



**RE-ACCREDITATION OF  
THE POLYTECHNIC OF ZAGREB**

**Date and place of the site visit:  
23-24 April 2012, Zagreb**

**July, 2012**

## COMPOSITION OF THE EXPERT PANEL

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- Prof. Dr.-Ing. Christian Millauer, Hochschule Ostwestfalen-Lippe, Germany, member
- Prof. Branimir Ružojčić, Ph.D., Polytechnic of Pula, Croatia, member
- Prof. Klaudio Tominović, Ph.D., Polytechnic of Pula, Croatia, member
- Kristijan Pili, Polytechnic Velika Gorica, Croatia, student member

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# INTRODUCTION

## *Short description of the evaluated institution*

Tehničko veleučilište u Zagrebu (TVZ), The Polytechnic of Zagreb, offers professional and advanced degree-studies in the field of engineering, hosted by four departments with the following scientific focus:

- Civil Engineering
- Electrical Engineering
- IT and Computer Science
- Mechanical Engineering

and the

- Life-long Education centre

which offers further education, especially for experienced engineers.

Even though it was not founded until 1998, TVZ in fact looks back on a history of more than 50 years because a number of predecesing institutions formed the nowadays Polytechnic. So, for example, the Department of Civil Engineering draws back to the Higher Technical School for the Construction Industry and Civil Engineering, founded in 1961 in Bedekovčina, and the new mechatronics programme is a follow up to the professional study of Mechanical Engineering, which started in 1958 at the Technical School in Zagreb.

TVZ describes its mission as:

“...The mission of the Polytechnic in Zagreb is to educate and train young people into competent experts in the field of technical engineering activity, in order to be able to confidently compete in the labour market. In following today's rapid technological development, by offering specialization and the acquisition of internationally recognized certificates, our students are given the opportunity of a continued professional development and training. Today's life-long learning is imperative, both for our teachers and students....”

According to the demands of an international, fully recognized 2<sup>nd</sup>-cycle programme, TVZ carries out numerous research and professional projects which led to the fact that TVZ is enrolled in the Register of Scientific Organisations. With respect to the demands of mobility, TVZ keeps an International Office headed by a responsible Professor. The IO assists prospective outgoing students and cares for the relations to cooperating partner-institutions abroad. The curriculum offers students possibilities of intercultural training and learning foreign languages.

At the moment, there are 4000-odd students, whereof, in the academic year 2012/2011, electrical- and IT department each had 208 enrolled students, civil engineering had 204 freshman and computing 150. In the same academic year, specialist graduate professional studies had 87 (electrical engineering), 128 (IT), and 125 (civil engineering) enrolled part-time students. For undergraduate studies an increasing demand for places can be noticed, whereas interest in the graduate study had a peak in demand in 2009/10. Since 2006, the number of applicants for mechanical engineering program decreased rapidly. As a reaction to that development, the department offered a substitute programme “Mechatronics” but kept the ability to offer mechanical engineering programme, if there is a need. This is a kind of precaution, because there is an objective need for mechanical engineers in the society.

Professional study at TVZ lasts six semesters, in accordance with the first cycle of the Bologna process, and comprises of 180 Credit Points of the European Credit Transfer and Accumulation System (ECTS). The graduates are awarded the Bachelor degree.

The specializations are:

- Electrical Engineering,
- Civil Engineering,
- Information Technologies IT,
- Computer Science,
- Mechatronics.

Polytechnic’s specialists graduate professional study branches into three specializations after the common first semester:

- Electrical Engineering,
- Civil Engineering,
- Information Technologies.

There are currently 92 teachers and 106 associates (Ref. page 88 of “self-report”) permanently employed. This includes 17 full professors and 14 associate professors. Given the current student population, this staff level indicates a staff/student ratio (SSR) of about 21, if associates are counted.

