CROATIAN ACADEMY OF ENGINEERING

TWENTY YEARS OF THE CROATIAN ACADEMY OF ENGINEERING (HATZ)
1993-2013

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Zagreb, 2014

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EDITORIAL

Dear readers,

The electronic or printed version of the monograph under the title of "Twenty Years of the Croatian Academy of Engineering (HATZ) 1993-2013" provides the most important information about the history of our Academy since its establishment in 1993.

From the Archives rich with the documents about the life and activities of the Croatian Academy of Engineering the Editorial Council has selected the contents providing an insight into the history, organization, membership and activities of the Academy. Therefore, the contents of the Monograph are divided into a number of chapters to provide more clearly presented data.

In particular, we point out the first five chapters which describe the organization of the Academy, valid normative acts and the Scientific Fund of the Academy (formerly the Foundation of the Academy), which initiates the evaluation of excellence at all levels of Croatian scientists in fields of engineering by awarding the best achievements, and therefore the eighth chapter is especially devoted to the award winners.

The sixth chapter describes the history of the Academy in which the former presidents give their perception which makes a valuable contribution to the history of the Academy and provides special quality to this monograph.

As we are particularly proud of the fact that the members of our Academy are top scientists with numerous awards of various kinds for their work, in the seventh chapter are listed all our members who are previous winners of the highest national awards and decorations.

The international activity of the Academy is, along with the main goal of contribution to science and the Croatian economy, one of the important objectives of the work. Besides bilateral international cooperation of some of our members, we cooperate and are members of the ″European Council of Academies of Applied

Sciences, Technologies and Engineering (Euro-CASE) and of the same kind of world association International Council of Academies of Engineering and Technological Sciences (CAETS). That is the reason why we decided to present this cooperation in the ninth chapter.

An overview of the selected individual members of all categories is presented systematically in the following four chapters, which show the number and diversity of our members from all branches of fields of engineering.

The strategic mission of the Academy is collaboration between science and industry, which has many forms.

In order to get closer to the needs of these two in the contemporary world inevitably and significantly related categories, a statutory decision enabled possibility of participating in the work of the Academy and all interested scientific institutions and economic entities; this is the reason that we have reached an enviable number of members in the category of supporting members, who with their contribution extremely help the Academy, which has no institutional financial support; they are listed in the twelfth chapter.

We are sorry to note that over these 20 years of our Academy a number of our members passed away. In memory of them their names are listed in the fourteenth chapter, paying them final homage.

In one period to 2014 there was a status of individual member friends of the Academy, a list of which is, due to historical facts, given in the fifteenth chapter.

To connect past, present and future of the Academy, the sixteenth chapter presents a vision of work and development of the Academy in the next period through the program of work of the current Governing Board which was adopted at the 28th Annual Assembly of the Academy in 2013.

The final seventeenth chapter contains the alphabetical list of the membership 2014. Short biographical information and contact is provided for each member. This makes this monograph more valuable.

Finally, as Editorial Board, we apologize for possible incompleteness, oversights and mistakes in this monograph which are certainly unintentional due to time framework and capacity when working.

Editor-in-Chief
Prof. *Vladimir Andročec*, Ph.D.

SIGNIFICANCE OF THE CROATIAN ACADEMY OF ENGINEERING IN THE REPUBLIC OF CROATIA

President of the Academy
Prof. Vladimir Andročec, Ph.D.

Previous archaeological research and findings indicate that the history of engineering in the human race starts with the Paleolithic two million years ago, with the most primitive stone processing (olduvai techniques) and that during the Neolithic thousands of years ago engineering became the basis for survival and development in various civilizations around the world.

Highly civilized societies of the Ancient World develop systemized engineering that already has the characteristics of science, especially in the field of mechanical devices. The Urban Revolution of building permanent and organized settlements encourages with the invention of letters the development of mathematics, physics and astronomy, which form the basis of the development of engineering sciences, whose intensive development began in the late Middle Ages with the appearance of world-renowned scientists in the field of natural and engineering sciences.

Their discovery of physical laws and calculation methods became the basis for the exponential development of science in the last two hundred years, which in various branches of engineering, technology and biotechnology has resulted in achievements without which life would be unthinkable today. In conclusion, an extremely rapid development of engineering sciences in the broader sense requires a good scientific approach to the use of achievements and their further development, which is possible through multidisciplinarity , associating scientists in research teams and societies that encourage and direct the development in terms of sustainability of optimal use of environment and its resources, especially in today's increasingly globalized world.

