the 8 key values is "mutually beneficial relations with employers 'and social partners' organizations" Examples were provided how programs are developed based on market needs, e.g. "Refrigeration program".

It is also claimed that procedures are implemented, documented and periodically revised. However, proof in the sense of written documentation of processes is not provided in the SAR which is in general lacking statistic data. In the study program part of the SAR however, results from different surveys are presented (SAR p. 57, p. 86, pp. 103). During the interviews some students could sometimes not remember that surveys were conducted (student interview Liepaja). Others had the impression that their feedback has impact (student interview Riga). However, the absence of statistical data puts the entirety of procedures in question.

3. Surveys which are present are evaluated quantitatively and qualitatively but follow-up procedures are not clearly defined. the other hand, it is impressive to see that the programs were adapted to perceived shortcomings of graduates and employers. The widespread opinion of graduates of under-developed practical aspects of the education resulted in a tremendous upgrade of lab equipment and the request of incorporation of EVs in the automotive transport program (graduate interview

Liepaja) was already met with a respective test rig. The same is true for the refrigeration engineering program with modern cooling agents (graduate interview Riga). Also the lack of welding in the engineering mechanics program was identified quickly and already corrected (graduate interview Riga). Hence, even if not mentioned in the SAR, loops are closed in some way or the other. Statistical data in a systematic and exhaustive sense however, is not available or was not presented in the SAR.

4. Concerning the ESG standards for internal quality assurance, some of them like learning resources, public information and cyclical external quality assurance are clearly identified and addressed. Others such as the ones concerning student admission, teaching staff and design of programs are probably considered but the HEI failed to provide written evidence. For some such as student-centered learning or information management no evidence was found by the panel. The lack of standardization in the sense of codification of rules and procedures is a challenge of the quality assurance system and a shortfall of the institution which needs to be addressed as soon as possible. Concrete aims and measures in order to improve the performance of the relevant study field are not present.

### **Conclusions. Strengths and weaknesses**

The efficiency of the internal quality system existing but needs to be significantly improved. Although broadly covered in the SAR and also published on the website many of the commitments have to be followed by HEI activities. In general many quality assurance procedures seem to depend on the effort of individuals rather than on systematic approach. On the other hand side, requests from stakeholders seem to be implemented quickly and efficiently. Still, documentation of the most important procedures is a must on which the HEI should focus in the future.

Strengths:

1. Information is collected in the form of surveys.
2. Rapid and efficient adaptation of study programs according to feedback of graduates and employers.

Weaknesses:

1. Insufficient level of documentation (and probably also definition) of standards and procedures.
2. Follow-ups from information gathered is not clearly defined.

### **3. Resources and Provision of the Study Field**

#### **Analysis**

1. The HEI has developed a system to determine the financial resources required for the implementation of the study field and the relevant study programmes, example of which is given in the latest strategy (<https://rtk.lv/?fails=1645204326.pdf>). In the strategy planned investments required to achieve strategic goals were calculated for the following categories: necessary maintenance costs for the investments made previously; investment into learning environment infrastructure; improvements of educational materials and technical base; E-environment and its development. There is no specific system for financing scientific research, however, according to the management statements during the meeting, there is a yearly budget of 5% which students (Student board) can use for their needs, including creative projects, sports and cultural events (e.g. Latvian Song and Dance Festival).

2. During the site visits it was demonstrated that modern equipment for practical training has been

purchased. There are two financing channels for the equipment procurement - cooperation with employers and attracting EU co-financing. During the laboratory tours HEI representatives informed experts that HEI has recently participated in SAM and ERAF projects (e.g. ERAF project Nr. 8.1.4.0/17/I/001) which allowed purchasing valuable equipment for practical works and modernising study facilities. All students answered positively during the interviews that they are allowed to use the laboratory equipment, both during the classes and for individual projects.

The latest investments included refurbishing of classrooms and computer classes. During the visits the advanced computer classes equipped with industry accepted software (AutoCAD and SolidWorks) were presented to Experts in Riga, Kandava, Liepaja and Daugavpils. The HEI benefits from sharing premises with vocational education school (including Kandava, Liepaja and Daugavpils branches). Thus, computer classes equipped with latest drawing and simulation software are available for school during the week, and are available for HEI students starting Friday afternoon.

Books are available in all premises of HEI libraries. SAR report states that students of the college have access to the libraries and databases of other higher education institutions and training laboratories, including Riga Technical university, Latvian University of Life Sciences and Technology, Latvian Maritime Academy. During the visits it was explained that to access Riga Technical university library, students must use their student card, and read the books in the reading room. Cooperation with Riga Technical university library provides students with the latest literature. The collection of items is even greater in virtual environment, which can be accessed through electronic databases. Unfortunately, during the interviews students seemed surprised to learn about these opportunities. Students interviewed in Liepaja told they never used library. The reason named by the student was that materials provided by instructors are fully enough. However, experts noted that for many students level of English does not allow to participate in the interview without the interpreter, which suggests, that they might not choose to read the lately published books in English and prefer instructor materials in native language instead. As convenient as this approach may sound, it limits the research potential of the students.

As an important part of digitalisation, Wi-Fi was available at all HEI premises to experts during visits, it is available to students and teachers to ensure fluent study process in digital environment.

3. The list on the teaching staff provided in SAR Annex (II. - 3. Resources and Provision of the Study Direction) shows that there are 65 instructors involved in the implementation of the study field, however, the list of composition of college staff states that there are only 47 people involved as academic staff. From the 65 listed instructors 40 have been awarded master degree, and 11 have been awarded doctoral degree (Dr.philol./Dr.sc.ing./Dr.chem. Mg.sc.chem./Dr. sc. comp.). Amount of teaching staff appears to be sufficient. In the list some names mentioned for course descriptions are missing (for example, for Automotive transports as teachers - guest lecturers are named, which are not present in the common list). During the visits experts learned that teaching staff from Riga, including program directors, travel to Kandava and Liepaja to give lectures, which provides students in branches opportunity to meet their program directors and discuss topicalities in the field.

The academic and research workload of the teaching staff is not balanced, and academic staff is mainly focused on teaching. According to SAR Annex II.-3 the total staff with their main job at the college is 90 persons, out of which 43 is academic staff for whom the college is not the main workplace (guest lecturers, professors, docents). 31 of which working less than 0.25 of full hours, and their main job is elsewhere, typically in the industry, not a research institution.

In the self-evaluation report p.3.3. it is not indicated whether specialists from companies are attracted and whether trainings on new technologies are organized and acquaintance with them in practice, however, during the interviews Experts learned to the present day the HEI attracts highly skilled professionals as lecturers. Experts met lecturers for the Refrigeration program in Riga and for automotive program in Kandava, which were working professionals in the field, and presented the study program they represent with great enthusiasm. According to students' responses during

interviews, they value lectures given by professionals highly. However, working professionals cannot participate in outgoing and incoming mobility and research. During interviews experts met teachers, who are former graduates of the program (e.g. during interview in Riga), and talked to graduates (e.g. during graduate interview in Liepaja and Daugavpils) who would willingly participate in the study process if invited. This suggests that HEI has created an ecosystem and good relationships that welcome students to keep connected with HEI after graduation.

During the visits examples of responsiveness of teaching staff to the students needs were given. For example, an "Automotive transport" study program director travels to Kandava once in two weeks to give a lecture and to meet with students and discuss the topicalities. Thus, although students did not recall systematic surveys about studies, they felt heard.

4. A well functioning Moodle system was demonstrated to experts. The Moodle page for common course for all programs - Mathematics, was demonstrated, where materials for studies were available and the announcements on the recent events and tests were placed. During Covid-19 distant learning period Moodle system for online materials and sharing of information became even more important. Students confirmed that almost all lecturers use it efficiently. The IT department representative claimed that at least 50% of teachers use Moodle system, while students (e.g. students in Liepaja) said almost all teachers, say 85% use it.

Additional support in form of consultations is mainly ensured by teaching staff, which responds with empathy and flexibility to students requests about additional training. During the meetings with students participants confirmed that lecturers are supportive, responsive and flexible. There were specific examples of responsiveness to students creative projects, e.g. for "Automotive Transport" program the competition car made by students was demonstrated, which broke down shortly before competition, and HEI staff provided financial resources timely to fix it.

## **Conclusions. Strengths and weaknesses**

The resources and provisions of study field indicate the possibility to ensure a high-quality study process. The learning resources are available in form of laboratory equipment, free internet, books. Books are available in libraries of the premises, and in cooperation with other universities, as hardcopies and electronic versions. All in all, HEI has a good resource base and the students and the teaching staff have access to the necessary resources to ensure the quality of teaching and learning process, even though, to access some resources students and teachers must visit different premises. One of the main concerns is the level of English of students and teaching staff and whether it is sufficient to ensure ability to read the latest literature.

Strengths:

1. Advanced infrastructure and equipment availability, excellent provision for all study field programs, with laboratories and workshops for practical training, computerized training rooms, software required for training provided. Moodle system is used efficiently. The financial resources required to achieve strategic goals are assessed.
2. Responsiveness to students' needs and support for students' creative projects.
3. Experienced, competent and motivated employees, including college graduates involved into the learning process.
4. Wi-Fi is available at all premises of the College.
5. Mobility of teaching staff between premises.

Weaknesses:

1. No budget and systematic motivation for research activities. Academic staff working less than 0.25 of full hours cannot participate in research projects.

2. To access some specific resources teachers and students must travel to different premises, e.g. travel from Liepaja to Riga.

#### **4. Scientific Research and Artistic Creation**

##### **Analysis**

1. The institution highlights the aims of study field as well as strategic development of it based on Latvian Sustainable Development Strategy, National Development Plan 2020-2025, United Nations Sustainable Development Goals etc. (Section 1.2 of self-evaluation report (SAR)). In addition, the SAR states that one of the opportunities for the study field is promotion of applied research activities among students and academic staff (Section 1.3 of SAR). However, SAR does not contain clearly formulated aims and tasks related to applied research in the study field as well as clear directions of future development in this area. Moreover, section 4.1 of SAR does not contain proper analysis, assessment, and information on applied research directions in the study field. Also, section 4.1 of SAR does not contain any information on relevance or impact of applied research to industry and study field. Moreover, during the on-site visit, representatives of the institution (interview with RTC management) were not able to explain what the aims are and their development plans for the study field in the area of applied research. Therefore, on the basis of information, assessments, interview and descriptions provided in sections 1.2-1.3 and 4.1 of SAR it is not possible to suitably assess and analyze if directions of applied research activities comply with the development aims of the higher institution as well as to study the field because it was not provided or introduced properly.

2. Section 4.2 of SAR does not contain any information or description on processes related to integration of applied research outcomes to study process or curriculums. On the other hand, considering the visit experience (interview with academic staff in Riga) it was found that results of student's final theses are used as teaching materials. It can be assessed as a positive aspect for the study process and to motivation of students. Also, annually the institution organizes public review of projects results and review/presentation of qualification papers which are presented by academic staff and students (interview with academic staff and management of study field in Riga). However, section 4.2 of SAR does not contain information what kind of event is organized i.e. it is not clear if these events are faculty or department meetings. However, on the basis of visit experience (interview with academic staff in Riga), it can be stated that the events are an international conference organized by institution and defense of a student's final thesis. These activities can be assessed as positive aspects regarding integration of applied research outcomes to the study process. Unfortunately, the SAR contains only fragmentary information and shallow analysis of this criteria. Therefore, it limits deeper analysis and assessment of it.

3. Considering a list of scientific publications (Annex of SAR) can be found that only one scientific paper was prepared in cooperation with foreign scholars. The topic of paper is related to mechanical engineering, manufacturing. It can be assessed as a positive aspect for study program "Mechanical Engineering". On the other hand, there is no publications with foreign scholar which are related to other study programs which are in the study field. It can be assessed as negative aspect. On the other hand, academic staff actively participates at international scientific conferences (list of conferences, Annex of SAR). In total, during period of assessment, the academic staff have participated at 15 international scientific conferences. This aspect can be assessed as positive. On the other hand, most of the topics, 7 from 15, are related to study program "Mechanical engineering" while other topics are general or related to educational aspects. It can be assessed as result of missing strategy of development, aims and tasks in field of applied research activities. Also, the institution participated as a partner at several international projects funded by Erasmus+ program (list of projects proposed at section 4.3 of SAR). However, the projects were focused on

development of study process and programs and can't be assessed as cooperation in area of applied research activities at international level. On the other hand, it has positive influence to study process and programs. Moreover, representatives of academic staff are invited to review the final thesis as guest reviewers at international level (Kauno Technikos Kolegija, Lithuania). It also can be assessed as a positive aspect. On the other hand, considering to SAR and list of publications (Annex of SAR) it can be found that international cooperation in area of applied research is not sufficient. Moreover, there is no information on the process or mechanism of how international cooperation in the area of applied research activities is regulated, supported or promoted by the institution. Also, considering the topics of scientific papers and presentations at international conferences (list of scientific publications, Annex of SAR) it can be found that applied research areas have high dispersion and there is no right way to assess their impact on the study field and study programs. Therefore, international cooperation in the area of applied research activities and their impact on the study field can be assessed as a weak, but with good potential for development.

4. Unfortunately, section 4.4 of SAR does not contain any relevant information about developed mechanisms for the involvement and motivating of the teaching staff to participate in applied research. The information in this section is just a copy of section 4.3 of SAR. However, on the basis of visit experience (interview with management of institution) it was found that institution financially encourage academic staff after successful publication of scientific paper, but not provided any formal regulation and/or criteria of this encouraging process. Also, considering to general experience of visit and quality of SAR, it is stated that the institution does not give proper attention to this field. In conclusion, this criteria of evaluation can't be assessed properly due to lack of information and low quality of SAR.

5. College SAR contains information that students are preparing and publishing scientific papers and participating at international conferences, but does not contain any information on mechanisms related to student's involvement in applied research activities. The SAR contains four examples of papers (additional list of publications which was provided after visit) to which were coauthored by students, as a positive aspect. However, SAR does not contain any statistic data related to students involvement to applied research activities. Therefore, it was stated that these activities are unsystematic and it is assessed as negative aspect. Moreover, the students were not able to recall any invitation or promotion of the conference among students (interview with students and graduates, Liepaja, Kandava). Therefore, considering to the provided information and visit experience it is not possible to assess efficiency of the mechanism due to missing description and statistical data. In addition, two study programs (Transport engineering, Mechanical engineering) curriculums contain subject "Basics of Survey Research" and it is as a positive aspect regarding student's involvement to applied research activities. But, considering the visit experience (interview with students and graduates, Liepaja, Kandava, Daugapils), the students were not able recall this subject, its topics or outcomes. Moreover, curriculums of "Refrigeration engineering" and "Heat power engineering" study programs do not contain this or similar study subject.

In general, considering visiting experience (interview with management of study programs, Riga) and SAR, the students are involved to applied research and technical creativity activities via preparation of midterm and final projects as well as during practice in industry. Moreover, the students are able to use college technical equipment and laboratories for their own private projects.

6. In college SAR Section 4.6 was not provided information related to innovative solutions which are used in the study process. The institution refers to the usage of the most recent CAD/CAM software, Zoom meeting system as well as BigBlueButton service and Moodle platform as innovative. However, usage of these services and software can't be named as innovative solutions for the study process. Therefore, this section of self-assessment report can't be properly analyzed and assessed

due to lack of information or statistics. In addition, on the basis of visit experience (interview with students and graduates, Liepaja, Kandava, Daugapils), the students mentioned student's presentations on different topics.

## **Conclusions. Strengths and weaknesses**

Considering to the analysis of SAR, visit experience and information provided by institution after the visit can be stated - the institution does not has clear development strategy, aims and goals in area of applied research activities. Moreover, the institution does not has clear mechanism to encourage academic staff to perform these activities. Therefore, it leads to low number of scientific publications which have huge dispersion in topics and weak links to study programs.

Also, insufficient international cooperation in the area and insufficient integration of outcomes of applied research to study programs is a result of missing strategy and vision of development. On the other hand, academic staff actively participates at international conference organized by the institution or by other institutions. However, considering SAR and visit experience it is result of personal initiative of members of academic staff rather result of institutional work in this area.

Involvement of the students to applied research activities is weak. The institution claims that students performs applied research activities during preparation of midterm or final thesis preparation. Therefore, considering to this statement all students in all study programs are involved to these activities. However, only four scientific publications are co-authored by students and there is no examples of student's participations at the conferences. Considering to whole number of students, number of outcomes of applied research activities is very low. Moreover, the institution dedicates 5% of budget to cultural and sport activities of students while there is no any mention on any funds dedicated to students applied research or technical creativity activities. Finally, there is limited information or examples provided on innovative solutions used in study process or in teaching.

Strengths:

1. International conference for academic staff is organized annually.
2. Institution dedicates 5% of the budget for students' cultural and sport activities.
3. Academic staff actively participates at international conferences.

Weaknesses:

1. Institution does not have defined directions of applied research for the study field and for study programs.
2. Institution does not have clear aims and tasks for applied research in the study field as well as development strategy, in this area, is also missing.
3. Institution does not have mechanism to encourage academic staff to perform applied research activities, publish scientific publications and develop international cooperation in this field.
4. Relation between applied research in the study field and the study process is weak and poorly described.
5. Innovative teaching methods or solutions are not included to the study process.
6. Involvement of students to applied research activities is unsystematic.

## **5. Cooperation and Internationalisation**

### **Analysis**

1. College strategy project for 2021. - 2027. vaguely defines that institution is interested in strengthening cooperation - both internationally and locally. As indicated in SAR of now college has 11 international cooperation agreements in place out of which 2 are within Erasmus+, 2 -

international internships, 4 - training of new specialists, 2 - staff and student mobility and 1 as cooperation in IT. It must be noted that College lacks a strong vision and strategy of internationalization, therefore it is recommended to define achievable and measurable goals, as it can help both staff and administration in the decision making process and assess the progress of success. College lacks clear vision and criteria (there was no proof of this in SAR or during visitation) on what kinds of cooperation opportunities they are seeking. All cooperation in future recommend to organize based on measurable goal is set forth in accordance with the larger vision and strategy of institution. According to information obtained during the visitation and SAR outgoing mobility is at low levels. However students note that the usual reason for low outgoing mobility levels could be explained by fact of student profile, that students are mostly already employed. Students who had taken an opportunity in mobility activities completely agrees that experience and gained experience was worthwhile. Therefore college should seek out more ways to promote mobility opportunities towards students by, for example, making introductory sessions with students regarding mobility opportunities, providing stories about students' experience abroad, advocating for better employment opportunities given possible experience abroad etc.