The Polytechnic is headed by a Dean, who is supported by three Vice-Deans, with specific responsibilities and administrative staff. The Dean reports to the Academic Council and to the Governing Council. Each department has one head for the administrative and strategic governance, answering to the academic council of the department. The study programmes are headed by a manager who is responsible for the day-by-day organization of the studies and the quality within. Besides that, for the aspect of quality, a separate quality board has been formed. It is led by the Vice-Dean for Teaching and students and its members are the chairmen of the department boards, students and TVZ representatives at AZVO.

## ***The work of the Expert Panel***

The expert panel based its review on the Self-evaluation report of the Polytechnic of Zagreb, which consists of two volumes, the first with general descriptions and the second volume comprises extensive excel-charts for all concerned topics. They carried out a site visit to the campus on 23<sup>rd</sup>, 24<sup>th</sup> April. For the visit, the group split in two, one visiting the premises in Vrbik 8 and Ivana Lučića 1 and other the location in Konavoska 2. At the Dean's chamber in Vrbik 8, they held meetings with the following groups:

- Management of the institution, i.e. Dean, Vice-Deans, Heads of Departments.
- The Self-Evaluation Group and the Committee for Quality Management
- Students
- Teaching Assistants
- Teachers
- Project Leaders

The panel also visited the Faculty facilities (laboratories and offices for administrative staff) and classrooms, with members of the panel having short discussions with attending students.



# DETAILED ANALYSIS BASED ON STANDARDS AND CRITERIA FOR RE-ACCREDITATION

## *1. Institutional management and quality assurance*

- 1.1. The institution's mission is relatively brief and generally formulated. It points out, that the TVZ sees its main efforts in the educational as well as in the scientific process of gaining and teaching engineering knowledge and skills. By emphasizing the research, it clarifies, that the institution is to be ranked in the field of higher education. The mission emphasises the institution's role as a centre of scientific research excellence on the international level and higher education teaching in the most important industrial centre of Croatia. The institution carries out appropriate strategic planning and hands out a detailed paper with main strategic goals and the function of the concerned academic councils and Quality Board.

However, the mission doesn't clarify differences for the departments and LLL programs, a formalized periodic given advice of stakeholders outside the TVZ and the permanent revision of the obtained outcomes.

**It is therefore recommended to extend the vision by considering specific differences between the departments. It is as well recommended to formalize the revolving system of quality evaluation by periodic carried out processes.**

- 1.2. The institution has relevant legal documents that formally set out its organisational structure.

**It is recommended that the institution reviews the organizational regulations and investigates ways for some basic procedures that are to be carried out beneficially in a unified mode in the whole institution. These rules should be accessible to all, students as well as staff.**

- 1.3. Study programmes offered by the institution are aligned with its mission. It is recommended to check whether the still virtually existing programme of Mechanical Engineering should be given up completely, if there really is no need for absolvents, which has to be reevaluated.

- 1.4. The institution has implemented a system of quality assurance and continuous quality improvement for its education, where all internally affected groups are involved. The external stakeholders are involved, but the process could be given a further improvement, if it would be undergone formalized and periodic.
- 1.5. The institution has implemented formal mechanisms for monitoring and improving the quality of teaching and gives feedback to the students and members of faculty. The TVZ has taken measures for helping students who have difficulties following the lectures by introducing tutorials. Additionally, TVZ improves teaching quality by specific programmes and new methods, which are carried out in workshops. TVZ also cares for further scientific development of its teachers, i.e. by giving grants for PhD studies. In organizational aspects, teachers are instructed in the demands of the Bologna process. The self-evaluation report names the URL for the teacher's self-evaluation sheet. The quality process is carried out at appropriate levels, i.e. the departments are in charge for the teaching, results, workload etc.
- 1.6. The institution regularly performs teaching evaluation. All students are involved, because they are obliged to fill out an evaluating sheet when enrolling in the next semester.