The Republic of Croatia has a long and turbulent history that needs to be understood in order to get an objective insight into the development of engineering sciences in Croatia. Already in the 9th century Croatia was an internationally recognized state, which at the beginning of the 12th century fell under the reign of Hungary, and in the 17th century it entered the Austro-Hungarian Empire. Meanwhile, nearly five centuries bit was more or less occupied by the Ottoman Empire.

After the First World War in 1918, Croatia became part of the community of Slavic nations called Yugoslavia, and after the second World War in 1945 i it was i n Yugoslavia within its current borders.

During the tumultuous political events of the nineties of the last century Yugoslavia disintegrated as a state, and Croatia gained independence in 1991 under the name of Republic of Croatia and was admitted to the United Nations as a full member.

It is important to point out the recent history in which Croatia became a member of NATO, and in 2013 it became the 28th member state of the European Union. We have thus serious predisposition to self-organize and manage research and development in the whole of science.

Although much of their history politically dependent, since the 16th century the Croats had their scientific institutions or scientific societies of most respected and most learned men who were educated throughout Europe and some of them have become famous inventors or scientists.

Several of them have made important contributions to our world and science, such as Faust Frančić, Rugjer Bošković, Marin Getaldić, Ivan Blaž Lupis, Ivan Vučetić, Slavoljub Penkala, David Schwarz and especially Nikola Tesla, born and raised in the heart of the Croatian, with his epoch-making inventions in the field of electrical engineering.

We should also mention two Croatian Nobel laureates in the field of chemical engineering, Lavoslav Ružička (1939) and Vladimir Prelog (1975).

The breakup of Yugoslavia in 1991 and the creation of the Republic of Croatia important scientific institutions, associations and companies in the field of engineering sciences broke up too. Some of them were extinguished, some transformed, and there was a need to establish new ones. This was particularly important in the fast-developing field of engineering, technology and biotechnology in which fields Croatia has a number of scientific and higher education institutions with a large number of distinguished scientists of the highest rank, who can significantly contribute to the development of the economy that is certainly crucial to the growth and development of resources in Croatia.

Noticing the need unite top scientists of the said fields on account of rapid development of education, research and economy in Croatia, Professors Juraj Božičević, Josip Božičević and Osman Muftić came to the idea of establishing the Croatian Academy of Engineering in 1992 which resulted in the founding assembly of the Academy on 19 January, 1993, which was attended by 14 participants.

The twenty-year history of the Academy is described in detail in the reports of the Presidents presented in Chapter 6 of this publication.

Over a twenty-year period the Croatian Academy of developed its activities through a series of activities by increasing their number and organization and brought together the largest number of prominent scientists from Croatia.

Current 270 members in various statuses are classified into 14 Departments according to technical and biotechnical professions, where diverse scientific activities were undertaken at the level of the Academy, the Department and individual members.

These activities are reflected mostly in the organization, providing support and sponsorship of scientific and professional conferences, round tables, lectures, independently or in cooperation with other institutions, thereby demonstrating academic activity towards all segments of society, especially towards economy with which we have implemented a number of projects. It should be noted that over 50 institutions and distinguished companies joined the Academy in the category of supporting members with whom we keep up continuous communication, and cooperation which we have been trying to promote for years, especially by organizing meetings which promote the economic development of Croatia.

Membership in the prominent European and global associations of engineering academies Euro-CASE and CAETS gives us the possibility of cooperation with a number of scientific institutions in the world through which we try to implement global trends and knowledge, particularly in the development and innovation in our academic and economic system. Consequently, we are proud of a respectable number of international members of our Academy from around the world.

Dissemination of information and knowledge began in the first years of the Academy's existence and became a permanent form of activity. The publication of the Academy Annual as a scientific edition and periodical publications such as the Academy Bulletin or Engineering Power leave a lasting trace of activities of our members of which we are proud and grateful to the previous Academy leaderships who organized and supported were organizers and supporters thereof.

The aforementioned organization and activities made it possible that the Ministry of Science, Education and Sports recognized us as a scientific institution with scientific status which we also have today.