As indicated during visitation institution has a well-developed and widespread local partner network within respective study fields of each relevant programme. College deeply cooperates with industry associations and companies. For example, the study program "Automotive Transport" has an excellent case of cooperation with Toyota representatives, yet, these kinds of cooperation are not represented in application for study field evaluation or submitted documentation.

In general, forms of cooperation are various and usually are based on mutual benefit - the need of a growing labor market and informal relationships. College claims to be active member of 4 industry associations. Therefore - it is recommended to offer the option to formalize the cooperation of involved partners or make internal account of all partnerships so that these possibilities could be utilised more efficiently.

During visitation experts had confirmation that most graduates that work in their respective fields are loyal and interested in daily activities of college. College should consider leveraging this resource more by including graduates more into the study process, for example, study trips to their respective companies, case studies, guest lectures, master classes and approbation of curriculum and so on. These kinds of relationships, if fostered, could bring benefit to the staff, college and students. College cooperates with partners from Latvia and abroad and it contributes to relevant study field, but it is not clear how cooperation partners are selected.

During the visits experts learnt that professionals (employers) are actively involved in development of the study programs, since some lecturers are practicing professionals in the field. In general, there are around 170 manufacturing companies willing to employ graduates from college, including companies located close to Riga, like Tiger and Baltrotors. There are events organised for students in cooperation with enterprises, for example, competitions by INTER CARS (available: <https://intercars.lv/lv/jaunumi/galerija/konkursa-jaunais-automehankis-2020-finals/>).

2. College reported 7 teaching activities for the Automotive Transport program and 7 for Engineering Mechanics. Although there are results in some of the study programs within study field, College has no developed system and procedures for attraction of the teaching staff from abroad that can be assessed. The institution has been working towards attracting teaching staff from abroad - during visitation College claimed they are working on writing of projects that enables them to have incoming guest lectures.

The self-assessment report section on mobility demonstrates that there is active exchange of lecturers between Baltic countries. During the visit experts learned that during the reporting period HEI got an award for the outstanding international cooperation (Erasmus wings award). This award was not mentioned in the self-assessment report. During visits experts saw success stories of mobility posted on the wall (which is a good example of mobility results dissemination and

motivation for students), and met graduate, who participated in mobility in Estonia, but mobility rate in general is not high. The obstacle to mobility might be not only employment of the students, but also poor English skills (in specific final projects experts noted that annotation was in Latvian and Russian, and not English).

3. College has an agreement for internship placement with The Association of Mechanical Engineering and Metalworking Industries (MASOC) of Latvia. During visitation it was concluded that usually internships placements are 1] with an employer where the student is already employed; 2] with an employer found by the student himself or 3] by lecturers and other staff members using their own informal contacts within the field. Students usually are encouraged to seek out internships in places other than their current workplace if applicable and staff is eager to help out with possible placement opportunities related to student interests and study field. During visits for experts was clear that all students are satisfied with the ways internship organisation is conducted. Common system for provision of traineeships and organization within the study field has been developed. Although in the SAR it was stated that internship is organised in cooperation with MASOC, but during interviews it was revealed that there are even more associations which maintain active cooperation e.g. "Latvijas Saldētājkārtu inženieru asociācija (Latvian Association of Refrigeration Engineers)", which is of specific importance for the program "Refrigeration Engineering".

### **Conclusions. Strengths and weaknesses**

The college cooperates with institutions from Latvia and to a limited extent abroad within the study field, and such cooperation contributes to the achievement of the aims and learning outcomes of the study field and the study programme. However, there is no clear strategy towards internationalization and some cooperation in Latvia are not accounted for.

College has not yet developed a demonstrable system and procedures for the attraction of the teaching staff from abroad within the study field. A common system for the provision of traineeships and the organization thereof has been developed within the study field.

Strengths:

1. Strong relationships within relevant industries by staff members.
2. The companies are satisfied with the knowledge and skills of the students of the study programme, a well-developed network of local partners offers traineeships for students and later - jobs for graduates.
3. Broad spectrum of traineeship opportunities as well as cooperation with local companies to support the development of practical skills and qualifications.
4. Loyal and interested graduates provide opportunities to utilize them in the teaching process.

Weaknesses:

1. Lack of clear strategy including measurable goals regarding internationalization and cooperation.
2. Student outgoing mobility is at a low level. Poor English skills and employment of students prevent them to participate in Mobility.
3. There is no demonstrable procedure to attract teaching staff from abroad.

## **6. Implementation of the Recommendations Received During the Previous Assessment Procedures**

### **Analysis**

The college in SAR report states that "There were no significant negative comments during the previous accreditation of the field of study, and the recommendations provided by the experts have

been implemented." (SAR p. 46). During the interviews management of study field recalled that previous evaluators strongly recommended improving base for practical tasks (recommendation No.5).

In total, in SAR Annex for section 6.1.-6.2. a list of 7 recommendations was provided, of which each was checked with "Completed":

"1. Continue developing the study program in line with job market development trends." This recommendation carries perpetual activities. SAR Annex states that for this recommendation college requires that annual study programme self-assessments are submitted, so that compliance can be checked at the end of every academic year. What is more important, during interview with employers the representative from The Association of Mechanical Engineering and Metalworking Industries of Latvia (MASOC) confirmed that he submits HEI his ideas on programs' improvements regularly.

"2. Invite more instructors from abroad." SAR Annex states that in-person and remote classes taught by foreign instructors take place in the college every year. Unfortunately, no specific number is available in any SAR annex. The SAR chapter on international cooperation states that "More information on student and teacher mobility is available in the yearbooks for each year." The yearbook of HEI (<https://www.rtk.lv/?birka=%20gadagr%C4%81mata>) states that for 2020/2021 number of foreign lecturers was zero. We acknowledge that all studies in college are in Latvian language, therefore a whole course cannot be organised by the foreign instructor, and foreign instructors might participate in classes as guests lecturers. Thus, cooperation is possible when HEI has common projects with some foreign universities not focused on teaching directly, but rather on developing study materials. Specific examples of the cooperation projects provided to experts are INLEARC project on Intelligent e-learning systems in robotics/mechatronics and Erasmus+ Strategic Partnership (KA2) LIGGD DIAD-tools on drawing teaching tools. The yearbook of 2020/2021 mentioned examples of online webinars, e.g. from Sandvik Coromant Ltd, Sweden "Learn more, earn more", attended by 2 participants from HEI.

"3. Continue investing in staff development and involve the teaching staff in international exchange projects." For this recommendation SAR annex states activity "The practical and teaching skills of the teaching staff are improving every year, which is registered and monitored by the Human Resources Department", which is not specific, but yearbook of 2020/2021 provides some examples: 2 teachers participated in Erasmus+ teaching mobility, 2 in training mobility, 3 mobility projects hosted in Latvia, Estonia and Lithuania are listed („Mobility and Experience - Freedom to Choose" (2019-1-LT01-KA116-060203); Development of professional competences (2019-1-LV01-KA102-060209; 2019-1-LV01-KA102-060209)), Strategic partnership INLEARC project.

"4. Involve students in international exchange projects." For this recommendation SAR annex states activity "Erasmus projects every year", without specific number. In a yearbook of 2020/2021 there is a note that due to Covid-19 restrictions 6 mobilities were postponed to 2021./2022. academic year. As a result, in 2020./2021. only one mobility related to study field (Refrigeration Engineering) was organised to Estonia. In 2019/2020 two mobilities for program "Automotive Engineering" were organised to Ireland and Germany and one mobility for Refrigeration Engineering programme was organised to Estonia.

"5. Continue improving teaching equipment." New equipment available to students on college premises was demonstrated to experts. During the reporting period material base was significantly broadened, by participating in ERAF and SAM projects, described in details under "Resources" section.

"6. Create and develop an e-learning environment." For this recommendation activity in SAR annex was: "Remote learning took place during the pandemic". There was not specific amount of courses developed mentioned. Nevertheless, the functioning Moodle system was demonstrated to experts. Students confirmed during interviews that almost all teachers use the system.

"7. Develop more IT solutions and electronic study courses." For this recommendation activity in SAR

annex was: "Actively use the MOODLE system and other remote learning platforms (ZOOM, Team etc.)". We acknowledge that courses in vocational education require both theory and practice. The theoretical material might be presented well in ZOOM, while for practical tasks it is harder. Some attempts of virtual lab experiments on screw compressor were provided for Refrigeration program. However, students claimed during interviews that they think even a well-performed virtual lab cannot provide the same learning experience as hands-on practical tasks.

Although details upon the implementation of recommendation from previous accreditation is not completely provided, the panel members were able to convince during the visit that most of the listed recommendations were followed, but not fully implemented.

## **Conclusions. Strengths and weaknesses**

The HEI is taking the suggestions of the previous evaluation serious and has undertaken substantial efforts in order to improve many of the aspects mentioned. Improvement of teaching equipment was one particularly positive example. Some issues however like the low level of international exchange seem to be systemic and therefore much harder to tackle in the short run.

Strengths:

1. The effect of the measures taken in order to follow the recommendations are mostly already visible.

Weaknesses:

1. International exchange still on a low level.

2. Most of the listed recommendations were followed, but not fully implemented.

## **7. Assessment of the Requirements for the Study Field**

- 1 R1 - Pursuant to Section 5, Paragraph 21 of the Law on Institutions of Higher Education, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study direction whilst implementing their internal quality assurance systems:

**Assessment of compliance:** Partially compliant

Internal quality policy is published and is available, but procedures to make sure that internal quality assurance system is working are not documented, therefore implementation of the policy is "Partially compliant".

- 2 1.1. The higher education institution/ college has established a policy and procedures for assuring the quality of higher education.

**Assessment of compliance:** Partially compliant

The quality assurance policy is present (<https://www.rtk.lv/?sadala=5082>), but procedures (necessary to make sure that policy is implemented well) are not documented. The absence of statistical data e.g. from surveys puts the entirety of procedures in question.

- 3 1.2. A mechanism for the development and internal approval of the study programmes of the higher education institution/ college, as well as the supervision of their performance and periodic inspection thereof has been developed.

**Assessment of compliance:** Partially compliant

During interviews it was stated that the programs are developed with a close cooperation with

associations. However, attention should be paid to document the compliance. To make sure that programs are compliant with the latest professional standard, form "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard" has to be completed.

- 4 1.3. The criteria, conditions, and procedures for the evaluation of students' results, which enable reassurance of the achievement of the intended learning outcomes, have been developed and made public.

**Assessment of compliance:** Fully compliant

The criterias are listed under each course. Moodle system allows online grading with immediate students' access to results.

- 5 1.4. Internal procedures and mechanisms for assuring the qualifications of the academic staff and the work quality have been developed.

**Assessment of compliance:** Partially compliant

The procedure is available on HEI web page (<https://rtk.lv/?sadala=5082>). A zip file of Quality of teachers' professional work includes self-evaluation of a teacher. Only SECONDARY SCHOOL PROCEDURE is available in the zip file.

- 6 1.5. The higher education institution/ college ensures the collection and analysis of the information on the study achievements of the students, employment of the graduates, satisfaction of the students with the study programme, efficiency of the work of the academic staff, the study funds available and the disbursements thereof, as well as the key performance indicators of the higher education institution/ college.

**Assessment of compliance:** Partially compliant

According to HEI web page, quality monitoring is based on 1) Discussions and surveys and 2) Self-assessment reports (teachers, programs, departments). During the interviews it was stated that data is collected, but no data and results were presented. Information on the study achievements of the students, employment of the graduates is collected and maintained through individual contacts and thanks to good relations of teaching staff and students. Written evidence is missing.

- 7 1.6. The higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study direction whilst implementing their quality assurance systems.

**Assessment of compliance:** Partially compliant

According to HEI web-page, the aim of quality management is to ensure the operation of the HEI in accordance with the development strategy, external and internal regulatory documents, contractual obligations, customer and employer requirements. Examples were provided how programs are developed based on market needs, and responded to changing regulation. However, the documents on the procedures and data were not provided, therefore written evidence is missing.

- 8 R2 - The cooperation with different organisations from Latvia and abroad implemented within the study direction ensures the achievement of the aims of the study direction.

**Assessment of compliance:** Partially compliant

The SAR p.1.2 on program goals states that "The programmes taught within the fields of study are orientated towards achieving Latvia's sustainability goals; "strengthening the main capital of Latvia, namely, the development of human abilities, knowledge and talents, creativity and ability

to collaborate, by educating young people and enabling them to join both the local and the global job market." The cooperation with local partners is strong. It is based on cooperation with industry associations and personal relationships of staff within field, including graduates. International organisations are cooperating with college in engineering projects like INLEARC and Erasmus contracts. Yet, college lacks strategy for internationalization and cooperation with partners abroad can be strengthened further. The insufficient English skills of students will prevent joining global job market.

- 9 R3 - Compliance of scientific research and artistic creation with the development level thereof (if applicable).

**Assessment of compliance:** Partially compliant

Professional education is highly focused on practical skills. The list of scientific activities provided showed that some attempts to perform research activities are made by teaching staff, although the number of research articles with RTK affiliation is not high. The student conferences are organised yearly in HEI.

- 10 R4 - Elimination of the shortcomings and deficiencies identified during the previous assessment of the study direction, if it has been conducted, or the implementation of the provided recommendations.

**Assessment of compliance:** Partially compliant

There were 7 recommendations. 1st recommendation on following job market development trends is perpetual and is fulfilled in cooperation with MASOC. The recommendation of improving practical projects material base was demonstrated in full (recommendation No. 5), the recommendations on online learning tools (recommendation No. 6 and 7) were implemented well. The other recommendation and follow-up activities were rather vague. According to additional information, retrieved from yearbooks of HEI, the recommendations 2-4 focused on international projects for academic staff and on involving more students into international projects was not fulfilled in desirable amount due to Covid-19 travelling restrictions.

## 8. Recommendations for the Study Field

### Short-term recommendations

Defining directions of scientific research for study field as well as develop strategy of development of these directions in international and local domains. Defining aims and tasks for study field in area of scientific research with focus on local and international demands.

Assigning a responsible person for a quality department, thus establishing accountability for quality of documents.

Defining KPI (Key Performance Indicators) in the strategy, which are supposed to help to evaluate if the desired progress was achieved fully or partially. Developing clear strategy and vision regarding internationalisation and cooperation policy including measurable goals and KPIs.

Reviewing course descriptions, ensuring similar formatting, dividing literature into obligatory and additional, stating goals of the course, study results, contents of the course, previous knowledge required. Mandatory reading amount should reflect actual content of course and should be realistic. Making course descriptions available for students online, because good course descriptions may attract more students looking for specific knowledge, who would otherwise not consider choosing college for higher education.

Add a target benchmark to each of the quality related areas like admission results, graduation and dropout rate, employer feedback etc. in order to have numerical targets for the quality criteria.

### Long-term recommendations

Developing clear and well defined mechanism which would encourage academic staff and students to perform research activities. Developing firm links between aims and tasks of study field and study programs in area of scientific research.

Developing written procedures for employees. Written procedures should not be complicated, instead, they are supposed to make training of new employees easier and ensure that the same good practices are followed in all branches.

Ensure sustainability and knowledge sharing by organising training for employees, so that there are at least 2 teachers (but preferably more than 2) capable of working on each advanced infrastructure item.

Cooperation of management with program directors for preparation of next self-assessment reports by assigning a small task every week during prolonged time period.

Improving English skills of students (for example, by integrating CLIL - Content Language Integrated Learning approach into studies) to increase literature availability (catalogues from Blitz are in English) and increase mobility rate.

Continuing improvement of the Moodle system and increasing the percentage of courses that use the system.

Seeking ways to advocate outgoing student mobility, for example, providing information on opportunities, organising Q&A events, providing success stories etc.

Identifying all cooperations that are already established and provide opportunity to formalize them if wanted by partners.

## II. "Automotive Transport" ASSESSMENT

### II. "Automotive Transport" ASSESSMENT

#### 1. Indicators Describing the Study Programme

##### Analysis

Automotive Transport is a first level professional higher education study programme. In the program description for the full-time studies of 2 years, 6 months the qualification to be obtained is Automotive transport maintenance specialist. The program has 100 Credit Points (<https://rtk.lv/?sadala=183>). The qualification corresponds to the level 5 of the Latvian qualifications framework.

The name of the study programme "Automotive Transport" clearly reflects the employment opportunities of graduates and the content of the programme. According to program Tasks, stated in Program description, graduates work in automotive maintenance and repair companies, diagnostic centres. Indeed, the graduates, experts met during interviews, work for automotive transport repair shops or automotive transport spare parts shops.

The type of study presented for accreditation experts is full-time studies, studies are organised typically during weekends, starting on Friday afternoon, to fit schedules of working professionals.

For the program "Automotive transport" the professional qualification or the degree and the professional qualification to be acquired was not stated in Annex "Sample of the diploma to be issued for the acquisition of the study programme", neither in Diploma example neither in Diploma supplement. The list of courses acquired was not provided in Diploma supplement for this program. In general, the Diploma and its supplement examples were not tailored for each program, which contributed to the expert statement in general assessment that the overall quality of SAR is low.

The professional qualification for the program "Automotive transport" was stated under HEI webpage (<https://rtk.lv/?sadala=183>). For this program, professional qualification "Specialist for automotive transport (in Latvian "Autoapkopes speciālisti")" was given. The graduates of the program work in automotive repair and service centres and shops, mostly related to automotive parts.

A link to the respective professional standard was not provided, which made procedure of assessment of compliance for experts based on many assumptions. There was further confusion when profession standard approved on 15.12.2021, applicable for profession name "AUTOSERVISA SPECIĀLISTS" was mentioned during interviews. In this report, to avoid mistakes experts refused making assumptions that "Autoapkopes speciālisti" and "AUTOSERVISA SPECIĀLISTS" are the same. For the SAR Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard the program was not organised according to Example (Annex 7), instead of analysis which competences are acquired in specific courses just one paragraph was uploaded. Given that Annex 7 has not been submitted, the experts had looked at compliance with the current new professional standard of Automotive service specialist, listed under Europass database

[<https://europa.eu/europass/fr/courses/qualification/954372de-c496-4b97-a15b-8f1c15115254>]. As a result, it was possible to evaluate only some competences e.g. "11. Use of special computer programs.", based on course descriptions, course mapping and software demonstrations during visits, but not a competence "11. Use technical manuals..." - it was not discussed or demonstrated.