TVZ names several important goals and intentions for developing quality and careers of young scientists, and points out that the Quality Board has taken notice of establishing a monitoring system for scientific work. The self-report lists a lot of high-quality projects and papers. During the site-visit, the panel attended an impressive short presentation of an innovative imaging system. Yet there is no system that puts these results into connection, describes its value und clarifies whether projects are in line with the mission of the TVZ.

**TVZ must build up a formalized system to monitor and evaluate scientific activities like publishing, contribution to national and international conferences, research-scholarships, subsidized projects, donations, involving the best students in scientific work etc. This system shall make transparent, where on one hand need for improvement exists and on the other hand, what is most important for science in general and the reputation of TVZ itself.**

- 1.7. A policy for ethical behaviour is given. With respect to scientific work are further explanations formulated (ref. "self-report", p. 116, section o.).
- 1.8. The role of ethics was discussed with teachers during the site visit. The Panel found out, that the rules are not spread all over TVZ. **Management must take efforts to inform teaching staff and students about the rules of ethical behaviour.**

## ***2. Study programmes***

- 2.1. TVZ is in contact with stakeholders like industry and the Croatian Employment Service, and considers these experts. Stopping Mechanical Engineering is an adequate example of a result of decreasing interest of students for mechanics and the increasing need of industry for engineers with skills in mechatronics.
- 2.2. The institution has established regulations for the review and recognition of prior qualifications and provides aids for gaining an appropriate standard of knowledge.
- 2.3. Student learning outcomes at the level of study programmes are not completely set by the teachers. Examples for syllabus were handed out to the panel during site-visit.  
**It is recommended that the institution makes a revision of the module handbook and publishes it to students, comprising learning outcomes, contents, workload, form of assessment, responsible lecturer.**
- 2.4. The teachers have some choice in the ways in which the students' learning is assessed. However, the panel recognises that most of assessment is done in the form of a final written examination.  
**Students shall be confronted with several types of examination e.g. oral, homework. Form of assessment must consider the expected competencies in an adequate manner.**

- 2.5. ECTS credits reflect the work load of the students. The students generally understand the arrangements for the allocation of credits although they reported that there was some imbalance in the implementation of the associated workloads.
- It is recommended that monitoring of the workload is investigated continuously within evaluation of lectures. It shall comprise presence time, examination time as well as time for self-studies.**
- 2.6. The content and quality of each study programme conforms to internationally recognised standards so that qualifications can be internationally recognised. On completion of their programmes, students are provided with a certificate accompanied by a diploma supplement document. The degree “specialist” is not in accordance with the Bologna process and may lead to misunderstandings abroad.
- Diploma supplement should clearly indicate that specialist studies are on the second cycle of higher education and that degree “specialist” is on the same level as the “master” degree.**
- 2.7. A range of different teaching methods like lecture or laboratory work is used. Most learning materials are available on-line. An own library with scientific associated books is missing, so the possibility of individual inquiries is a weak point.
- 2.8. The electronic resources for learning and information are quite satisfactory. There is a well-developed platform for student information.
- 2.9. The TVZ is in permanent contact with several well-known companies, which provide adequate internships for students. Associate staff also provides possibilities for direct access to placements in industry.
- 2.10. The institution carries out a continuous renovation of its study programmes and names this as one of their core activities. The self-evaluation report explains: “...in Electrical Engineering, about 80% of courses/subjects were innovated as follows: ten of the "old" ones were replaced with fresh ones, twelve of the courses are significantly revised, and forty of the courses are modernized didactically, methodically and in their content. In a similar way, in the IT and Computer Science four new courses were introduced, while

in the specialist study of Electrical Engineering six new courses are included...". Though no formal process has been designed, TVZ takes care of providing modern and competitive study programs with international recognition.