In order to promote and expand the activities of the Academy, recently we have signed cooperation agreements with the Academy of Medical Sciences of Croatia, Academy of Croatian Legal Sciences and the Academy of Forestry Sciences, as

well as with professional associations and, which we are particularly proud of, with the Croatian Academy of Sciences and Arts , the oldest and most significant scientific and cultural institution in Croatia.

All the above mentioned has today, twenty years after its establishment, has created a serious framework for the operation of our Academy with the primary objective of supporting the development of engineering sciences in Croatia, in order to achieve the optimal technical and technological advancement of our society, and especially the economy, which is necessary if we want to enter the club of developed countries with the appropriate standard of civilization achievements of developed societies.

This monograph on the occasion of the twentieth anniversary of the Croatian Academy of Engineering is an attempt to leave a permanent trace on the activities of the Academy and encouragement that the Academy in the future becomes a significant participant and further develops its activities in the Croatian society with the aim of helping further economic, scientific and educational development of Croatian, so that it as soon as possible fits into primarily European and consequently world system of technical progress of appropriate modern technologies.

Finally, last but not least, it should be noted that just this year a serious activity of writing the Croatian technical encyclopedia has begun, the edition that will give an overview of the historical development of engineering in Croatia until today, on the basis of an agreement between the Lexicographic Institute Miroslav Krleža, the Croatian Academy of Sciences and Arts, and our Academy, in which a number of our members will participate as authors , which among other things, indicates the current importance of our Academy in Croatian society.

Twenty years is not much in history in general, but I think it is a lot of the history of our young Republic of Croatia so that this monograph of the history of the Academy will present part of our living together.

President of the Croatian Academy
of Engineering
Prof. *Vladimir Andročec*, Ph.D.

ORGANIZATION OF THE CROATIAN ACADEMY OF ENGINEERING

Secretary-General of the Academy
Prof. Dubravko Rogale, Ph.D.

Croatian Academy of Engineering has a complex internal organization that has been changed and improved during the existence of the Academy. In this way its efficiency has been ensured and increased. The organization has a very clear organizational scheme and hierarchical structure, its bodies and holders of tasks.

Assembly of the Academy

The Statute of the Academy stipulates that the Assembly is the highest body of the Academy, Fig. 2, constituted of all categories of members and chaired by the President of the Academy.

The right to make decisions at the Assembly is vested in all members of the Academy, associates of the Academy, International Members of the Academy and Emeriti of the Academy, except for decisions making about appointment of new members in the Academy or the termination of membership. In that case the right to decide is only vested upon Members of the Academy and Emeriti of the Academy. The right to decide about elections for the Governing Body of the Academy is vested in Members of the Academy, Associates of the Academy, International Members of the Academy and Emeriti of the Academy.

According to the Statute of the Academy, the jurisdictions of the Assembly of the Academy are:

- passes the Statute of the Academy and its amendments
- passes the Bylaw on Membership of the Croatian Academy of Engineering
- appoints the President, two Vice-Presidents and the Secretary-General of the Academy
- confirms the appointments of the Secretaries Deputy Secretaries of Departments
- passes decisions on internal organization of the Academy
- passes decisions on the election of the members of the Academy