Based on course descriptions and Annex "Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme", majority of requirements are covered in study curricula, e.g. study course "Communication/Saskarsme" targets competence "13. Understand team work style, be able to work in a team...", but for some criteria (e.g. Competence Nr.24 "24. Ability to communicate in the state language and two foreign languages.") the coverage was partial, because there is only one foreign language in the program.

The SAR Annex of statistics on the students over the reporting period do not separate students by branches. A drop in students' number was observed from 170 to 140 in 2014/2015 and a further slight drop to 126 in 2015/2016, and since then number of students is stable, varying around 120.

The programme is focused on practical skills - during the studies, a lot of practical tasks are done on the automotive transport parts, provided by industry players e.g. Toyota. The professional standard is updated under European Social Fund project 8.5.2 Nr. 8.5.2.0/16/I/001. As the graduates of study program claimed, the laboratories of the program replicate well and even surpasses equipment of real-life repair shops. The program is given in Riga, Kandava and Liepaja branches, and during the studies students travel to Riga for some practical tasks on the most modern equipment.

According to the statement in general program description, the aims, objectives and learning outcomes of the programme are defined according to the Professional Standard. The primary aim of the program is to prepare automotive maintenance professionals, which are capable to provide service to automotive equipment, and can manage personnel providing the services.

Contrary to Heat Power Engineering and Refrigeration Engineering programs, for this program the course mapping example was provided, which demonstrated well how study curricula is satisfying program goals, for example the goal "Understanding of various automotive diagnostic techniques, maintenance materials. Knowledge of the general nature of the design and operation of mechanisms, systems, units used in the transport industry" is covered in courses "Combustion

engines", "Automotive electrical equipment and electronics", "Construction of cars". However, learning outcomes are not the same in course mapping and program description. In the program general description tasks are too broadly defined and are not program specific. Some goals of the study program look more like goals of study field management e.g. Goal Nr.3. "To provide participation of employers in design of content of studies and organisation of the qualification exam." To achieve program goals and to raise interest of students on the practical tasks, program organises competitions together with employers, named "Junior Mechanic", and other universities (allowing student to build their own race cars).

The admission requirements for the students are that they have completed general secondary or professional (vocational) secondary education. These admission requirements are given in HEI web page (<https://rtk.lv/?sadala=175>), are clear and understandable.

## **Conclusions by specifying the strengths and weaknesses**

The study programme Automotive Transport is designed to prepare specialists working in automotive maintenance and repair companies, diagnose centres, including repair shops or as dealers for automotive parts. Programme graduates are prepared to provide maintenance and to manage personnel of service shops. The program is given in Riga, Kandava and Liepaja branches, and during the studies students travel to Riga for some practical tasks on the most modern equipment. The program is highly focused on practical skills, and replicates and even surpasses real-life repair shops equipment. The name of the program is appropriate, while aims, objectives and learning outcomes of the programme are defined according to the Professional Standard for "Autoapkopes speciālisti", available under Europass database. For this program the mapping example was provided, and it demonstrated well how study curricula is satisfying program goals.

Strengths:

1. The program name gives a clear idea of the content of the program.
2. The prospective employment opportunities are clearly defined.
3. The material base was recently updated to fit recent advances in the industry. Excellent provision with laboratory and practical tasks equipment in Riga branch, including the most recent equipment to study electric cars.
4. Involvement of students in creative projects and competitions, like building a race car.
5. Strong cooperation with industry, which includes organising competitions for students.

Weaknesses:

1. Tasks are too broadly defined and are not program specific.
2. Learning outcomes are not the same in course mapping and program description.
3. Not clear about professional standard used to ensure compliance with professional qualification to be obtained.
4. Experts saw less provision for practical tasks for this program in Liepaja branch.

## **2. The Content of Studies and Implementation Thereof**

### **Analysis**

1. The program "Automotive Transport" is a first level professional higher education study program, which should prepare the students for automotive mechanic profession, comprising in particular the ability to service equipment and manage and organize staff. The course program courses are designed to provided these skills. The students should also learn how to do applied research in their field, therefore the course "Basics of research" is introduced to the program and given by program director in Riga and Kandava. The course selection for "Automotive Transport" are adequate for the

training of automotive service and repair experts. It consists (comparable to the other programs under evaluation) of a small part of general sciences and skills (20%) and larger part of compulsory subjects (80%), internship I and II 16 CP (5 CP and 11 CP) and Qualification paper course 9 CP. As required in regulations, in study program "Automotive Transport" content is included in compulsory part study course Civil and Environmental protection 2 CP. But, regarding a module for the development of business professional competencies the study courses, as experts found, are separated between compulsory part (Business Economics 3 CP in total, Organizational psychology 2 CP in total) and non-compulsory part (Entrepreneurship in transport 1 CP, Basics of quality management 1 CP), what could be on expert's point of view additionally revised and completed more useful with a focus on the field of business directions. Study plan consists study course with 0 CP (Sport), that could be not included in study plan and offered as additional service.

According to course descriptions, the program-specific courses related to construction of automotive equipment are given by different lecturers, which is a positive aspect. Of the latter all are technical making the proportion of economical and legal studies particularly low in this program. For a positive surprise, hybrid vehicles already are covered in the courses (SAR p. 100, interview program director Riga). On the downside, electronics and BEVs seem to be underrepresented. The evaluation on whether the courses match professional standard requirements was assessed partially, because link and compliance to the professional standard was not provided by college. Analysis was done based on standard for a similar qualification name found by experts in the internet (in the official database there is no standard for qualification "Autoapkopes speciālisti"). Based on this analysis, most qualification criteria are met, except some criteria (e.g. Competence Nr. 24 on two foreign languages - there is only one foreign language in the curricula).

The learning schedule for the studies is available under HEI web-page <https://rtk.lv/?sadala=448>. It shows that studies are organised three days a week from 15:20-21:35. Considering that program applies for full-time study option, attention has to be paid to ensure that contact hours are sufficient. According to the Republic of Latvia Cabinet Regulation No. 141, Adopted 20 March 2001, "Regulations regarding the State Standard for First Level Professional Higher Education", considering that each semester has 20 CP, and a CP is equal to 40 working hours (p.6), given that studies take place 20 weeks, there should be 40 working hours per week for a student, and at least 30% of this time devoted to practical works (p.7.4.).

2. As is the case for most study programs lectures are generally concluded by an exam while a qualification paper has to be written and defended for the second internship. The grading principles given in Course description Annex are very detailed, for example, in course "Theory and mechanics of motor vehicles" the number of points for each achievement is listed (student receives 2 points for a correct but formal answer to the simplest question or task, 4 point for the task calculation scheme with force and moment vectors, 6 points on a correctly constructed system of equations, 5 points can be obtained for additional analysis and suggestions), and collecting these points student gets a grade. During interviews with students and graduates, experts specifically asked for some complaints on the grades, but students responded they never had any. The detailed grading criteria explains this phenomena. It must be pointed out that the risk of over grading was ruled out by experts. Conference proceedings of HEI were available to experts in College premises during interviews, and in one of the proceedings statistics on grades for the common course in the field "Mathematics" was given, which showed that majority of students get 4 or 5 for this course, and only some students complete the course with good grade or with distinction (8-10).

The proportion of practical work is claimed to comprise half of the studies which seems high but in the face of the sheer number and endowment of labs this is conceivable. Although not explicitly named in course descriptions, some activities (also extra-curricular) are project-based such as a student racing team. Students and staff alike are investing an impressive amount of resources with the collateral effect of positive spillover to the actual learning goals.

3. Surveys are conducted among students and graduates. The first are published at the homepage (<https://rtk.lv/?sadala=265>). For the latter exemplary results are given in the SAR (p. 104) with overwhelmingly positive feedback. Main fields of questioning were

- professional knowledge
- erudition (versatile knowledge)
- ability to arouse interest in study courses
- manage your audience
- strictly requires compliance with the requirements

Systematic follow-up is not documented but the fact that hybrids are already integrated into the courses after requests from employers (interview employer Riga) leads to the conclusion that it is done.

4. ERASMUS opportunities are offered primarily in the form of internships abroad. From the point of view of part time students however, these remain theoretical. In general knowledge thereof is scarce (interview students Liepaja). Statistical data is available in the RTC yearbooks ([www.rtk.lv/?sadala=460](http://www.rtk.lv/?sadala=460)) in Latvian language.

### **Conclusions by specifying the strengths and weaknesses**

The study program content and courses are in general designed to provide the necessary skills for automotive mechanic profession. The HEI did an impressive job in improving the overall study situation by e.g. acquiring the latest lab equipment or updating course contents to the latest development like hybrid cars, but also the college sees cars still mainly as mechanical systems underrepresenting electronics, high-voltage electrics and bus systems to a certain degree in the curriculum. The module of entrepreneurship for the development of business professional competencies need to be revised and completed more useful with a focus on the field of business directions. The same recommendation to revise the study program plan about study course Sport with 0 CP, what is included in study program plan. Based on profession standard for a similar qualification name found by experts most qualification criteria are met, except some criteria. The study program grading criteria are clear and detailed.

Strengths:

1. Content is professionally oriented, includes modernization towards hybrids.
2. Strong links and support by local industries.

Weaknesses:

1. The module of entrepreneurship skills for the development of business professional competencies not clearly defined and separated, study course Sport with 0 CP is included in study program plan.
2. Not clear about professional standard used to ensure compliance with professional qualifications to be obtained.
3. Electronics, high-voltage electrics and BEVs underrepresented in curriculum.
4. Statistical data gathered is not sufficiently and efficiently enough used for the improvement of the program.

### **3. Resources and Provision of the Study Programme**

#### **Analysis**

Additionally to the resources available and analysed in the part of study field, during the laboratory tours, it was demonstrated to experts that for the specific program of the Automotive transport, all branches provide a lot of opportunities to complete practical tasks. For example, in Riga a lot of

resources for practical tasks are provided by partners e.g. Toyota dealers.

Lab equipment (at the Riga site) is impressive to a degree that they are shared with the national branches of automotive companies (tour of the facilities Riga). Students from Kandava and Liepaja however, need to commute to Riga for practical lessons throughout their course of studies.

The investments listed in the SAR program description under p.3.1. were demonstrated to Experts. The equipment and materials for the Automotive Transport study programme such as a vehicle lift, vehicle repair tools and gear, 'diesel engines', 'suspension', 'vehicle body' laboratory training stands, a vehicle for a total of EUR 707,676.80 were acquired as part of the European Regional Development Fund action programme No. 8.1.4.0/17/I/001.

In Kandava laboratories there is a separate room for automotive parts, one including real cars, models of gear trains, and another one with internal combustion engines and related parts. In Liepaja the machining hall is well-developed, although the hall with real cars was not demonstrated, which confused experts greatly. Kandava and Liepaja branches, during the study process, provide partial practical training in Riga. During the study process, students travel to Riga, where they can stay in dormitories owned by college during the training period. The costs of the dormitories was affordable, neither of students could recall the specific price, but it was under 10 EUR per night. Surprisingly, students from Liepaja branch, which is most distant from Riga, claimed that it does not causes any problems to travel to Riga when necessary, quoting the student: "Driving to Riga is not hard. I just get into a car and drive there."

During the visits, experts learned that HEI established the routine of sending different lecturers to learn about advances in the field from dealers, and these trainings happen regularly. The equipment to learn about recent advances in Automotive field was demonstrated in Riga, namely, a laboratory where students can study parts of electric cars was demonstrated, and experts learned that the lab equipment with high voltage costs more than the actual electric car. The lab to study electronics was demonstrated, because modern cars are highly computerised.

The libraries of the branches are shared with other educational institutions, which, however, appear not to disrupt availability of resources - during the interviews students and graduates admitted that they preferred handouts prepared by lecturers to library books.

There were specific examples of student-centred learning demonstrated for this program, e.g. teachers participated in the project and acquired an expensive equipment, with which students can replicate a sound system of a car with real parts and finally test the sound. To complete the projects, students have to learn electronic principles and wire the equipment correctly, and as a reward, they can hear a system playing music.

Financial provision increased by ERAF project Nr. 8.1.4.0/17/I/001, and new equipment acquired indicates the possibility to ensure a high-quality study process also in the future.

Computer classes are shared with other programs, and provide sufficient ground for studies.

## **Conclusions by specifying the strengths and weaknesses**

The program has excellent resources for practical tasks, which create the prerequisites for the achievement of the learning outcomes, and indicate the possibility to ensure a high-quality study process also in the future. The laboratories demonstrated allow to learn all parts of the cars in greatest details, including the recent advancements in Automotive industry - electric car parts, sound systems and electronics. Computer classes are shared with other programs, and provide sufficient ground for studies.

Strengths:

1. Valuable resources provided by partners in industry.
2. Valuable resources acquired from lecturers activities in projects.
3. The recent advances in industry can be studied in laboratories in Riga.

4. The student-centred learning examples were demonstrated for this program with specific laboratory projects.

Weaknesses:

1. Availability to these resources is not similar in all branches, although sharing of resources is organised well, and students interviewed claimed that it was not a problem to travel to Riga to complete some practical training.

#### **4. Teaching Staff**

##### **Analysis**

1. The changes in composition of academic staff at study program titled “Automotive Transport” was provided in SAR. In accordance with SAR, three members have left and two have joined the study program. The reasons of changes are indicated. Average age of new staff members is 35 years. The additional documentation, which was provided after visit states that new members have knowledge based on practical work. This aspect can be assessed as positive. However, the institution does not provide any information on measures which were taken in order to ensure quality of study program and its compliance when changes in academic staff had taken place. This aspect can be assessed as negative.

2. Considering the composition of academic staff (Annex: Basic information on the teaching staff involved in the implementation of the study direction) complies with requirements of study program implementation and enables the achievement of the aims and learning outcomes of the study program. Matching the data provided in course descriptions and CVs', experts concluded that selected study courses of this program are given by professionals from the industry that is important for vocational education. For example, study course "Construction of cars" is given by a professional who started work as auto mechanic in 1983, and continued until 2002 before switching to logistics and teaching; courses "Internal combustion engines", "Car maintenance and repair" are given by a professional who worked as a board member and manager of car service company until 2018 before starting a teaching career.

Moreover, the institution indicates that academic staff continuously improve their qualifications via various workshops, courses, conferences and international projects. However, self-evaluation does not contain information on mechanism, process or regulations which describes how improvement of qualification of academic staff is regulated and promoted by the institution. In addition, SAR does not indicate how many members of academic staff, which are involved to the study program, have participated at qualification improvement activities and what impact, to the study program, was obtained as a result of these activities.

3. Considering to the list of publications (Annex of SAR) and additional information provided after visit can be found that 9 publication at international and local journals were published. However, almost a half of publications are not related to automotive study field. In addition, considering the visit experience (interviews with management of study programs and academic staff), it was found that members of academic staff perform applied research activities in collaboration with local universities. The number of publications does not reflect this collaboration and involvement of academic staff to these activities. Therefore, this aspect can be assessed as negative, but with good potential for future development. The SAR does not indicate any examples or outcomes of international collaboration in the area of applied research. This aspect can be assessed as negative and must be developed in future. On the other hand, SAR contains information which indicates that members of academic staff were invited to perform reviews of student’s final theses at international level. This aspect can be used as a base for development of international collaboration in the area of

scientific research. Unfortunately, SAR does not contain any information on mechanism or process which is related to integration of outcomes of applied research to the study process.

4. Section 4.6 of SAR indicates that different RTC departments, councils and partners interact with each in order to conduct a study program and if necessary make changes to it. However, descriptions of mechanisms or processes related to decisions to change or improve study program are missing or are not defined. SAR contains information that academic staff and management of study field program participate in experience sharing workshops, meetings with foreign higher education institutions, social partners, and industry representatives. Considering to SAR, these activities are focused on improvements of the study program. Therefore, this aspect can be assessed as positive. On the other hand, SAR does not contain information about correlation between related study subjects achieved or how it is regulated or promoted. Moreover, SAR is missing analysis of correlation impact to study program and its quality. In addition, on the basis of visit experience (interview with academic staff, Riga), it was found that cooperation between academic staff at the level of subjects exists. However, it is based on personal initiative of members of academic staff.

### **Conclusions by specifying the strengths and weaknesses**

Considering to analysis can be found that the composition of academic staff is suitable to achieve aims and outcomes of study program. Considering to changes in academic staff composition and qualification of new members can be stated that changes have positive impact to quality of study program. Moreover, management of study program and academic staff participates in activities focused on qualification improvement and it shows that qualification of the employees related to the study program is under development. Unfortunately, there is no any mechanism, regulations or promotion of these activities. Moreover, academic staff cooperates with local universities in field of applied research activities. In addition, members of academic staff are invited to perform reviews of final thesis's at international level. On the other hand, considering to composition of academic staff and list of publications can be found that number of scientific publications, related to study program, is insufficient. It is a result of missing mechanism which would promote these activities among academic staff. Moreover, international domain is also weak and must be developed in future.

Strengths:

1. Composition of academic staff is suitable to achieve the aims and learning outcomes of the study program.
2. Academic staff and management of study program participate in qualification improvement activities.
3. Academic staff performs scientific activities in collaboration with local universities.
4. Academic staff is invited to perform reviews of student's final theses at international level.

Weaknesses:

1. Involvement of academic staff to research activities is weak and there is no mechanism to promote these activities.
2. Number of scientific publications, in the field of study program, is not sufficient.
3. Mutual collaboration between the teaching staff members is not regulated or promoted.
4. International domain in the area of scientific research is not sufficient.

## **5. Assessment of the Compliance of the Study Programme "Automotive Transport"**

### **Requirements**

1. The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure by which state-recognised documents of higher education are issued.

**Assessment of compliance:** Partially compliant

The provided sample of the Diploma is organised in according with the regulations, however, the diploma uploaded has gaps, e.g. "ieguvis XXXXXXXXXXXXXXX kvalifikāciju" and diploma supplement has gaps as well: "2.1. kvalifikācijas nosaukums: XXXXXXX". Thus, the diploma examples are not program specific. The regulation "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinājošus dokumentus" p.1. states that regulations prescribe the criteria and procedures for the issuance of state-recognized documents certifying higher education regarding the acquisition of an accredited study program, as well as samples of the referred to documents, which means samples prepared had to be program-specific, an exact copy of a real diploma, except student personal data. Therefore the assessment is partially compliant.