### **3. Students**

- 3.1. Information packages available to prospective students clearly inform them about the level of programmes, qualifications and academic titles as well as the possibilities for further education and employment. Application for enrolment is made on TVZ's web page. The students said that they were satisfactorily informed when they applied for study at TVZ.
- 3.2. Admissions criteria and procedures are publicly stated and consistently applied. Their effectiveness in predicting student success is reviewed. The performance of students in terms of pass rates shows a higher proportion of those coming from vocational than of those from grammar schools.  
**These results should end up in special courses for those to improve also their success.**
- 3.3. Given that acceptance is based on the state Matura, there is no need for additional criteria to determine acceptance.
- 3.4. The students confirm mentorships and good personal contacts with their teachers; they feel well supported in case of difficulties in the learning process.
- 3.5. In the self-evaluation report (p. 83, tables 7, 8) TVZ lists many venues for sport, fitness, salsa, copy shop etc. Additionally, the facilities of the University of Zagreb can be used.
- 3.6. TVZ standards, which seem to be lower than those of the University of Zagreb.  
**TVZ should evaluate the most important needs by questioning students. As first step those, who are members of the Councils and the Quality Board. This shall**

**improve the competitiveness of TVZ for high-level applicants and raise the motivation whilst studying.**

- 3.7. Students can be elected as members of councils and the Quality Board and are able to participate in the decision-making processes. The panel talked with the student member during the session with the Quality Board.

**There are only 2 student members and it was not known to students which we asked.**

**There should be a better communication.**

- 3.8. Teachers give instructions in which way assessments will take place. The realization allows teachers great liberty, what sometimes results in confusing the students. Feedback is rather late due to web-based evaluation, which takes place at enrolment for the next semester.

- 3.9. Although the institution gains information about employment of graduates from connections with professional associations and surveys, the amount of information that the institution has about the employability of its graduates is relatively limited and no permanent statistical figures are available.

**TVZ shall strengthen its statistical information relating to employment.**

- 3.10. At the moment, the contact with alumni is based on informal relations with the caring members of the staff.

**TVZ should extend its contact with its alumni and keep a specific register of members, including formalising an Alumni Club with at least one annual meeting.**

- 3.11. Students can denominate members to all committees relevant for the learning process, teaching quality, etc. However, **TVZ should encourage students to become members of these committees.**

- 3.12. The web page of TVZ informs satisfactorily about study programmes and qualifications in Croatian and even English language.

**TVZ should add information to the web-page about learning outcomes and employment. That will help prospective students in the decision-making process, in deciding what to study and avoiding misunderstandings about the difficulties of studying an engineering programme. It will also inform engineers with a first degree on how to improve their skills by further education.**

3.13. Student-members are represented in all relevant committees and can propose improvements.

3.14. Students are informed about the measures implemented on the basis of their suggestions and opinions, and have access to minutes of the committees.

**TVZ should spread important decisions and improvements to the students. Maybe by using the electronic information system in accordance with student members, what is of interest for the students.**

#### ***4. Teachers***

4.1. The qualifications of the teachers are adequate.

4.2. The institution carries out good measures for growth and development of human resources. Among others, PhD studies are supported. A written document is yet not agreed by the concerned bodies.

4.3. Considering the students recruited each year, the institution employs sufficient full-time personnel.

4.4. The ratio between full-time teachers and students is 1:46. Taking part-time staff into account, the ratio decreases to 1:22 – a very good figure.

4.5. TVZ has well-developed contracts for each individual member of the teaching staff. This includes sections which prescribe further scientific progress and also consequences if these conditions are not fulfilled. Pedagogical training is offered and shall encourage the staff to find new, activating teaching methods.

- 4.6. TVZ's procedures for promotion and other advancement by the teachers are appropriately developed, understood and accepted. They are implemented in a fair and consistent manner and there are opportunities to appeal.
- 4.7. The rules governing the assignment of teachers' workloads are generally fair. A constraint is effected, if a teachers has the duty, to act at different sites of TVZ, which needs travelling time.
- 4.8. The institution is aware of this problem and settles it, if necessary by the individual contract.

## ***5. Scientific and professional activity***

- 5.1. The field of research is dependent on the skills of the responsible professor; at the moment, there is no mainstream of research at different departments to recognize.  
**A scientific, medium-term development plan in accordance with the institution's mission and vision should be developed. It should take into account the specific equipment, also to be seen as an offer to industry and to attract students as a preparation for future postgraduate studies. Monitoring of researchers is in progress and done by the Quality Board. Rules for measuring performance and output should be developed.**
- 5.2. By implementing its research activities, the institution is developing fruitful links both in Croatia and abroad.
- 5.3. Research is essential for TVZ and is supported by teachers, scientific staff and employees.
- 5.4. TVZ has decided to formalise steps for supporting researchers in a policy; the main facts are described in the self-evaluation report, p. 112.



- 5.5. TVZ supports outstanding scientific activities but there is no policy available yet. **TVZ should develop a policy in which the relation of scientific success (different types have to be considered and weighted) and percentage of support is described and forms a reliable base for researchers.**
- 5.6. The institution uses evidence of productivity of its publications and presentations at conferences and encourages its researchers for these activities. However, at the moment, the output is not systematically measured.  
**A section of the future “Research Policy” should take into account different types of publishing, for example books, contributions to conferences, articles in reviewed papers. In this way, a systematic and transparent ranking of productivity could be achieved.**
- 5.7. TVZ registers the output; many examples of different types are given in the self-evaluation report. A systematic weighting of these facts does not exist at present.
- 5.8. TVZ gives according to its budgets for travelling to conferences and also supports laboratory activities.

## ***6. International cooperation and mobility***

- 6.1. TVZ has signed cooperation agreements with institutions in Slovenia, Slovakia, Portugal and Germany, providing student and staff exchange under the ERASMUS-Framework. Besides, TVZ is member of CEEPUS. The web-page provides an “English-Button” and wide information is provided in English language. This gives a good impression of TVZ to foreign students.
- 6.2. By means of the ERASMUS-and CEEPUS-network, students can take semesters abroad. Acknowledgement of credits refers to the ECTS-Regulations. TVZ has established an International Office, which has permanent staff and can be accessed daily without prior announcement. The conditions and prerequisites for applications for ERASMUS-grants and aids for visa and travelling expenses which are at present paid by the department, are presented to the students in several forums.

For preparing a stay abroad, TVZ offers language training in English and German and, as the panel found out, the teaching staff has remarkably good knowledge of the English language – so its members serve as very good examples to the students

6.3. Teachers can apply for Erasmus-Staff-Mobility, further expenses like visa and insurance is paid for by the department. A number of teachers with international experience are mentioned in the self-evaluation report. These perform in encouraging staff mobility.

6.4. TVZ is involved in the CEEPUS network coordinated by an institution in Austria, with members from a range of other institutions in Central and Eastern Europe.

**It is recommended to enforce networking also on the level of scientific organizations.**

6.5. The opportunities for attracting students from abroad at present are fairly limited because only very limited parts of the programmes, confined to electives, are delivered in English.

**It is, in a mid-term-scope, recommended that the institution moves towards offering a greater proportion of its programmes in English.**

6.6. The institution provides lifelong learning programmes in the form of short and part-time courses in all its field of professional study programmes. It also offers its first cycle study programmes to experienced engineers who want to improve their knowledge.

6.7. The institution has developed other forms of international cooperation by, for example, welcoming foreign guest lecturers, visits by foreign student groups, arranging international conferences. This depends on existing personal contacts of professors.

## ***7. Resources: administration, space, equipment and finances***

7.1. TVZ, with its four departments, is spread over 8 sites in the town of Zagreb. Even if departments are concentrated in one or two neighboured locations, a certain lack of space is to be considered. TVZ owns only one building, but it has rented space from

university and other proprietors. So, building in scientific equipment is difficult, because no long-term planning can be made.