2. Documents confirming that the higher education institution/ college will provide the students with the options to continue the acquisition of education in another study programme or at another higher education institution/ college (a contract with another accredited higher education institution/ college), in case the implementation of the study programme is discontinued.

**Assessment of compliance:** Non-compliant

There is no cooperation agreement for study program "Automotive Transport" provided by College.

3. Document confirming that the higher education institution/ college guarantees to the students a compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the higher education institution/ college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

**Assessment of compliance:** Fully compliant

Confirmation 14.12.2021., Nr. 1.1.-21/90 verifies that the institution guarantees compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

4. The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

**Assessment of compliance:** Fully compliant

Attached resumes of teaching staff and confirmation 09.09.2021., Nr. 1.1.-21/51 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi"

5. The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language.

**Assessment of compliance:** Not relevant

- 6 6. At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts.

**Assessment of compliance:** Not relevant

- 7 7. The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 8 8. The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

**Assessment of compliance:** Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi"

- 9 9. The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

Course descriptions and study materials are in Latvian. According to the p.56.1. criteria (1) the study course "defines the requirements for the commencement of the acquisition of a study course"; This criteria was missing for some courses, e.g. Augstākā matemātika/Calculus, Angļu valoda/English, Uzņēmējdarbības ekonomika/Business Economics. On the positive side, independent work description, evaluation criteria and grading are very detailed (criteria 4 and 5).

For criteria 2 and 3 the aim of the study course, planned study results are outline of the course were present, but in some cases course descriptions only partially reflect the goals of the course, study results, content of the course. For some of study course mandatory reading does not reflect actual content of course or is excessive and unrealistic in amount. Rework of course descriptions on College side is needed to comply with requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

- 10 10. The study programme complies with the valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided that the completion of the study programme leads to a professional qualification.

**Assessment of compliance:** Non-compliant

The comparison Annex 7 was not provided and therefore the compliance cannot be assessed. The new professional standard for the program was approved as of 15.12.2021., but the name of the profession was slightly different (in Latvian "AUTOSERVISA SPECIĀLISTA PROFESIJAS STANDARTS" versus qualification to be obtained "Autoapkopes speciālists"). Requirements were not presented in accordance to the Annex 7. Some assessment was done using information on professional requirements from qualification database web-page:  
<https://www.latvijaskvalifikacijas.lv/kvalifikacija/pirma-limena-profesionalas-augstakas-izglitiba-diploms-ar-profesionalo-kvalifikaciju-autoapkopes->

specialists/?doing\_wp\_cron=1641612138.1536090373992919921875. Majority of requirements are covered in study curricula, but for some criteria (e.g. Competence Nr.24 on two foreign languages) the coverage was less obvious.

- 11 11. Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 12 12. The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard.

**Assessment of compliance:** Fully compliant

Study program in general does comply with Regulations of Cabinet No. 141 "Noteikumi par pirmā līmeņa profesionālās augstākās izglītības valsts standartu".

- 13 13. The joint study programmes comply with the requirements prescribed in Section 551, Paragraphs one, two, and seven of the Law on Institutions of Higher Education (if applicable).

**Assessment of compliance:** Not relevant

- 14 14. Each member of the academic staff has either publications published in reviewed editions within the last six years, including international editions (if they have worked for a shorter period of time, the number of publications shall be in proportion to the work period), or artistic creation achievements (for instance, exhibitions, films, theatre performances, and concert activity), or a five-year practical work experience (except for the experience in the implementation of the study programme) in accordance with the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

Considering to list of publications as well as biographies of the teaching staff can be found that not all members have necessary publications. On the other hand, practical experience of members of academic staff is in most cases sufficient. Professional experience of academic staff demonstrated in CVs' provides a base to achieve study goals. Program includes courses given by professional with over 15 years of experience in automotive industry and car repair, and professional with 5 years experience as board member and auto service manager (specific courses referred to are listed in p.4.2. on Teaching staff analysis).

- 15 R5 - Overall rating

**Assessment of compliance:** Partially compliant

College should provide cooperation agreement for study program "Automotive Transport" confirming that the college will provide the students with the options to continue the acquisition of education in another study programme or at another institution in case the implementation of the study programme is discontinued. Compliance with professional standard and program specific diploma example needs to be provided. Also the study plan and course descriptions needs to be corrected - adding missing information and critically assessing how realistic is provided amount of mandatory reading.

## Requirements (R6-R8)

- 1 R6 - The compliance of the study provision, scientific support (if applicable), informative provision (including libraries), material and technical provision, and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of the learning outcomes.

**Assessment of compliance:** Partially compliant

In general the available resources and provisions indicate only partial possibility to ensure successful process. The learning and informative resources are available and in good order. Institution has a good financial base and the students and the teaching staff have access to the necessary informative resources to ensure the quality of teaching and learning process, however Liepaja branch lacks laboratories, garages and workshops which severely impacts study quality in comparison with other branches as most of practical workshop-based courses are being conducted remotely or by traveling to other cities. Available technical provision in Riga is in good order while Kandava branch technical provisions could be improved.

- 2 R7 - The compliance of the qualification of the academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments.

**Assessment of compliance:** Fully compliant

Complies with national regulation.

- 3 R8 - The study programme leading to the master or doctoral degree is based on the advances and findings in the relevant field of science or artistic creation.

**Assessment of compliance:** Not relevant

### **Conclusions by specifying the strengths and weaknesses**

The assessment of compliance with professional standard is missing, and has to be submitted to improve evaluation of the program. The program-specific diploma example has to be submitted as well. Otherwise, most of the requirements prescribed in the Law on Institutions of Higher Education and other regulatory enactments are met, except p.2. on the requirements about the possibilities to continue the acquisition of education in another study programme.

Strengths:

1. Study program content is professionally oriented, includes modernization towards hybrids.
2. The material base is adequate for achieving of study program goal and aims, is recently updated to fit recent advances in the industry.
3. Teaching staff is experienced, professional and motivated.
4. The prospective employment opportunities are clearly defined.
5. Strong cooperation with industry, which includes organising competitions for students.

Weaknesses:

1. Study program tasks are too broadly defined and are not program specific, learning outcomes are not the same in course mapping and program description.
2. Study program plan composition is not clear regarding Entrepreneurship module and Qualification paper course.
3. Not clear about professional standard used to ensure compliance with professional qualification to be obtained.

## Evaluation of the study programme "Automotive Transport"

Evaluation of the study programme:

Average

## 6. Recommendations for the Study Programme "Automotive Transport"

### Short-term recommendations

Please prepare and submit a study program compliance with professional standard (Following Example provided under section "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard (if applicable)" before the Study Quality Committee meeting.

Please prepare and submit the program specific diploma example before the Study Quality Committee meeting, mentioning in diploma specific qualification to be obtained and courses taken.

Please provide document confirming that college will provide the students with the options to continue the acquisition of education in another study programme or at college in case the implementation of the study programme "Automotive Transport" is discontinued.

Please customize learning outcomes of the program. Please use professional standard to define learning outcomes thus ascertaining that learning outcomes are program specific.

### Long-term recommendations

Involvement of the industrial experts in delivering guest lectures, supervising projects and organizing site visits is an essential task for the study programme improvement, therefore we recommend keeping a record of those activities, to be available for Experts next time.

Lack of automotive studies specific equipment in Liepaja branch leads to lower quality education. Ensure access to relevant basic equipment or consider closing the branch.

Introducing a way how the graduates and employers could be systematically involved in the study programme improvement as external advisers, evaluators, organizers of field trips and guest lecturers.

Introduce project based teaching courses into the study programme. Include into the courses topics relevant to recent developments in the automotive industry and scientific research related to it, for example HEVs, BEVs etc.

Include training on the EU Machinery Safety Directive, its relationship with Latvian legislation, practical application and legal aspects in the learning process.

## II. "Engineering Mechanics" ASSESSMENT

### II. "Engineering Mechanics" ASSESSMENT

#### 1. Indicators Describing the Study Programme

##### Analysis

Engineering Mechanics is a first level professional higher education study programme. In the

program description for the full-time studies of 2 years, 6 months the qualification to be obtained is Mechanical engineer or Mechatronic. Both program versions have 100 Credit Points (<https://rtk.lv/?sadala=185>). The qualification corresponds to the level 5 of the Latvian qualifications framework.

Two qualifications - Mechanical engineer and Mechatronic fit well under the broader name Engineering Mechanics.

According to general description of the program, the primary task of study programme is to give theoretical knowledges and practical skills in area that is connected with exploitation and maintenance of mechanical engineering machines - bringing up qualified mechanical engineering area specialists, that are able to work in engineering companies, diagnose centres and related companies.

The type of study presented for accreditation experts was full-time studies, studies are organised typically during weekends, starting on Friday afternoon, to fit schedules of working professionals.

The program is implemented in Riga, and Liepaja, Daugavpils branches. The teaching staff from Riga drive to branches regularly to give lectures, the material base is sufficient on place, without the additional necessity for students to travel to Riga for practical tasks.

For the program "Engineering Mechanics" the professional qualification or the degree and the professional qualification to be acquired was not stated in Annex "Sample of the diploma to be issued for the acquisition of the study programme", neither in Diploma example neither in Diploma supplement. The list of courses acquired was not provided in Diploma supplement for this program. In general, the Diploma and its supplement examples were not tailored for each program, which contributed to the expert statement in general assessment that the overall quality of SAR is low.

The professional qualification for the program "Engineering Mechanics" was available though under HEI web-page (<https://rtk.lv/?sadala=185>). For this program, professional qualifications "Mechanical engineering specialist (in Latvian "Mašīnbūves speciālisti")" and "Mechatronics specialist (in Latvian "Mehatroniķis")" are listed.

For this program the SAR Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard the program was attempted to be organised according to Example (Annex 7), but the links to the respective professional standards provided ([http://www.aic.lv/ar/2012\\_profesiju\\_standarti\\_visi%20viena.pdf](http://www.aic.lv/ar/2012_profesiju_standarti_visi%20viena.pdf); [https://www.latvijaskvalifikacijas.lv/kvalifikacija/pirma-limena-profesionalas-augstakas-izglitibas-diploms-ar-profesionalo-kvalifikaciju-autoapkopes-specialists/?doing\\_wp\\_cron=1621433478.7663829326629638671875](https://www.latvijaskvalifikacijas.lv/kvalifikacija/pirma-limena-profesionalas-augstakas-izglitibas-diploms-ar-profesionalo-kvalifikaciju-autoapkopes-specialists/?doing_wp_cron=1621433478.7663829326629638671875); [https://www.latvijaskvalifikacijas.lv/kvalifikacija/pirma-limena-profesionalas-augstakas-izglitibas-diploms-ar-profesionalo-kvalifikaciju-mehatronikis/?doing\\_wp\\_cron=1620845587.5705089569091796875000](https://www.latvijaskvalifikacijas.lv/kvalifikacija/pirma-limena-profesionalas-augstakas-izglitibas-diploms-ar-profesionalo-kvalifikaciju-mehatronikis/?doing_wp_cron=1620845587.5705089569091796875000)) were either not working or not providing documents for download or online reading.

However, experts realized a comparison with the profession standards for Mechanical Engineering Specialist (under link <https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-195.pdf>) and for Mechatronics (under link <https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-196.pdf>). It was not specified from college and not clear from provided information for which of standards analysis in Annex 7 was given. For example, Annex 7 analyses CAD/CAM/CAE skills, while standards only mention CAD/CAE skills, Mechatronic skills (e.g. Mechatronic system simulation) defined in the standard are not covered in Annex 7 at all, therefore in the "Assessment of the Compliance field" only partial compliance is assigned for the criteria on compliance with professional standard with strong recommendation to prepare and submit an actualized study program compliance with professional standards to the Study Quality Committee.

The SAR Annex of statistics on the students over the reporting period shows that number of students in both programs was very close (50 and 56) as of 01.09.2019, and more students (31 versus 17)

was in program “Mechatronics specialist” as of 01.07.2021. However, dynamics for full reporting period was not provided. Unfortunately, number of students by branches was not provided as well. The program is highly focused on practical skills, and the content of the program, including purchase of equipment for laboratory works is coordinated with employer association - MASOC. Similarly, the software choice is discussed with employers and student are taught to work in software, AutoCAD and SolidWorks, which industry uses. As stated in the self-assessment report “College education focuses on the acquisition of practical skills for students, including internships”, and many internship examples were provided for every branch during interviews.

According to the statement in general program description, the aims, objectives and learning outcomes of the programme are defined according to the Professional Standard.

Some mismatch of learning outcomes was detected between the documents. For example, according to profession standard, this profession requires skills in “CAD/CAM/CAE technologies”. These skills appear in course mapping, but not in general results. Approach to support further development in this profession (mentioned in the program) is appreciated.

MASOC representative confirmed (during the interview with Employers) that graduates of study program are highly demanded in local labor market, and there are around 170 manufacturing and metal working companies hiring respective professionals.

Contrary to Heat Power Engineering and Refrigeration Engineering programs, for this program the course mapping example was provided, which demonstrated well how study curricula is satisfying program goals, for example the goal “Understanding the principles of mechanical engineering technological process” is covered in courses “Theoretical mechanics”, “Resistance of materials”, “Machine element”. Deficiencies noted - results in general and in course mapping are different.

To achieve goals of the study program, teaching staff participate in trainings and perform research, described more in p.4. on Teaching Staff.

The admission requirements for the students are that they have completed general secondary or professional (vocational) secondary education. These admission requirements are given in HEI web page (<https://rtk.lv/?sadala=175>). The admission requirements are clearly understandable for the applicants.

## **Conclusions by specifying the strengths and weaknesses**

The study programme Engineering Mechanics is designed to prepare Mechanical engineering or Mechatronics specialists working in manufacturing enterprises. The program is given in Riga, and college Liepaja, Daugavpils branches. The teaching staff from Riga regularly drive to branches to give lectures. The program is highly focused on practical skills, and the content of the program, including purchase of equipment for laboratory works is coordinated with employer association. The name of the program is appropriate, while aims, objectives and learning outcomes of the program are defined according to the Professional Standard, but it was not specified from college and not clear from provided information for which of standards analysis given, experts noted partially compliance with the actual available profession standards for Mechanical Engineering Specialist and for Mechatronics.

Strengths:

1. The program name gives a clear idea of the content of the program.
2. Study program contains two specializations which leads to the attractiveness of the study program.
3. The prospective employment opportunities are clearly defined. Graduates of study program are highly demanded at labor market.

Weaknesses:

1. Tasks are too broadly defined and are not program specific.
2. Outcomes of study program, course mapping and description of study program are in mismatch.
3. Not clear about professional standard used to ensure compliance with professional qualification to be obtained.

## 2. The Content of Studies and Implementation Thereof

### Analysis

1. The program "Engineering Mechanics" is a first level professional higher education study program, which should prepare students for mechanical engineering specialist profession, comprising in particular the ability to service equipment and manage and organize staff. The part of the SAR for the program "Engineering Mechanics" is detailed and stands out from the other programs in terms of quality. The selection of courses in the curriculum make sense and contributes to the achievement of the program goals. Electives are not available but instead the possibility to focus in one of the two majors "Mechatronics" or "Machine Building" representing 31 (including the internship 42) credits from 100 total. Roughly 10% of the credits are non-technological and help the graduates to perform in an entrepreneurial environment, e.g. legal and economical subjects. The students should also learn how to do applied research in their field. For these skills, course "Basics of Research" is introduced to the program with the total amount of 1 KP. The skills and competences given in Annex "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard" partially match the skills listed under provided link (<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-076.pdf>) and ([https://www.niid.lv/files/prof\\_standartu\\_registrs/mehatronisku\\_sistemu\\_tehnikis.pdf](https://www.niid.lv/files/prof_standartu_registrs/mehatronisku_sistemu_tehnikis.pdf)). Annex covers both programs, but the standards list different skills for them. Some skills discussed in Annex appeared in neither of standards. Thus, "Analysis of data necessary for design by constructing simple algorithms" is discussed in Annex, while neither of standards mentions this skill. Meanwhile, "Mechatronics" prof. standard requires skills to "Perform mechatronic systems assembly and adjustment", not analysed in Annex; "Machine Building" profession standard requires skills to "Develop a time schedule for work execution", not analysed in Annex, and therefore it is not possible to tell if either of courses provides this skill. It might be a part of a broader ability to organise work. Unfortunately, no specific course was mentioned to satisfy a skill "Plan and organise the work to be performed" in Annex, and blank cell was left next to this skill. Summing up, either wrong version for standard was provided or the compliance check was not updated recently.

Internship I and II in total 16 CP (5 CP and 11 CP) and Qualification paper part 9 CP are included in study program content, and, as required in regulations, in study program content is included in compulsory part study course Civil and Environmental protection 2 CP. But, regarding a module for the development of business professional competencies the study courses, as experts found, is separated between compulsory part (Business Economics 3 CP in total, Organizational psychology 2 CP in total) and non-compulsory part (Basics of quality management 2 CP), what could be on expert's point of view additionally revised and completed more useful with a focus on the field of business directions. Study plan consists study course with 0 CP (Sport), that could be not included in study plan and offered as additional service.

The learning schedule for the studies is available under HEI web-page <https://rtk.lv/?sadala=448>. It shows that there are four groups, for which studies are organised either three or four days a week from 15:20-21:35. Considering that program applies for full-time study option, attention has to be paid to ensure that contact hours are sufficient for all groups. According to the Republic of Latvia Cabinet Regulation No. 141, Adopted 20 March 2001, "Regulations regarding the State Standard for First Level Professional Higher Education", considering that each semester has 20 CP, and a CP is equal to 40 working hours (p.6), given that studies take place 20 weeks, there should be 40 working hours per week for a student, and at least 30% of this time devoted to practical works (p.7.4.).

2. For this program grading principles were stated differently for different courses in Course description Annex. For courses, like "Quality management", where the evaluation is "Passed/not passed", criteria are simpler, but for courses, where students are given a grade from 1-10 the criteria is very detailed. For example, in the course "Hydraulics and pneumatics" to get a 4 student must demonstrate minimal knowledge in hydraulics and pneumatics topics, be able to build the required pneumatic and hydraulic circuit with some help, while to get a grade of 10 student must be able to build a circuit with required parameters and be capable to build a pneumatic and hydraulic circuits of higher complexity. During interviews with students and graduates, asked for some complaints on the grades, students responded they never had any. The detailed grading criteria explains this phenomena.