**The institution is recommended to increase its study spaces and classrooms, and establish a library for the special scientific demands of the departments. In addition, a bigger concentration of locations will promote interdisciplinarity and avoid idling-time.**

- 7.2. Development of non-teaching staff is continuously regulated by the daily need of assisting the teaching-processes.

**TVZ sets up appropriate rules for the non-teaching staff development.**

- 7.3. The institution provides appropriate equipment and technical support. This includes IT equipment for direct teaching as well as IT equipment as a topic of education, i.e. for networks. The equipment also serves the LLL activities.

- 7.4. Well-equipped labs support teaching at state of the art. Constraint is the fact that the equipment is scattered all over town; keeping it together would be advantageous.

- 7.5. The offices of the Dean and Heads of the Departments collect and review relevant data.

- 7.6. TVZ does not have its own library, so the students have to rely on universities library and the National and University Library. Concerning the supply of textbooks, teachers have made available a wide variety of material, most available online at printing stations, where students can get copies, so the supply for learning is secured. A weak point is that students have no scientifically adequate possibilities to carry out their own inquiries for projects and highly-sophisticated technical problems.

**TVZ is recommended to try to build up its own library; as a first step, it would be enough to close those gaps that substitute libraries bring with them due to their mission, which differ from that of TVZ. They especially seem not to be specialized in technical monographs.**

7.7. The current ratio of non-academic to academic staff is about 1:3,3. This represents an understaffing considering the number of students. Particularly, the number of the administrative staff is insufficient.

**TVZ is recommended to take steps either to increase the number of the staff or try to rationalize administrative processes.**

7.8. The income allows the organisation of all study programmes in an adequate manner.

7.9. TVZ spends its funds for education, especially support labs, students and even hiring administrative staff.

# **FINAL REPORT AND RECOMMENDATIONS BY THE EXPERT PANEL FOR THE ACCREDITATION COUNCIL**

## ***ADVANTAGES (STRONG POINTS)***

- Learning resources are reasonably good. The student/teacher ratio allows small groups with excellent care for the student's progress. The teaching staff is very committed to achieving the best teaching results.
- The teaching process is continuously reviewed and efforts are made to invent new didactic methods, especially some kind of activated learning.
- Many members of the teaching staff provide living contacts with the industry. This secures their permanent updating of know-how, a practise-orientated syllabus, and many possibilities for internships, professional and scientific projects.
- TVZ carries out a great number of scientific projects, which result in a high and modern level of the contents taught.
- TVZ has ambitious long-term plans, e.g. their own campus, tailor-made to its visions, and introducing further academic education, namely the third cycle of the Bologna process.
- TVZ made a good process in internationalization by becoming member of the ERASMUS-Charter. Teaching of foreign languages, a continuously operating International Office and English-speaking staff are good prerequisites for expanding international exchange and establishing additional cooperation with universities abroad.

## ***DISADVANTAGES (WEAK POINTS)***

- Several tasks, academic as well as administrative processes, are not sufficiently formalized which means that the know-how must often be worked out anew whenever a different person becomes in charge of a process.
- More formality in basic documents is recommended, because the liberty of conducting learning processes in an individual, non-consistent ways result in student disinformation. A Module-Handbook, describing the main features of courses according

to the European Standards and Guidelines ESG, is lacking. It should clarify the demands of a course to the students in a definite mode.

- The way of calculating credit points does not follow a systematic path; it must comprise all aspects of learning-time, presence, self-studies and examinations. Also, gradation schemes are sometimes untransparent and due to unexpected changes.
- Students are not encouraged enough to take chances in building up the quality of the learning process by participating in committees.
- TVZ loses contact after graduation, which is why it does not have enough feedback about the quality of its study programmes.
- Student standard should be raised; at present, it is too dependent on the University of Zagreb.

# RECOMMENDATIONS FOR IMPROVEMENT OF QUALITY

## 1) Institutional management and quality assurance

- It is therefore recommended to extend the vision by considering specific differences between the departments. It is as well recommended to formalize revolving system of quality evaluation by periodically carried out processes. (1.1)
- It is recommended that the institution reviews its organizational regulations and investigates ways for some basic procedures that are to be carried out beneficially in a unified mode in the whole institution. These rules should be accessible to all, students as well as staff. (1.2)
- TVZ must build up a formalized system for monitoring and evaluating scientific activities, for example publishing, contribution to national and international conferences, research-scholarships, subsidized projects, donations, involving the best students in scientific work etc. This system shall make transparent where, on one hand, need for improvement exists and, on the other hand, what is most important for science in general and the reputation of TVZ. (1.6\*)
- Management must take efforts to inform teaching staff and students about the rules of ethical behaviour. (1.8)

## 2) Study programmes

- It is recommended that the institution makes a revision of the module handbook which would include learning outcomes, contents, workload, form of assessment, responsible lecturer, and publishes it to students. (2.3)
- Students should be confronted with several types of examination e.g. oral, homework etc. Form of assessment must consider the expected competencies in an adequate manner. (2.4)
- It is recommended that monitoring of the workload is investigated continuously within evaluation of lectures. It should include presence time, examination time as well as time for self-study. (2.5)
- Diploma supplement should clearly indicate that specialist studies are on the stage of the second cycle of higher education and that degree “specialist” is on the same level as the “master” degree. (2.6)

### **3) Students**

- TVZ should evaluate the most important needs by questioning students. As first step those who are members of the Councils and the Quality Board. This shall improve the competitiveness of TVZ for high-level applicants and raise the motivation while studying. (3.6)
- TVZ should strengthen its statistical information concerning employment. (3.9)
- TVZ should extend its contacts with its alumni and keep a specific register. (3.10)
- TVZ should add information to their web-page about learning outcomes and employment. That will help prospective students in the decision-making process, in deciding what to study and avoiding misunderstandings about the difficulties of studying an engineering programme. It will also inform engineers with a first degree on how to improve their skills by further education. (3.12)
- TVZ should inform students about important decisions and improvements, maybe by using the electronic information system in accordance with student members, what is of interest for students. (3.14)

### **4) Teachers**

- No recommendations

### **5) Scientific and professional activity**

- A medium-term scientific development plan in accordance with the institution's mission and vision should be decided. It should take into account the specific equipment, also to be seen as an offer to industry and to attract students as a preparation for future postgraduate studies. Monitoring of researchers is in progress and done by the Quality Board. Rules for measuring performance and output should be developed. (5.1)
- TVZ should develop a policy ("Research Policy") in which the relation of scientific success (different types have to be considered and weighted) and percentage of support is described and forms a reliable base for researchers (5.5)
- A section of the future "Research Policy" should take into account different types of publishing, for example books, contributions to conferences, articles in reviewed papers.



In this way, a systematic and transparent ranking of productivity could be achieved.  
(5.6)

## **6) Mobility and international cooperation**

- It is recommended to enforce networking also on the level of scientific organizations.  
(6.4)
- It is, in mid-term scope, recommended that the institution moves towards offering a greater proportion of its programmes in English. (6.5)

## **7) Resources: administration, space, equipment and finances**

- The institution is recommended to increase its study spaces and classrooms, and establish a library for the special scientific demands of the departments. Besides that, a bigger concentration of locations would promote interdisciplinarity and avoid idling-time. (7.1)
- TVZ should set up appropriate rules for the development of non-teaching staff. (7.2)
- TVZ is recommended to try to build up its own library; as a first step, it would be enough to close those gaps that substitute libraries bring with them due to their mission, which differ from that of TVZ. They especially seem not to be specialized in technical monographs. (7.6)
- TVZ is recommended to take steps either to increase the number of staff or try to rationalize the administrative processes. (7.7)