The implementation of studies is a good mix of practical and theoretical lectures although students would further emphasize the practical aspects (interview students Riga). One indicator therefore is the strong involvement of the study program with professional associations (SAR p. 79). It is claimed to comprise case studies (SAR p. 81) and in-company mentors for internships (interview program director). Also, a considerable amount of lectures are given by external professionals (SAR p.86). Otherwise the communication with teachers seems to be efficient and its outcome satisfactory (interview students Riga).

3. About surveys, the only survey/evaluation mentioned in the SAR is a statistics of the qualification exams (SAR p. 84) and a graduate an employer survey (SAR p. 86). In particular the mechatronics students seem to be highly successful, but further steps are not mentioned. Instead reference is given to an additional report which was not available to the panel (SAR p. 86). From the graduate and employer report it is only stated that cooperation with companies and in particular the Association of Mechanical Engineering and Metalworking Industries is successful, but no further details.

4. Concerning the awareness of mobility and outgoing programs the panel encountered mixed feedback. Whereas some confirmed that information was provided but cannot be exploited due to professional obligations (interview students Riga), others seem to be completely unaware (interview student Liepaja). Statistical data is available in the RTC yearbooks ([www.rtk.lv/?sadala=460](http://www.rtk.lv/?sadala=460)) in Latvian language.

### **Conclusions by specifying the strengths and weaknesses**

The program "Engineering Mechanics" is efficiently following the trends in the sector and is continuously evolving in order to follow them. The selection of courses in the curriculum make sense and contributes to the achievement of the program goals. But similar to the other programs statistical data available could be used much more for fine tuning of the program. Also, more active international cooperation would be expected for a program existing for more than 20 years. The grading criteria are clear and detailed. The skills and competences given in Annex "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard" partially match the skills and competencies listed in profession standards. Study program plan consists 0 CP study course Sport and not clear defined Entrepreneurship module.

Strengths:

1. Availability of two different majors ("Mechatronics" and "Machine Building").
2. Strong links to professional associations.
3. Excellent endowment with lab equipment at all sites.
4. Most regional program due to availability in all parts of the country.

Weaknesses:

1. Study program plan composition is not clear defined regarding Entrepreneurship module and 0 CP study course Sport.
2. Not clear about professional standard used to ensure compliance with professional qualifications to be obtained.
3. Little utilization of international relations.
4. Inconsistent follow-up of surveys/evaluations.
5. Statistical data gathered is not sufficiently and efficiently enough used for the improvement of the program.

### **3. Resources and Provision of the Study Programme**

#### **Analysis**

The program of Engineering Mechanics prepares students in specialities Mechatronics and Mechanical Engineering.

As for the other study programs in the field, resources and lab equipment available are more than impressive. Especially for the "Mechatronics" major important investments were made considerably helping to achieve the program goals and targets. In case course content or support material is in English, teachers seem to be very supportive in providing alternatives in Latvian language (interview students Riga). Also, a student at the Liepaja site actually mentioned a foreign lecturer which was the only evidence of staff exchange encountered during the visit. For this program traineeship was described separately in the Description of the courses, which is a positive aspect, because well-defined learning outcomes of traineeship ensures achievement of program goals. From the Descriptions of the study courses it can be concluded that courses are given by eleven different lecturers, although it appears that teaching workload is still very high for each lecturer, which creates barrier to allocate time to research.

This program acquired sufficient amount of new resources during the reporting period. SAR states that since 2017 as a part of ERAF project Mechanical Engineering study programme was updated, with a total cost of EUR 1,258,128. The equipment specifications were approved by MASOC and the Industry Expert Council (NEP). The equipment included CNC workbench production programming: training simulators with SIEMENS, FANUC, HEIDELBACH, FAGOR software, as well as CNC metalworking training milling machine, CNC metalworking lathe, MTS software, Hass CNC lathing system and simulators, 11 pcs, CNC vertical processing milling system with a Heidehain TNC 620 control system, computer-aided design software, Mastercam EDU CAM system updating to the current version: CAM Mastercam in Riga and a branch. SYM plus simulation software, metalworking workbenches: universal metalworking lathe, CNC folding press.

The equipment laboratories demonstrated in Riga in Liepaja during site visits looked like a real manufacturing facilities, with CNC machines and students working on them. In all of the HEI facilities, Riga, Daugavpils, Liepaja) numerous manufacturing equipment of principal importance to mechanical engineering profession was demonstrated. It included metal cutting - cutter, finishing, forming, lathe etc. Students first get acquainted with equipment during practical classes. It was confirmed by students and teachers that equipment is available for use for individual projects, and laboratory technicians are welcoming students to bring their own drawings and manufacture some parts. The classrooms on Electrical practical projects are shared in Riga with other programs and are available to students for practical classes. There, students are trained, for example, to solder the electrical schemes (e.g. for a light bulb) and understand wiring principles for electrical equipment (e.g. wire 3-phase electric motor - an important equipment for any manufacturing facility).

Computer classrooms software that is most recently used in manufacturing, like AutoCAD and SolidWorks, was presented. It was stated during interviews that software is available for download to students' computers.

A large investment into program equipment was made during the reporting period via ERAF project (e.g. ERAF project Nr. 8.1.4.0/17/I/001) and in cooperation with Industry representative Festo, which provides the most recent pneumatic and hydraulic solutions in the field. During the site visit in Riga and Liepaja, Festo systems of smart robotics were demonstrated (for example, a robot arm that can sort a blocks of different colours was shown), that had different sensors, and are computer-controlled.

During the visits, experts learned that HEI established the routine of sending at least two lecturers to the training about every system.

In this program practical learning is very important, for this program no examples of virtual laboratory projects (as for Refrigeration program) was provided, so during the times of distant learning the quality might suffer.

### **Conclusions by specifying the strengths and weaknesses**

The study program "Engineering Mechanics" resources indicate the possibility to ensure a high-quality study process and prepare specialists for work in the industry very well. As many other programs lab equipment is excellent and ties to relevant industries good. The laboratories In Riga and Liepaja look like a manufacturing halls of middle enterprises and include all of the critical equipment for mechanical engineering. The CAD/CAE/CAM software necessary for work in industry is available to students.

Strengths:

1. Excellent and up to date equipment and material base. Up-to-date equipment, acquired through ERAF financing and in cooperation with companies e.g. Festo.
2. Personnel well-trained to use the equipment.
3. Equipment and software is available to students, even for the individual projects.

Weaknesses:

1. Compared to Riga, Daugavpils and Liepaja branches have different levels of equipment and material base. RTK Daugavpils and Liepaja branch unconvincingly present the practical training system, opportunities and provision.
2. In this program practical learning is very important, so during the times of distant learning the quality might suffer.

## **4. Teaching Staff**

### **Analysis**

1. The changes in composition of academic staff at study program titled "Engineering Mechanics" were provided in SAR. In accordance with SAR, two members have left and seven have joined the study program. The institution states that changes of academic staff had a positive impact on the quality of study program via modern knowledge of new members as well as their practical experience. Most of new staff members who have joined the study program are with industrial experience, what can be assessed as positive. However, the institution does not provides information on measures which were taken in order to ensure quality of study program and its compliance when changes in academic staff had taken place.

2. Composition of the academic staff involved in the study program (Annex: Basic information on the teaching staff involved in the implementation of the study direction), on experts view, complies with requirements of study program implementation and enables the achievement of the aims and learning outcomes of the study program. Composition of academic staff is well balanced. The six

members of academic staff team are PhD holders, sixteen members have master degrees and two have bachelor degrees. This aspect can be assessed as highly positive and has a positive influence on the implementation of study program. Moreover, SAR indicates that members participate at different activities related to improvement of qualification, for example: professional career development, advanced training as part of courses and workshops; participation in the preparation of new teaching materials and books; meetings and discussions with leading industry specialists and experts, etc. The members of academic staff actively participate at international conferences and at preparation of scientific papers. These aspects can be assessed as positive and ensure proper implementation of the study program.

3. Considering the list of publications (Annex of SAR), most of publications in the study field are related to this study program. This aspect can be assessed as positive and shows appropriate involvement of academic staff to scientific research activities. In addition, considering the visit experience (interviews with academic staff and management of study program), it was found that members of academic staff perform scientific activities in collaboration with local universities and the number of publications reflects this collaboration. Moreover, academic staff actively participates at international conferences organized by institution or at conferences which are organized abroad and evaluated as a positive aspect. The SAR indicates examples of international collaboration. However, the collaboration is based on projects which are funded by Erasmus+ program. The projects are focused on improvement and development of study program. In general, it is a positive aspect, but unfortunately can't be assessed as related to the domain of applied research. Therefore, the international domain at field of applied research is weak. However, it has good potential for development in future. On the other hand, self-evaluation does not contain any information on mechanism or process which is related to integration of outcomes of applied research to the study process.

4. Section 4.6 of SAR indicates that different RTC departments, councils and partners interact with each in order to conduct a study program and if necessary make changes to it. However, descriptions of mechanisms or processes related to changes or improvements of study programs are missing or not defined. Self-evaluation report contains information that academic staff and management of study field programs participates at experience sharing workshops, meetings with foreign higher education institutions, social partners, industry representatives. Considering SAR, these activities are focused on improvements of the study program, this aspect can be assessed as positive. On the other hand, self-assessment does not contain information does correlation between related study subjects is achieved as well as how it is regulated or promoted. In addition, on the basis of visit experience, it was found that cooperation between academic staff at the level of subjects exists. However, it is based on personal initiative of academic staff members.

### **Conclusions by specifying the strengths and weaknesses**

Considering to the analysis can be stated that composition of academic staff is well balanced and ensures achievement of aims and learning outcomes of the study program. Moreover, applied research activities and their outcomes are significant and fulfils with study program. In addition, academic staff and management of study program systematically participates at events related to improvement of qualification. On the other hand, it is not defined mechanism which is used to ensure quality of study process when changes in academic staff takes a places. Also, international domain of study program is not sufficient and must be developed in future. In addition, there is no clear mechanism which would lead to proper collaboration between members of academic staff at level of study subjects.

#### Strengths:

1. Academic staff is involved in applied research activities and the outcomes are relevant to the study program.
2. Composition of academic staff is suitable to achieve the aims and learning outcomes of the study program.
3. Academic staff and management of study program participate in qualification improvement activities.
4. Academic staff performs applied research activities in collaboration with local universities and industry.

#### Weaknesses:

1. The Erasmus+ activities are mostly related to studies, therefore for the area of applied research international domain is not sufficient.
2. Measures to ensure quality of study program and its compliance when changes in academic staff composition takes place are unclear.
3. Mechanism for mutual collaboration between the teaching staff members is unclear.

### 5. Assessment of the Compliance of the Study Programme "Engineering Mechanics"

#### Requirements

1. The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure by which state-recognised documents of higher education are issued.

#### **Assessment of compliance:** Partially compliant

The provided sample of the Diploma is organised in according with the regulations, however, the diploma uploaded has gaps, e.g. "Ieguvis XXXXXXXXXXXXXXX kvalifikāciju" and diploma supplement has gaps as well: "2.1. kvalifikācijas nosaukums: XXXXXXX". Thus, the diploma examples are not program specific. The regulation "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinošus dokumentus" p.1. states that regulations prescribe the criteria and procedures for the issuance of state-recognized documents certifying higher education regarding the acquisition of an accredited study program, as well as samples of the referred to documents, which means samples prepared had to be program-specific, an exact copy of a real diploma, except student personal data. Therefore the assessment is partially compliant.

2. Documents confirming that the higher education institution/ college will provide the students with the options to continue the acquisition of education in another study programme or at another higher education institution/ college (a contract with another accredited higher education institution/ college), in case the implementation of the study programme is discontinued.

#### **Assessment of compliance:** Fully compliant

Cooperation agreement in place with Ventspils University of Applied Sciences (Sadarbības līgums - 2014. gada 8. oktobris 1-36/25). p. 2.1.2. of the contract states that among other programs Ventspils University of Applied Sciences will provide a program "Engineering Mechanics" with duration of full-time studies - 2.5 years to college students and provide opportunity to pursue bachelor degree studies after this program.

3. Document confirming that the higher education institution/ college guarantees to the students a compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the higher education institution/ college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

**Assessment of compliance:** Fully compliant

Annex 14.12.2021., Nr. 1.1.-21/90 confirms that the institution guarantees compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

- 4 4. The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

**Assessment of compliance:** Fully compliant

Attached resumes of teaching staff and confirmation 09.09.2021., Nr. 1.1.-21/51 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

- 5 5. The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language.

**Assessment of compliance:** Not relevant

- 6 6. At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts.

**Assessment of compliance:** Not relevant

- 7 7. The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 8 8. The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

**Assessment of compliance:** Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi"

- 9 9. The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

Course descriptions and study materials are in Latvian. According to the p.56.1. criteria (1) the study course "defines the requirements for the commencement of the acquisition of a study course"; This criteria was missing for some courses, e.g. Augstākā matemātika/Calculus, Uzņēmējdarbības ekonomika/Business Economics, Organizāciju psiholoģija/Organizational psychology, Pētnieciskā darba pamati/Basics of research work. Independent work description, evaluation criteria and grading are detailed enough (criteria 4 and 5). For criteria 2 and 3 the

aim of the study course, outline of the course were present, but in some cases courses results were not defined (Materiālmācība/Material science) or the section on Results was present, but topics were listed instead of results (Teorētiskā mehānika/Theoretical mechanics). Rework of course descriptions on College side is needed to comply with requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

- 10 10. The study programme complies with the valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided that the completion of the study programme leads to a professional qualification.

**Assessment of compliance:** Partially compliant

The professional standard for “MAŠĪNBŪVES SPECIĀLISTS” was only confirmed in 15.12.2021, while professional standard for program “Mechatronics” is mature. One analysis is provided for both programs in Annex 7. The coverage for skills number 23 and 26 is not complete in Annex 7 and could not be identified from the curricula.

- 11 11. Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 12 12. The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard.

**Assessment of compliance:** Fully compliant

Study program does comply with Regulations of Cabinet No. 141 “Noteikumi par pirmā līmeņa profesionālās augstākās izglītības valsts standartu”.

- 13 13. The joint study programmes comply with the requirements prescribed in Section 551, Paragraphs one, two, and seven of the Law on Institutions of Higher Education (if applicable).

**Assessment of compliance:** Not relevant

- 14 14. Each member of the academic staff has either publications published in reviewed editions within the last six years, including international editions (if they have worked for a shorter period of time, the number of publications shall be in proportion to the work period), or artistic creation achievements (for instance, exhibitions, films, theatre performances, and concert activity), or a five-year practical work experience (except for the experience in the implementation of the study programme) in accordance with the Law on Institutions of Higher Education.

**Assessment of compliance:** Fully compliant

According to the college provided resumes, list of publications academic staff has required number of publications and practical experience.

- 15 R5 - Overall rating

**Assessment of compliance:** Partially compliant

Study course descriptions needs to be corrected and critically assessed. Compliance with professional standard and program specific diploma example needs to be provided. In other

cases - study program complies with regulatory requirements.

### **Requirements (R6-R8)**

- 1 R6 - The compliance of the study provision, scientific support (if applicable), informative provision (including libraries), material and technical provision, and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of the learning outcomes.

**Assessment of compliance:** Fully compliant

The study provisions including informative, financial and technical indicate the possibility to ensure a successful study process and prepare future specialists for work in the industry very well. Laboratory and workshop equipment is in excellent order and ties to relevant industries good. Available study materials are readily available and in good order.

- 2 R7 - The compliance of the qualification of the academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments.

**Assessment of compliance:** Fully compliant

Complies with national regulation.

- 3 R8 - The study programme leading to the master or doctoral degree is based on the advances and findings in the relevant field of science or artistic creation.

**Assessment of compliance:** Not relevant

### **Conclusions by specifying the strengths and weaknesses**

The assessment of compliance with professional standard is missing, and has to be submitted to improve evaluation of the program. The program-specific diploma example has to be submitted as well. On the positive view, program "Engineering Mechanics" is efficiently following the trends in the sector and is continuously evolving in order to follow them.

Strengths:

1. The selection of courses in the curriculum in general make sense and contributes to the achievement of the program goals.
2. The study program resources indicate the possibility to ensure a high-quality study process and prepare specialists for work in the industry very well.
3. Equipment and software is available to students, even for the individual projects.
4. Composition of academic staff is suitable to achieve the aims and learning outcomes of the study program.
5. Academic staff participates in qualification improvement activities and performs applied research activities in collaboration with local universities and industry.
6. Strong links to professional associations.

Weaknesses:

1. Study program plan composition is not clear regarding Entrepreneurship module and 0 CP study course Sport.
2. Professional standard compliance was not demonstrated.
3. Statistical data, surveys are not sufficiently and efficiently enough used for the improvement of the program.

## Evaluation of the study programme "Engineering Mechanics"

Evaluation of the study programme:

Average

## 6. Recommendations for the Study Programme "Engineering Mechanics"

### Short-term recommendations

Please prepare and submit a study program compliance with professional standard (Following Example provided under section "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard (if applicable)" before the Study Quality Committee meeting.

Please prepare and submit the program specific diploma example before the Study Quality Committee meeting, mentioning in diploma specific qualification to be obtained and courses taken.

Please customize learning outcomes of the program. Please use professional standard to define learning outcomes thus ascertaining that learning outcomes are program specific.

### Long-term recommendations

Develop and promote international domain of study program via students exchanges, academic staff mobility and participation of foreign teachers at study program.

Develop and promote link between the most recent scientific findings in the area and content of study program. Include training on the EU Machinery Safety Directive, its relationship with Latvian legislation, practical application and legal aspects in the learning process.

Systematically promote students involvement to scientific research/ technical creation activities.

Develop and promote students surveys on quality of study process and establish firm link between results of surveys and study program.

Formalize and promote clear and firm correlation between related study subjects. Revise aims, tasks and outcomes of study program and develop clear and firm links between them.

## II. "Heat Power Engineering" ASSESSMENT

### II. "Heat Power Engineering" ASSESSMENT

#### 1. Indicators Describing the Study Programme

##### Analysis

Heat Power Engineering is a first level professional higher education study programme. The program implemented in the form of full-time studies of 2 years, 6 months, the qualification to be obtained is Heat power engineering specialist. The program has 100 Credit Points (<https://rtk.lv/?sadala=181>). The qualification corresponds to the level 5 of the Latvian qualifications framework.

According to general description of the program, the primary task of study programme is to give theoretical knowledges and practical skills in area that is connected with exploitation and maintenance of heat energy machines – bringing up heat engineering area specialists, that are able to work in heat engineering companies, diagnose centres and related companies.

The name of the program "Heat Power Engineering" clearly reflects study contents and qualification to be obtained. It gives students the correct impression on the qualification and prospective working opportunities (for example, graduates work for Rīgas Siltums or Thermo Power Plants). Program is often chosen by professionals seeking life-long learning opportunities. An extreme example was mentioned - recently he had a graduate of around 60 years old. According to program director, working professionals is a useful information source for the program. They provide up-to-date information on the processes in the industry. However, students, committed to work cannot contribute for time consuming research activities, mobility and additional study projects.

The type of study presented for accreditation experts was full-time studies, studies are organised typically during weekends, starting on Friday afternoon, to fit schedules of working professionals. This flexibility creates distinctive advantage of this program amongst its competitors.

The program is given in Riga only. Based on the courses listed for the program and qualification works provided for experts as examples, the program is focused on practical skills, process overview and planning.

For the program "Heat Power Engineering" the professional qualification or the degree and the professional qualification to be acquired was not stated in Annex "Sample of the diploma to be issued for the acquisition of the study programme", neither in Diploma example neither in Diploma supplement. The list of courses acquired was not provided in Diploma supplement for this program. In general, the Diploma and its supplement examples were not tailored for each program, which contributed to the expert statement in general assessment that the overall quality of SAR is low.

In the SAR are provided Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard of professional qualification "Heat Power Engineer (in Latvian "Siltumenerģētikas speciālists")" and link to the respective professional standard for this study program.

The SAR Annex of statistics on the students over the reporting period shows that there was a slight drop in number of students in 2018/2019 (from around 50 to 28) and varies around 25-28 since then.

According to the statement in general program description, the aims, objectives and learning outcomes of the programme are defined according to the Professional Standard.

The program requires some minor corrections, for example, it is not clear how exactly the program prepares specialists for "applied research and pedagogy". It is stated in documentation that internship is organised through MASOC, but energy production related to other associations too, like "Latvijas Elektroenerģētiķu un Energobūvnieku asociācija". It was mentioned during interviews that college cooperates with other associations as well.

Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme was not provided, the Curriculum was uploaded twice instead, therefore it was not possible to evaluate if study results of courses and program goals are synchronized. Review of teaching staff list suggests that program-specific courses are taught by limited number of lecturers. This aspects is described in section 3. on resources of the program.

The admission requirements for the students are that they have completed general secondary or professional (vocational) secondary education. These admission requirements are given in HEI web page (<https://rtk.lv/?sadala=175>).The admission requirements are clearly understandable for the applicants.

### **Conclusions by specifying the strengths and weaknesses**

The study programme Heat Power Engineering was developed to prepare specialists and improve knowledge of working professionals in heat power engineering field. Program is often chosen by professionals seeking life-long learning opportunities. The program is given in Riga only. The program is focused on practical skills, process overview and planning. The study programme has

been prepared according to the development guidelines for the "Heat Power Engineering" specialist. The aims, objectives and learning outcomes of the programme are in general defined according to the Professional Standard.

Strengths:

1. Profession is highly demanded in the industry, which provides program with motivated students with a good background knowledge and attitude towards studies, which was proven by carefully developed qualification projects demonstrated to Experts' team.
2. Flexible studies' schedule to fit demand of life-long learning for professionals. Study program is tailored to specific students needs.
3. Study program receives up-to-date information on the processes in the industry from the students.

Weaknesses:

1. Documents on cooperation with associations need to be reviewed.
2. Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme missing (has to be developed).
3. Students, committed to work cannot contribute for time consuming research activities, mobility and additional study projects.

## **2. The Content of Studies and Implementation Thereof**

### **Analysis**

1. The program "Heat Power Engineering" is a first level professional higher education study program, which prepares students for Heat energy specialist profession, comprising in particular the ability to service equipment and manage and organize staff.

Similar to the other programs in college evaluated study field "Heat Power Engineering" is divided in 20 credits of general studies and 80 credits of compulsory subjects which are mainly technical. Electives or a choice of courses are not provided. The course selection is sound and will undoubtedly contribute to the goals of the study program. The students should also learn how to do applied research in their field. For these skills, course "Basics of Research" is introduced to the program with the total amount of 1 KP.

Study program content includes internship I and II 16 CP (5 CP and 11 CP) and Qualification paper part 9 CP, as required in regulations, in study program content is included in compulsory part study course Civil and Environmental protection 2 CP. But, regarding a module for the development of business professional competencies the study courses, as experts found, is not clearly defined how is requirement of Cabinet of Ministers Regulations is provided. Cabinet of Ministers Regulations No. 141 of March 20, 2001 on "The State Standard of First-Level Professional Higher Education" states, that "The compulsory content of the first level professional higher education courses includes a module for the development of business professional competencies (organization and establishment of companies, management methods, basics of project development and management, record keeping and financial accounting system, knowledge of social dialogue in society and labour laws). The module is implemented mainly with competency training, business games and similar practical teaching methods. The module is included in all programs in the amount of not less than six credit points (6 CP). In college study program compulsory part contains study courses Business Economics 3 CP and Organizational psychology 2 CP, in total 5 CP. Experts suggest that other courses are placed in non-compulsory part. So, on expert's opinion, the study program plan has to be revised due to fact of this key point. Additionally, study program plan consists study course with 0 CP (Sport), that could be not included in study plan and offered as additional service.

An interesting observation is the overlap with "Refrigeration Engineering" in terms of the ability to

operate refrigeration equipment, compressor units, condensers and evaporators present (SAR p. 112). Compatibility with the needs of the industry is ensured by close cooperation with companies. Seeing the overlap in teaching with the Refrigeration Engineering program, a merger in one study program (with 2 specializations) could be one possible solution.

Analizing provided descriptions of the study courses, is revealed the risky situation, that almost all program-specific courses are prepared and given by study program director, except 2 courses. This could cause a risk of insufficient human resources for the program in case of a key person absence.

In the SAR for this study program Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard the program and link to the respective professional standard was provided, but was assessed by experts as partially compliant. However, the list of knowledge to obtain and skills was not fully matching to the standard. For example, according to the standard (<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-169.pdf>) some basic knowledge on the exhaust gases is required (in Latvian "Dūmgāzu un izmešu sastāvs"), while in Annex 7 this aspect is not mentioned, therefore in the "Assessment of the Compliance field" only partial compliance is assigned for the criteria on compliance with professional standard.

The learning schedule for the studies is available under HEI web-page <https://rtk.lv/?sadala=448>. It shows that studies are organised three days a week from 15:20-21:35, 15:20-20:50 and 15:20-20:00. Considering that program applies for full-time study option, attention has to be paid to ensure that contact hours are sufficient. According to the Republic of Latvia Cabinet Regulation No. 141, Adopted 20 March 2001, "Regulations regarding the State Standard for First Level Professional Higher Education", considering that each semester has 20 CP, and a CP is equal to 40 working hours (p.6), given that studies take place 20 weeks, there should be 40 working hours per week for a student, and at least 30% of this time devoted to practical works (p.7.4.).

2. For this study program evaluation and grading criteria very not specifically defined for each course, however, for each course, the minimum accomplishment are listed that are required before student is allowed to take an exam, for example, to take Exam in the course THERMAL TECHNICAL MEASUREMENTS AND PROCESS AUTOMATION, student must complete eight practical works during the semester on Error theory; Temperature measurement; Pressure measurement; Gas analysis; Humidity measurement; Basics of automatic control and regulation theory; Automation elements; Basics of automatic control and regulation theory. For every practical task student gets grade "Passed/ Not passed", and for the Exam the grade in scale 1-10 is given. Such grading system ensures that student cannot pass a course without a basic skills. However, grading a whole course based on one-day Exam performance is risky - some points for practical tasks might be assigned to make sure that students' performance is not under evaluated or over evaluated. As claimed by the program director the program is the most conservative of all 4 under evaluation (interview program directors Riga) resulting in the highest percentage of theoretical classes. In the SAR however (p. 120) work in small groups, problem based learning, role playing and unsupervised tasks are claimed to be part of the teaching methods. Still the ratio of course work and exams is comparable to the other programs.

3. Surveys among students, graduates and employers are published on the homepage (<https://rtk.lv/?sadala=460>). Other than this surveys are the follow-up thereof are not mentioned in the SAR. Also during the interviews ,unlike the other programs, little evidence for evolution of the program contents due to external input could be gathered. A so called "VKEK" commission was formed (SAR p. 123, not mentioned at any other location in the SAR) which monitors improvements develops recommendations:

- The presentation of qualification papers and answers to reviewers' questions have improved, therefore the consultant should continue to be supported in the use of computer equipment and

preparation of papers;

- Compared to last year's student qualification papers, the overall level of this year's qualification papers is higher.
  - The topics of students' qualification papers were chosen in accordance with the requirements of modern life.
  - Qualifications should make more use of the latest advances in science and technology
  - Use the best qualification papers as examples for future qualification papers development process.
- According to the SAR, all suggestions have been implemented.

4. Although in the SAR (p. 123-124) cooperation with foreign institutions is claimed in terms of partnerships with vocational schools, other HEIs and companies, examples are not provided. During the interviews however (interview students Riga), evidence about mobilities was found. through a student who did his internship abroad via a branch of his employer and claimed full accreditability. Information and statistical data about mobility is available in the RTC yearbooks ([www.rtk.lv/?sadala=460](http://www.rtk.lv/?sadala=460)) in Latvian language.

### **Conclusions by specifying the strengths and weaknesses**

The study program "Heat Power Engineering" content and study course selection is sound and contribute to the goals of the study program. From all programs under evaluation Heat Power Engineering is the least dynamic one. The general low number of students suggest that a strategy change should be considered. The overlap in teaching with the Refrigeration Engineering program observed. In study program plan is not clearly defined a module for the development of business professional competencies (Entrepreneurship module). Additionally, study program plan consists study course with 0 CP (Sport), that could be not included in study plan and offered as additional service. The list of knowledge to obtain and skills partially matching to the professional standard of the qualification to be obtained.

Strengths:

1. Well balanced study program curricula.

Weaknesses:

1. Classical and little changing program contents.
2. Study program plan composition is not clear defined regarding Entrepreneurship module and 0 CP study course Sport.
3. Compliance with professional standard was not demonstrated.
4. Statistical data gathered is not sufficiently and efficiently enough used for the improvement of the program.

### **3. Resources and Provision of the Study Programme**

#### **Analysis**

Additionally to the general study field resources description, the information about study program "Heat Power Engineering" provided in SAR p.3.1. is not program specific, and mimics description of Refrigeration program, listing such resources as "refrigeration equipment and conditioning equipment".

However, experts acknowledge that programs share resources, therefore description of welding laboratories, computer classrooms and libraries provided in SAR is in line with actual situation. During the visits experts learned that during the reporting period a new laboratory equipment was bought which allows studies of process flows, valves, and fluid flow in differently-shaped channels.

This equipment was demonstrated during laboratory tours.

Self-assessment report indicates that the financial provision of the study program consists mainly of the state budget grant and own revenues, however, it is claimed to be enough to ensure good-quality study process.

The recent books are available in the library. The library in HEI was presented to experts, but the important remark was made that students can use the electronic database of Riga Technical university, which has more items. The specific of the program is that it is chosen by professionals in the field, and therefore many of them are familiar with the systems already. The downside of this aspect was revealed during interviews - if a program was chosen by non-specialists in the field, right after school, there was a high probability that the person would not be on the same level with the others.

According to Table 17 provided in Annexes, in the last three years there was a decrease of number of students in half. This indicates that pool of professionals seeking development is decreasing, and program needs either to focus on other target groups or consider restructuring.

Review of teaching staff list suggests that program-specific courses are taught by limited number of lecturers. 13 lecturers are mentioned in the self-assessment report, but list of instructors involved in the study field shows only 2 employees for program specific courses. This creates risk to the program to be understaffed in case of key teaching staff illness or leave.

## **Conclusions by specifying the strengths and weaknesses**

Resources available for the study program "Heat Power Engineering" indicate the possibility to ensure a high-quality study process. The equipment demonstrated to experts during the assessment visit was better than listed in college SAR p.3.1., because in SAR description was very limited. For example, laboratory equipment to study valves working principles and flow principles was not listed in SAR. The program-specific courses are taught by limited number of lecturers - only 2 employees.

Strengths:

1. Program provides life-long learning opportunities and fulfils a socially important role.

Weaknesses:

1. Program-specific courses are taught by limited number of lecturers.
2. If a program is chosen by a non-specialist in the field, it will be difficult for that person to catch-up.
3. Focus on a specific target group - professionals - limits the enrolment rate. Decrease of students in half indicate tendency that target group - professionals in the field, seeking development, is shrinking.

## **4. Teaching Staff**

### **Analysis**

1. The changes in composition of academic staff at study program "Heat Power Engineering" were provided in SAR. In accordance with SAR, two members have left and two have joined the study program. The SAR indicates that these changes took place in a period of six years, while evaluation period is two years. Also, the institution states that changes of academic staff had a positive impact on the quality of study program via modern knowledge of new members as well as their practical experience and can be assessed as positive. Unfortunately, SAR does not provide deeper analysis of changes as well as their impact to quality and compliance of study program. In addition, the institution does not provide the information on measures which were taken in order to ensure quality of study program and its compliance when changes in academic staff had taken place.

Review of teaching staff list suggests that program-specific courses are taught by limited number of lecturers. 13 lecturers are mentioned in the self-assessment report, but list of instructors involved in the study field shows only 2 employees for program specific courses. This creates risk to the program to be understaffed in case of key teaching staff illness or leave.

2. Composition of academic staff involved in the study program (Annex: Basic information on the teaching staff involved in the implementation of the study direction) complies with requirements of study program implementation and enables the achievement of the aims and learning outcomes of the study program. Composition of academic staff is based on two members which are PhD holders, twelve members which are holders of master degree. This aspect can be assessed as positive. Also, SAR indicates that members participate in different activities related to improvement of qualification. For example: professional career development, advanced training as part of courses and workshops; participation in the preparation of new teaching materials and books; meetings and discussions with leading industry specialists and experts, etc. This aspect can be assessed as positive. On the other hand, SAR states that members of academic staff actively participate at international conferences. However, information provided by the institution shows that only two publications related to study program were published. Considering to composition of academic staff the amount of publication is not sufficient.

3. The SAR states that one of the directions of academic staff, which are involved in the study program, is scientific research activities as well as integration of outcomes of these activities to the study process. The results, as SAR states, improves the quality of the study process. However, a list of publications and conferences (Annex of SAR), does not confirm these statements. The list contain only two publications in local journal and no presentations at conferences which would be related to this study program. Also, SAR does not contain any examples of integration of outcomes of applied research and their impact to quality of study process. Therefore, this aspect can be assessed negatively and must be developed and improved in future. In addition, the SAR does not contain description or information on applied research topics which are developed or under development at this study program by members of academic staff. Therefore, involvement of academic staff to applied research activities is not sufficient. International domain in the area of applied research is not sufficient as well. The SAR contains statements that academic staff participates at international conferences and meetings. However, justification of these statements, via publications or other outcomes of applied research are not provided. In general, applied research activities, involvement of academic staff as well as international domain in this area are weak and must be developed in future.

4. Section 4.6 of SAR indicates that different RTC departments, councils and partners interact with each in order to conduct a study program and if necessary make changes to it. However, descriptions of mechanisms or processes related to changes or improvements of study program are missing or not defined. SAR contains information that academic staff and management of study program participate in experience sharing workshops, meetings with foreign higher education institutions, social partners, industry representatives. Considering to SAR, these activities are focused on improvements of the study program, this aspect can be assessed as positive. On the other hand, SAR does not contain information about correlation between related study subjects as well as how it is regulated or promote. In addition, on the basis of visit experience (interview with academic staff, Riga), it was found that cooperation between academic staff at the level of subjects exists. However, it is based on personal initiative of academic staff members.

Considering to the information which was provided at SAR it can be found that there is no mechanism which would lead to control and improvement of quality of study process when changes

of academic staff takes a place. Applied research activities of academic staff are not sufficient, number of publications is low. It is result of missing mechanism which would promote these activities among academic staff. In addition, considering to the list of publications it can be found that international domain and cooperation is missing, no mechanism developed to promote this collaboration. The same statement can be applied to mutual cooperation between academic staff at level of study subjects. In general, can be stated that these aspects makes study program weak and in future the institution must develop clear strategy related to development of this study program. As general conclusion can be stated – the quality of SAR is low, information is given unsystematically, fragmentally and does not gives full information on relevant aspects.

### **Conclusions by specifying the strengths and weaknesses**

On the first view composition of academic staff is sufficient to achieve aims and learning outcomes of study program, but deeper review of teaching staff list suggests that program-specific courses are taught by limited number of lecturers. Almost all program-specific courses are prepared and given by study program director, except 2 courses. This could cause a risk of insufficient human resources for the program in case of a key person absence. No mechanism which would lead to control and improvement of quality of study process when changes of academic staff takes a place. Applied research activities of academic staff are not sufficient, number of publications is low. Missing mechanism of promoting activities among academic staff, international domain and cooperation to promote this collaboration. In general, all mentioned aspects makes study program weak and in future the institution must develop clear strategy related to development of this study program. As general conclusion can be stated – the quality of SAR is low, information is given unsystematically, fragmentally and does not gives full information on relevant aspects.

Strengths:

1. Academic staff and management of study program participate in qualification improvement activities - academic staff and management of study program participates at workshops, trainings and other activities which are focused on improvement of qualification.

Weaknesses:

1. Involvement of academic staff to research activities is weak and there is no mechanism to promote these activities.
2. Number of scientific publications, in the field of study program, is not sufficient.
3. Mutual collaboration between the teaching staff members is not regulated or promoted by the institution.
4. International domain in the area of scientific research is not sufficient.
5. Program-specific courses are taught by limited number of lecturers.

## **5. Assessment of the Compliance of the Study Programme "Heat Power Engineering"**

### **Requirements**

1. The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure by which state-recognised documents of higher education are issued.

**Assessment of compliance:** Partially compliant

The provided sample of the Diploma is organised in according with the regulations, however, the diploma uploaded has gaps, e.g. "ieguvis XXXXXXXXXXXXX kvalifikāciju" and diploma supplement has gaps as well: "2.1. kvalifikācijas nosaukums: XXXXXXX". Thus, the diploma examples are not program specific. The regulation "Kārtība, kādā izsniedz valsts atzītus

augstāko izglītību apliecinošus dokumentus" p.1. states that regulations prescribe the criteria and procedures for the issuance of state-recognized documents certifying higher education regarding the acquisition of an accredited study program, as well as samples of the referred to documents, which means samples prepared had to be program-specific, an exact copy of a real diploma, except student personal data. Therefore the assessment is partially compliant.

2. Documents confirming that the higher education institution/ college will provide the students with the options to continue the acquisition of education in another study programme or at another higher education institution/ college (a contract with another accredited higher education institution/ college), in case the implementation of the study programme is discontinued.

**Assessment of compliance:** Non-compliant

The Annex with collection of cooperation agreements was uploaded for this program. However, neither of uploaded cooperation agreements targeted specific study program "Heat Power Engineering". Agreement with RTU does not mention opportunity to continue studies, rather discusses cooperation practices, agreement with Ventspils University of Applied Sciences applies only to "Engineering Mechanics" program.

3. Document confirming that the higher education institution/ college guarantees to the students a compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the higher education institution/ college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

**Assessment of compliance:** Fully compliant

Annex 14.12.2021., Nr. 1.1.-21/90 confirms that the institution guarantees compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

4. The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

**Assessment of compliance:** Fully compliant

Attached resumes of teaching staff and confirmation 09.09.2021., Nr. 1.1.-21/51 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi"

5. The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language.

**Assessment of compliance:** Not relevant

6. At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts.

**Assessment of compliance:** Not relevant

- 7 7. The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 8 8. The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

**Assessment of compliance:** Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi"

- 9 9. The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

For this program only profession-specific course descriptions were uploaded. Course descriptions and study materials are in Latvian. Evaluation and grading criteria are clear. Previous knowledge needed to start course and study results missing for most of the courses (Siltumapgāde/Heat supply, Kurināmis, kurtuves un katli/Fuels, furnaces and boilers, Plūsmu mehānika/ Fluid mechanics). For the courses mentioned above literature is not divided into obligatory and additional reading (criteria 3 of Section 56.1, Paragraph two) Rework of course descriptions on College side is needed to comply with requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

- 10 10. The study programme complies with the valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided that the completion of the study programme leads to a professional qualification.

**Assessment of compliance:** Non-compliant

The link provided in Annex 7 to the profession standard is correct, however, the information analysed does not correspond to the standard, for example, standard does not require "Ability to calculate the unit cost of a refrigeration unit per refrigeration unit", mentioned in Annex 7.

- 11 11. Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 12 12. The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard.

**Assessment of compliance:** Fully compliant

Study program does comply with Regulations of Cabinet No. 141 "Noteikumi par pirmā līmeņa profesionālās augstākās izglītības valsts standartu".

- 13 13. The joint study programmes comply with the requirements prescribed in Section 551, Paragraphs one, two, and seven of the Law on Institutions of Higher Education (if applicable).

**Assessment of compliance:** Not relevant

- 14 14. Each member of the academic staff has either publications published in reviewed editions within the last six years, including international editions (if they have worked for a shorter period of time, the number of publications shall be in proportion to the work period), or artistic creation achievements (for instance, exhibitions, films, theatre performances, and concert activity), or a five-year practical work experience (except for the experience in the implementation of the study programme) in accordance with the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

The professional experience for the teachers involved is sufficient, but, according to the resumes as well as list of publications can be stated that academic staff involved in this study program have published only two publications, with topics directly related to study program. Moreover, the publications are published in journal issued by HEI. These results are not sufficient to meet with this criteria.

- 15 R5 - Overall rating

**Assessment of compliance:** Partially compliant

College should provide cooperation agreement for study program "Heat Power Engineering" confirming that the college will provide the students with the options to continue the acquisition of education in another study programme or at another institution in case the implementation of the study programme is discontinued. Compliance with professional standard and program specific diploma example needs to be provided. Also the study course descriptions needs to be corrected - adding missing information and study results.

**Requirements (R6-R8)**

- 1 R6 - The compliance of the study provision, scientific support (if applicable), informative provision (including libraries), material and technical provision, and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of the learning outcomes.

**Assessment of compliance:** Partially compliant

The information about study program "Heat Power Engineering" provided in SAR p.3.1. is not program specific, and mimics description of Refrigeration program, listing such resources as "refrigeration equipment and conditioning equipment". While financial and informative provision seems to be acceptable, the laboratory equipment seems to be shared with other programs and there is some lack of Heat Power related equipment, as laboratories mainly focus on studies on flows, valves and fluid dynamics.

- 2 R7 - The compliance of the qualification of the academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments.

**Assessment of compliance:** Fully compliant

Complies with national regulation.

- 3 R8 - The study programme leading to the master or doctoral degree is based on the advances and findings in the relevant field of science or artistic creation.

**Assessment of compliance:** Not relevant

## Conclusions by specifying the strengths and weaknesses

The assessment of compliance with professional standard is missing, and has to be submitted to improve evaluation of the program. The program-specific diploma example has to be submitted as well. Otherwise, most of the requirements prescribed in the Law on Institutions of Higher Education and other regulatory enactments are met, except p.2. on the requirements about the possibilities to continue the acquisition of education in another study programme. The study program "Heat Power Engineering" content and study course selection is sound and contribute to the goals of the study program. The overlap in teaching with the Refrigeration Engineering program observed. Study program plan has to be revised.

In general, in future the institution must develop clear strategy related to development of this study program.

### Strengths:

1. Program provides life-long learning opportunities and fulfils a socially important role.
2. Profession is highly demanded in the industry, which provides program with motivated students with a good background knowledge and attitude towards studies
3. Composition of academic staff is suitable to achieve the aims and learning outcomes of the study program.

### Weaknesses:

1. Classical and little changing program contents.
2. Study program plan composition is not clear defined regarding Entrepreneurship module and 0 CP study course Sport.
3. Some basic knowledge missing to complain with professional standard.
4. Involvement of academic staff to research activities is weak and there is no mechanism to promote these activities.
5. Number of scientific publications, in the field of study program, is not sufficient.
6. Mutual collaboration between the teaching staff members is not regulated or promoted by the institution.
7. International domain in the area of scientific research is not sufficient.
8. Program-specific courses are taught by limited number of lecturers.

## Evaluation of the study programme "Heat Power Engineering"

Evaluation of the study programme:

Average

## 6. Recommendations for the Study Programme "Heat Power Engineering"

### Short-term recommendations

Please prepare and submit a study program compliance with professional standard (Following Example provided under section "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard (if applicable)" before the Study Quality Committee meeting.

Please prepare and submit the program specific diploma example before the Study Quality Committee meeting, mentioning in diploma specific qualification to be obtained and courses taken.

Please provide document confirming that college will provide the students with the options to continue the acquisition of education in another study programme or at college in case the implementation of the study programme "Heat Power Engineering" is discontinued.

Please customize learning outcomes of the program. Please use professional standard to define learning outcomes thus ascertaining that learning outcomes are program specific.

### Long-term recommendations

Continuing improvement of the Moodle system and increasing the percentage of courses that use the system, because remote learning is of special importance to working professionals.

Evaluate the cooperating with partner universities and "Refrigeration systems" teaching staff for common publications, organising of conferences, and sharing study courses. During the interviews with management the idea was expressed that in the future programs "Refrigeration systems" and "Heat Power engineering" might be joint together. Experts considered this idea worth implementing, because each program has specific laboratory resources, and both programs might benefit from joining forces, e.g. screw compressor (demonstrated in "Refrigeration systems" laboratory) is used for gas compression in thermo power plants as well. We suggest organising training for the teaching staff to use advanced computer classroom (one with remote process control available for "Refrigeration systems", since the process control is of specific importance to Heating systems as well).

Considering attracting more lecturers for program-specific courses to avoid situation when program cannot be given due to the absence of key teachers.

Please arrange the study program plan. Review the literature list for the courses. It should be divided into Obligatory/Additional literature. Avoid including too many sources, more than 1 source for course dated before 2000, as well as sources in foreign languages that are not in the curricula.

Review the teaching staff and study course coverage to avoid a risky situation that program-specific courses are taught by limited number of lecturers

## II. "REFRIGERATION ENGINEERING" ASSESSMENT

### II. "REFRIGERATION ENGINEERING" ASSESSMENT

#### 1. Indicators Describing the Study Programme

##### Analysis

Refrigeration Engineering is a first level professional higher education study programme. In the program description for the full-time studies of 2 years, 0 months the qualification to be obtained is Refrigeration equipment specialist. The program has 80 Credit Points (<https://rtk.lv/?sadala=3596>). The qualification corresponds to the level 5 of the Latvian qualifications framework.

According to general description of the program, the primary task of study programme is to give theoretical knowledges and practical skills in area that is connected with exploitation and maintenance of refrigeration machines - bringing up refrigeration engineering area specialists, that are able to work in refrigeration machines maintenance and repair companies, diagnose centres and related companies.

The program "Refrigeration engineering" was first accredited in 2014. The graduates of the program work with refrigeration systems on ships or on shore, or in the storage facilities. As stated by

management of the field during interviews, this program became very demanded after the Maxima store collapse, and there is constant lack of specialists of refrigeration systems willing to work on ships (off-shore). Illustratively, graduates work for the companies owning grocery stores, and the salary for a respective professional is above average. It is unique program, and has no direct competitors, therefore cooperation with employers is very tight, and graduates have great employment prospective. As stated by employer representative during the interview (and former graduate of the respective program), he cannot wait for more graduates to complete the program, so that he can invite them to join his company. The name of the program clearly reflects study contents and qualification to be obtained. There are specific courses in the program related directly to refrigeration technology and solutions.

The type of study presented for accreditation experts was full-time studies only, although studies are organised typically during weekends, starting on Friday afternoon, to fit schedules of working professionals.

For the program "Heat Power Engineering"/ "Refrigeration Engineering" the professional qualification or the degree and the professional qualification to be acquired was not stated in Annex "Sample of the diploma to be issued for the acquisition of the study programme", neither in Diploma example neither in Diploma supplement. The list of courses acquired was not provided in Diploma supplement for this program. In general, the Diploma and its supplement examples were not tailored for each program, which contributed to the expert statement in general assessment that the overall quality of SAR is low.

The professional qualification for the program "Refrigeration Engineering" was available though under HEI web-page (<https://rtk.lv/?sadala=3596>). For this program, professional qualification "Refrigeration Engineer (in Latvian "Aukstumtehnikas speciālists")" was named.

For the SAR Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard the program was not organised according to Example (Annex 7), and link to the respective professional standard was not provided. The list of knowledge to obtain and skills was detailed, but no indication how exactly these requirements are met by study program courses was given.

Typing the profession name into the official database [https://registri.visc.gov.lv/profizglitiba/stand\\_registrs\\_2017.shtml](https://registri.visc.gov.lv/profizglitiba/stand_registrs_2017.shtml) allowed to download profession standard in PDF form (<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-178.pdf>). In this standard, the list of requirements is different than the list provided by HEI in Annex (for example, standard requires skills of managing refrigeration system construction works on the site, not mentioned in HEI Annex 7), therefore in the "Assessment of the Compliance field" only partial compliance is assigned for the criteria.

The SAR Annex of statistics on the students over the reporting period shows that contrary to other programs, which experienced a slight drop of students 3-4 years ago, the "Refrigeration" program attracts 30-34 students each year since program was open for admission in 2014/2015, and experienced an increase in students with a peak of 45 students in 2017/2018, with a drop to previous number of 34 students in 2018/2019, which remains stable since then.

To achieve program goals the excellent lab equipment was acquired including cooling camera, described in Part 3 on program resources. Experts were positively surprised that even without evidence of a formal and well documented quality assurance system the program managed to quickly adapt to new fields such as alternative cooling agents and refrigeration in the maritime sector.

Some tasks are not study programs' but rather study field tasks, like p.5. "organise student conferences". Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme was not provided, the Curriculum was uploaded twice instead, therefore it was not possible to evaluate if study results of courses and program goals are synchronized.

The admission requirements for the students are that they have completed general secondary or

professional (vocational) secondary education. These admission requirements are given in HEI web page (<https://rtk.lv/?sadala=175>). The admission requirements are clearly understandable for the applicants.

## **Conclusions by specifying the strengths and weaknesses**

The study programme Refrigeration Engineering is a unique program in Latvia designed in 2014 to satisfy demand for specialists working with refrigeration systems offshore and onshore. The program is given in Riga only. The study programme has been prepared according to the development guidelines for the Refrigeration Engineering specialist. The aims, objectives and learning outcomes of the programme are defined according to the Professional Standard.

Strengths:

1. No direct competition exists for this program in Latvia, it is highly specialized and therefore with little competition on the market.
2. The prospective employment opportunities are clearly defined.
3. Employment rate after completing studies is very high.
4. The cooperation with future employers is tight.
5. There are a substantial amount of specialised courses in the curriculum.
6. The program study content is topical and flexible demonstrated by reaction to new legislation on alternative cooling agents.

Weaknesses:

1. Tasks are too broadly defined and are not program specific.
2. Since no mapping of the study courses was provided, not possible to evaluate if courses in the Curriculum are designed to achieve program results. There is insufficient documentation concerning aspects like course - learning goals mapping or quality assurance system.

## **2. The Content of Studies and Implementation Thereof**

### **Analysis**

1. The program "Refrigeration Engineering" is a first level professional higher education study program, which prepare the students for the Refrigeration equipment specialist profession, comprising in particular the ability to service refrigeration equipment and manage and organize staff. The selection of courses as found in the curriculum (SAR annex III - 2) is sound (the program-specific courses e.g. Cooling technology, Refrigeration equipment, Basics of refrigeration equipment automation, Conditioning, are balanced with general engineering courses e.g. Electrical engineering, Technical mechanics) and special attention is given to regulatory and safety issues as requested by graduates (interview graduates Riga) and defined in the study goals, because students should learn about safety issues an legal requirement in the sector. This is the only program in the evaluated field for which a second foreign language (excluding English) is included into the course plan. During the interviews, it was revealed that German language is planned to be given as an option to students, because study program has close cooperation with German refrigeration company Blitz. A mapping table of courses to learning outcomes was not provided and available in English or in Latvian. In general, the part of the SAR for the program "Refrigeration Engineering" is particularly poor, lacks the most basic information and is repetitive. There seems to be a high degree of interaction with potential employers via the organization of the compulsory internships which leads to a high satisfaction with graduates (SAR p. 57). From the Descriptions of the study courses it can be concluded that program-specific courses are given by 5 different lecturers, and human resources appear to be sufficient for the program to be continued in good quality.

The study program consists Compulsory General Study Courses part 20 CP, Compulsory and Optional Professional Study Courses part 15 CP, Professional Study Courses part 17 CP, internship I and II 16 CP (6 CP and 10 CP) and Qualification paper part 8 CP. Offered 3 optional study courses 2 CP each, must be selected 4 CP (Annex "Studiju programma AUKSTUMTEHNKA (1).docx"). As required in regulations, in study program "Refrigeration Engineering" content includes in compulsory part study course Civil protection 1 CP and in Environmental protection 1 CP. Regarding a module for the development of business professional competencies, experts found in courses compulsory part (Introduction to Entrepreneurship 2 CP, Business Communication 1 CP, Labour Rights 1 CP, Occupational Safety 1 CP, 5 CP in total) and in optional part (Basics of quality management 1 CP), gave no clear advice, how the entrepreneurship module is organized. That could be, on expert's point of view, additionally revised and completed for better visibility.

Additionally, the study course Introduction to Speciality is offered in compulsory part 1 CP and in optional part 2 CP, that not clear for experts and recommended to college to review. Study plan consists study course with 0 CP (Sport), that could be not included in study plan and offered as additional service.

In the SAR Annex on Compliance of the qualification to be acquired upon completion of the study programme with the professional standard the program was not organised according to Example (Annex 7), and link to the respective professional standard was not provided. The list of knowledge to obtain and skills was detailed as results, but no indication how exactly these requirements are met by study program courses was given.

Typing the profession name REFRIGERATION SPECIALIST into the official database [https://registri.visc.gov.lv/profizglitiba/stand\\_registrs\\_2017.shtml](https://registri.visc.gov.lv/profizglitiba/stand_registrs_2017.shtml) allowed to download profession standard in PDF form (<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-178.pdf>). In this standard, the list of requirements is different than the list provided by HEI in Annex (for example, standard requires skills of managing refrigeration system construction works on the site, not mentioned in HEI Annex 7), therefore in the "Assessment of the Compliance field" only partial compliance is assigned for the criteria.

The learning schedule for the studies is available under HEI web-page <https://rtk.lv/?sadala=448>. It shows that studies are organised four days a week from 16:00-21:35.

2. For this study program evaluation and grading criteria are very clearly defined. Criteria were stated very specifically for every course in Course description Annex, for example, to get a minimum grade of 4 in the course "Basics of refrigeration equipment automation" student must be able to name different types of automation devices and apparatus, while to get a maximum grade 10 for the course student must be able to name and describe the possible solutions of the refrigeration automation control scheme, their advantages and disadvantages. During interviews with students and graduates, experts specifically asked for some complaints on the grades, but students responded they never had any. The detailed grading criteria explains this phenomena.

The percentage of courses given by externals is with about 75% particularly high (interview program directors Riga) and may be one reason for the high proportion of practical classes of 50% (interview program directors Riga). Student-centered teaching in terms of group works and even flipped classroom concepts seems to happen upon the initiative of the teachers. However, it is not pursued systematically. As a particularly good example of innovative teaching methods a conference on new cooling agents organized by RTC needs to be mentioned. During COVID times teachers substituted hands-on courses with video tutorials which is considered an inadequate replacement by the students (interview students Riga).

3. As example of surveys an employer survey from the academic year 2021/22 is provided (SAR p. 57) which shows high satisfaction with the graduates. The immediate consequences however are unclear. On the other side, content updating seems to work efficiently, see part I - 2.1. Also the

reasons for choosing the program was asked to the students as well as their overall satisfaction. Again, no evidence is given to which end this data is used.

4. Mobility is, just like in other programs, mainly achieved via internships. For the current semester 2 students benefit from this opportunity doing their internship in Lithuania and Estonia respectively (SAR p. 66).

### **Conclusions by specifying the strengths and weaknesses**

The program "Refrigeration Engineering" program is a highly specialized program rarely seen elsewhere. The responsible teachers of the program seem to be exceptionally responsive in adapting the program content-wise. The grading criteria are clear and detailed. As example modern refrigeration agents were mentioned as well as a new focus on marine application. Also, it is the only program under consideration focusing on legal aspects and safety and putting this explicitly into the program goals. Entrepreneurship module, study courses Sport and Introduction to Speciality need to be reviewed.

Strengths:

1. Highly specialized program, providing market with highly demanded unique specialists.
2. Good integration with regional and national industries and professional associations.

Weaknesses:

1. Study program plan not clearly defined.
2. Compliance with profession standard was not demonstrated.
3. Statistical data gathered is not sufficiently and efficiently enough used for the improvement of the program.

### **3. Resources and Provision of the Study Programme**

#### **Analysis**

This program is given only in Riga branch. SAR report states that this program currently mainly receives funding through the national budget.

Additionally to the resources analysis for the study field, the following laboratories using for study program were presented to experts: welding laboratory, refrigeration equipment laboratory (including a refrigeration camera of real-life size) and air conditioning laboratory.

The professionals from the industry are participating in study program as teachers and mentors. During the reporting period this program acquired modern equipment e.g. refrigeration camera and computer classroom which enables remote access for teachers to students computers. Currently two teachers are skilled to use this classroom. Computer classrooms with remote access have a great potential, and therefore more lecturers might be interested to be trained how to use it.

During the Covid-19 restrictions lecturers still tried to organise practical works by filming the process of equipment handling on camera e.g. by filming from the top how a gas screw compressor works when the screws are operated manually. It was individual effort of teachers, but it is in line with the modern approach of "Virtual laboratories", and provides excellent ground for future development of virtual labs.

From the literature provisions catalogues from partners e.g. Blitz are highly valued. They are available in teachers rooms, and available for students upon request. However, the literature is in German and English. According to interviews of students, most of the time, they rely on teacher to read the latest advances in the industry and prepare materials in native language for them.

## Conclusions by specifying the strengths and weaknesses

The resources of the program indicate the possibility to ensure a high-quality study process in short-term and long-term. The professionals from the industry are participating in study program as teachers and mentors. The computer classes for this program are equipped with the latest software for HVAC studies, and allow interactive learning.

Strengths:

1. The study program has excellent laboratory equipment available.
2. Computer classroom with remote control available.
3. Ability to organise virtual practical learning when face-to-face classes were not possible.

Weaknesses:

1. Catalogues of partners are in English and German, so it is not guaranteed all students can understand the material well.

## 4. Teaching Staff

### Analysis

1. The SAR does not contain information how many members have left and how many members have joined the study program. On the other hand, SAR contains the following statement: "As instructors are replaced, there has been a notable trend towards improvement in the quality of studies in recent years". It shows that changes in composition of academic staff had taken place. However, SAR does not indicate any statistics on changes and does not describe measures which were taken in order to ensure quality of study program implementation. In addition, SAR contains information on academic staff involvement in different activities related to improvement of qualification. This aspect can be assessed as positive considering that it is measures which ensure quality of implementation of study program. On the other hand, SAR does not contain an analysis of how many new members were involved in these activities and what impact the study program was obtained.

2. Composition academic staff involved in the study program (Annex: Basic information on the teaching staff involved in the implementation of the study direction) complies with requirements of study program implementation and enables the achievement of the aims and learning outcomes of the study program. Composition of academic staff is based on five members which are PhD holders, seven members which are master degree holders and six members with bachelor degree. This aspect can be assessed as positive. Also, SAR indicates that members of academic staff participate at different activities related to improvement of qualification. For example: further studies, participating in scientific research, conferences, projects etc. This aspect can be assessed as positive. On the other hand, SAR states that members of academic staff actively participate at international conferences. However, information, provided by the institution, does not confirm this statement i.e. there is only two publications in local journal and no presentations, relevant or related for study program.

3. The SAR states that involvement of academic staff to applied research activities is based on dissertation prepared by one member of academic staff. Considering the information provided at SAR, the topic of dissertation was related to pedagogical aspects of teaching and evaluation of study outcomes. In general, this aspect has a positive impact on the study program. However, considering the scientific field of dissertation it has a low impact to study program from the point of possible technological innovations in the field. In addition, considering to this information and list of

publications can be stated that involvement of academic staff to applied research activities is not sufficient. Also, SAR does not contain information on how the most recent scientific findings are included in the study process. International domain of applied research activities are not introduced. In general, the most information, provided at this section, does not properly introduce and indicates academic staff involvement to applied research activities and its impact to study process or quality of it.

4. Section 4.6 of SAR indicates that different RTC departments, councils and partners interact with each in order to conduct a study program and if necessary make changes to it. However, descriptions of mechanisms or processes related to changes or improvements of study programs are missing or not defined. On the other hand, SAR contains information that academic staff and management of study field programs participate at experience sharing workshops, meetings with foreign higher education institutions, social partners, industry representatives. Considering to SAR, these activities are focused on improvements of the study program. Therefore, this aspect can be assessed as positive. The SAR states that academic staff conduct regular discussions and meetings in order to establish links between study subjects and topics. It can be assessed as a positive aspect. On the other hand, the SAR does not contain information, does established correlation between related study subjects has any impact to quality of the study program.

### **Conclusions by specifying the strengths and weaknesses**

Considering to analysis of information given at SAR can be stated that composition of the academic staff is suitable to achieve aims and learning outcomes of study program. The academic staff participates at events focused on improvement qualification which also leads to improvement of study process. On the other hand the institution does not provides information on changes of academic staff and what measures were used to ensure quality of the study program. Considering to SAR applied research activities are based on topic of dissertation of one academic staff member. Moreover, the topic is not directly related to study program. It is highly negative aspect. Number of publications is low and does not gives any impact to study process. This aspect must be reconsidered by management of study field and study program. In addition, international domain of study program and applied research activities are not described or somehow addressed. As general conclusion can be stated – the quality of SAR is low, information is given unsystematically, fragmentally and does not gives full information on relevant aspects.

Strengths:

1. Academic staff and management of study program participate in qualification improvement activities.
2. Composition of academic staff is suitable to achieve aims and task of study program

Weaknesses:

1. International domain in the area of applied research is not sufficient.
2. Measures to ensure quality of study program and its compliance when changes in academic staff composition takes place are unclear or undefined.
3. Involvement of academic staff to applied research activities is weak and there is no mechanism to promote these activities.
4. Number of publications, in the field of study program, is not sufficient.

## **5. Assessment of the Compliance of the Study Programme "REFRIGERATION ENGINEERING"**

### **Requirements**

1. The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure by which state-recognised documents of higher education are issued.

**Assessment of compliance:** Partially compliant

The provided sample of the Diploma is organised in according with the regulations, however, the diploma uploaded has gaps, e.g. "ieguvis XXXXXXXXXXXXXXX kvalifikāciju" and diploma supplement has gaps as well: "2.1. kvalifikācijas nosaukums: XXXXXXX". Thus, the diploma examples are not program specific. The regulation "Kārtība, kādā izsniedz valsts atzītus augstāko izglītību apliecinājošus dokumentus" p.1. states that regulations prescribe the criteria and procedures for the issuance of state-recognized documents certifying higher education regarding the acquisition of an accredited study program, as well as samples of the referred to documents, which means samples prepared had to be program-specific, an exact copy of a real diploma, except student personal data. Therefore the assessment is partially compliant.

2. Documents confirming that the higher education institution/ college will provide the students with the options to continue the acquisition of education in another study programme or at another higher education institution/ college (a contract with another accredited higher education institution/ college), in case the implementation of the study programme is discontinued.

**Assessment of compliance:** Non-compliant

There was no cooperation agreement provided for study program "Refrigeration Engineering" provided by College.

3. Document confirming that the higher education institution/ college guarantees to the students a compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the higher education institution/ college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

**Assessment of compliance:** Fully compliant

Annex 14.12.2021., Nr. 1.1.-21/90 confirms that the institution guarantees compensation for losses if the study programme is not accredited or the licence of the study programme is revoked due to the actions of the college (actions or failure to act) and the student does not wish to continue the studies in another study programme.

4. The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

**Assessment of compliance:** Fully compliant

Attached resumes of teaching staff and confirmation 09.09.2021., Nr. 1.1.-21/51 verifies that state language proficiency is compliant with MK. Nr. 733 "Noteikumi par valsts valodas zināšanu apjomu, valsts valodas prasmes pārbaudes kārtību un valsts nodevu par valsts valodas prasmes pārbaudi".

5. The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language.

**Assessment of compliance:** Not relevant

- 6 6. At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts.

**Assessment of compliance:** Not relevant

- 7 7. The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 8 8. The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

**Assessment of compliance:** Fully compliant

Sample of attached study agreement complies with MK. Nr. 70 "Studiju līgumā obligāti ietveramie noteikumi".

- 9 9. The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 56.1, Paragraph two and Section 56.2, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

For this program only 6 profession-specific course descriptions were uploaded, which is not a full list, because program has specifics in curricula different from other field programs, like second foreign language.

The course descriptions of uploaded courses satisfies criteria set by Law on Institutions of Higher Education, but some critique should be addressed towards literature lists:

- Although studies are in Latvian language, in the literature lists some sources in Russian are given (including Obligatory literature for the course Montāža, remonts un ekspluatācija/Installation, repair and operation).

- For some of study courses mandatory reading is unrealistic in amount (e.g. for course Aukstumiekārtu automatizācijas pamati/Basics of refrigeration equipment automation the literature list is one page long; for course Aukstumtehnika/Refrigeration equipment there are 18 obligatory literature sources).

- 10 10. The study programme complies with the valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided that the completion of the study programme leads to a professional qualification.

**Assessment of compliance:** Non-compliant

The knowledge, skills and competences listed are less than listed in qualification database web-page for profession standard of REFRIGERATION SPECIALIST:

<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-178.pdf>. Majority of requirements are covered in study curricula, but for some criteria (e.g. two foreign languages and consulting skills) the coverage was less obvious.

- 11 11. Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Institutions of Higher Education.

**Assessment of compliance:** Not relevant

- 12 12. The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard.

**Assessment of compliance:** Fully compliant

Study program does comply with Regulations of Cabinet No. 141 "Noteikumi par pirmā līmeņa profesionālās augstākās izglītības valsts standartu".

- 13 13. The joint study programmes comply with the requirements prescribed in Section 551, Paragraphs one, two, and seven of the Law on Institutions of Higher Education (if applicable).

**Assessment of compliance:** Not relevant

- 14 14. Each member of the academic staff has either publications published in reviewed editions within the last six years, including international editions (if they have worked for a shorter period of time, the number of publications shall be in proportion to the work period), or artistic creation achievements (for instance, exhibitions, films, theatre performances, and concert activity), or a five-year practical work experience (except for the experience in the implementation of the study programme) in accordance with the Law on Institutions of Higher Education.

**Assessment of compliance:** Partially compliant

According to the college provided resumes academic staff has sufficient practical work experience, but according to the resumes as well as list of publications it can be stated that academic staff involved to this study program have published only a few publications which are related to study program. Moreover, SAR states that research activities, in this study program, are mostly based on topic of dissertation of one academic member. The topic is not directly related to study program.

- 15 R5 - Overall rating

**Assessment of compliance:** Partially compliant

College should provide cooperation agreement for study program "Heat Power Engineering" confirming that the college will provide the students with the options to continue the acquisition of education in another study programme or at another institution in case the implementation of the study programme is discontinued. Compliance with professional standard and program specific diploma example needs to be provided. Also the study course descriptions needs to be critically assessed on how realistic is provided amount of mandatory reading and how correctly it reflects goals of the course, study results, content of the course etc.

## Requirements (R6-R8)

- 1 R6 - The compliance of the study provision, scientific support (if applicable), informative provision (including libraries), material and technical provision, and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of the learning outcomes.

**Assessment of compliance:** Fully compliant

The resources of the program ensures the possibility for high-quality study process. Informative and financial provisions are in good order. The available laboratories are in excellent order and ensures successful studies of refrigeration technologies and achievement of learning outcomes.

- 2 R7 - The compliance of the qualification of the academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments.

**Assessment of compliance:** Fully compliant

Complies with national regulation.

- 3 R8 - The study programme leading to the master or doctoral degree is based on the advances and findings in the relevant field of science or artistic creation.

**Assessment of compliance:** Not relevant

### **Conclusions by specifying the strengths and weaknesses**

The program "Refrigeration Engineering" program is a highly specialized program rarely seen elsewhere. The responsible teachers of the program seem to be exceptionally responsive in adapting the program content-wise. The resources of the program indicate the possibility to ensure a high-quality study process in short-term and long-term.

The assessment of compliance with professional standard is missing, and has to be submitted to improve evaluation of the program. The program-specific diploma example has to be submitted as well. Otherwise, most of the requirements prescribed in the Law on Institutions of Higher Education and other regulatory enactments are met, except p.2. on the requirements about the possibilities to continue the acquisition of education in another study programme.

Considering to SAR applied research activities are based on topic of dissertation of one academic staff member, but the topic is not directly related to study program. Number of publications is low and does not gives any impact to study process. This aspect must be reconsidered by management of study field and study program. In addition, international domain of study program and applied research activities are not described or somehow addressed.

Strengths:

1. Highly specialized program.
2. Excellent equipment.
3. Motivated staff and teachers.
4. Good integration with regional and national industries and professional associations.

Weaknesses:

1. Study program plan not clearly defined to the fact of Entrepreneurship module and other courses mentioned in expert report.
2. Partial compliance with profession standard.
2. Insufficient exploitation of international relations.
3. Statistical data gathered is not sufficiently and efficiently enough used for the improvement of the program.

### **Evaluation of the study programme "REFRIGERATION ENGINEERING"**

Evaluation of the study programme:

Average

## **6. Recommendations for the Study Programme "REFRIGERATION ENGINEERING"**

### **Short-term recommendations**

Please prepare and submit a study program compliance with professional standard (Following Example provided under section "Compliance of the qualification to be acquired upon completion of the study programme with the professional standard (if applicable)" before the Study Quality Committee meeting.

Please prepare and submit the program specific diploma example before the Study Quality Committee meeting, mentioning in diploma specific qualification to be obtained and courses taken.

Please provide document confirming that college will provide the students with the options to continue the acquisition of education in another study programme or at college in case the implementation of the study programme "Refrigeration Engineering" is discontinued.

Please customize learning outcomes of the program. Please use professional standard to define learning outcomes thus ascertaining that learning outcomes are program specific.

### Long-term recommendations

Build up an active network of partner universities for staff and student exchange.

Increase the amount of scientific publications of the faculty by establishing a suitable incentive scheme. This should include support for PhD.

Consider broadening the program towards more potential professions and therefore opportunities for the students.

Increasing number of books available in Latvian language, which might require teaching staff participating in EU funding projects to develop learning materials.

## III. Assessment of the Requirements for the Study Field and the Relevant Study Programmes

### III. Assessment of the Requirements for the Study Field and the Relevant Study Programmes

#### Assessment of the Requirements for the Study Field

Requirements	Requirement Evaluation	Comment
R1 - Pursuant to Section 5, Paragraph 21 of the Law on Institutions of Higher Education, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study direction whilst implementing their internal quality assurance systems:	Partially compliant	Internal quality policy is published and is available, but procedures to make sure that internal quality assurance system is working are not documented, therefore implementation of the policy is "Partially compliant".

Requirements	Requirement Evaluation	Comment
<p>R2 - The cooperation with different organisations from Latvia and abroad implemented within the study direction ensures the achievement of the aims of the study direction.</p>	<p>Partially compliant</p>	<p>The SAR p.1.2 on program goals states that "The programmes taught within the fields of study are orientated towards achieving Latvia's sustainability goals; "strengthening the main capital of Latvia, namely, the development of human abilities, knowledge and talents, creativity and ability to collaborate, by educating young people and enabling them to join both the local and the global job market." The cooperation with local partners is strong. It is based on cooperation with industry associations and personal relationships of staff within field, including graduates. International organisations are cooperating with college in engineering projects like INLEARC and Erasmus contracts. Yet, college lacks strategy for internationalization and cooperation with partners abroad can be strengthened further. The insufficient English skills of students will prevent joining global job market.</p>
<p>R3 - Compliance of scientific research and artistic creation with the development level thereof (if applicable).</p>	<p>Partially compliant</p>	<p>Professional education is highly focused on practical skills. The list of scientific activities provided showed that some attempts to perform research activities are made by teaching staff, although the number of research articles with RTK affiliation is not high. The student conferences are organised yearly in HEI.</p>

Requirements	Requirement Evaluation		Comment
R4 - Elimination of the shortcomings and deficiencies identified during the previous assessment of the study direction, if it has been conducted, or the implementation of the provided recommendations.		Partially compliant	There were 7 recommendations. 1st recommendation on following job market development trends is perpetual and is fulfilled in cooperation with MASOC. The recommendation of improving practical projects material base was demonstrated in full (recommendation No. 5), the recommendations on online learning tools (recommendation No. 6 and 7) were implemented well. The other recommendation and follow-up activities were rather vague. According to additional information, retrieved from yearbooks of HEI, the recommendations 2-4 focused on international projects for academic staff and on involving more students into international projects was not fulfilled in desirable amount due to Covid-19 travelling restrictions.

#### Assessment of the Requirements for the Relevant Study Programmes of the Study Field

No.	Study programme	R5	R6	R7	R8	Evaluation of the study programme (excellent, good, average, poor)
1	Automotive Transport (41521)	Partially compliant	Partially compliant	Fully compliant	Not relevant	Average
2	Engineering Mechanics (41521)	Partially compliant	Fully compliant	Fully compliant	Not relevant	Average
3	Heat Power Engineering (41522)	Partially compliant	Partially compliant	Fully compliant	Not relevant	Average
4	REFRIGERATION ENGINEERING (41526)	Partially compliant	Fully compliant	Fully compliant	Not relevant	Average

#### The Dissenting Opinions of the Experts

For two programs Automotive Transport (41521) and Engineering Mechanics (41521) the Experts were confused about the provision of technical resources in branches, which were less compared to Riga.

(For the Automotive Transport (41521) it is felt that R6 (library, material, ...) is "fully compliant" only for the Riga site but not for the programs run at Kandava and Liepaja.

For criteria R7 experts had intensive discussions, but finally pursued strictly the legal framework to complete the evaluation.

The final evaluation was given considering the better opinion.