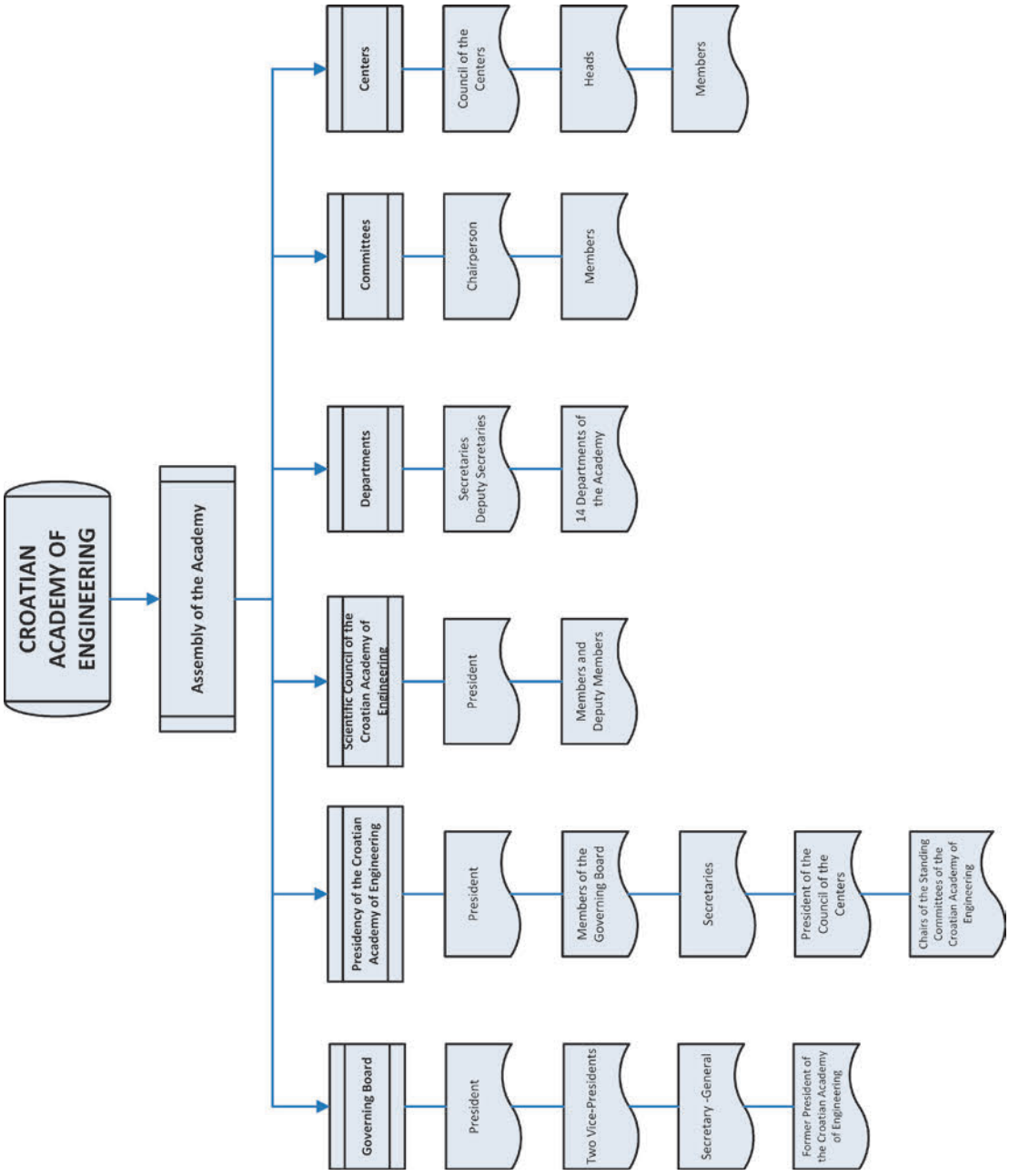

Fig. 1 – Organization of the Croatian Academy of Engineering

- passes decisions on classification of the members by Departments
- passes decisions on the cessation of membership in the Academy
- informs the members of the decisions passed
- draws up the programs of activities and documents of the Academy
- debates and passes decisions on the execution of the program of activities from the preceding period
- debates and passes decisions on the reports of the President, Departments, Centers and Committees of the Academy
- decides on acquisitions and the management of the Academy assets
- confirms the financial plan and final accounts
- passes the decision on legal entities.

The Assembly may decide in plenary session or outside the sessions by the electronic voting of all members of the Assembly with voting rights on a specific subject.

Sessions of the Assembly of the Academy may be regular or special. Regular Assembly is held at least once per year. Special Assembly is held according to need. Governing Board, Presidency and Scientific Council of the Academy as well as the Council of Centers and Committees, Fig. 1, which also have their internal substructure, are subordinated to the Assembly.

Governing Board

The Governing Board of the Academy consists of the President, two Vice-Presidents, the Secretary-General and Former President of the Academy. The mandate of the Governing Board lasts 4 years, Fig. 2.

The President of the Academy presides over the Governing Board. The Governing Board makes decisions at the meetings by public voting.

Governing Board administers the following:
- prepares and organizes the Assembly
- carries out the resolutions of the Assembly
- manages the work of the Academy between two Assemblies
- controls the Academy operations
- prepares draft decisions for the Presidency
- addresses current issues in the field of activities of the Academy
- monitors the execution of financial plans and programs of the Academy

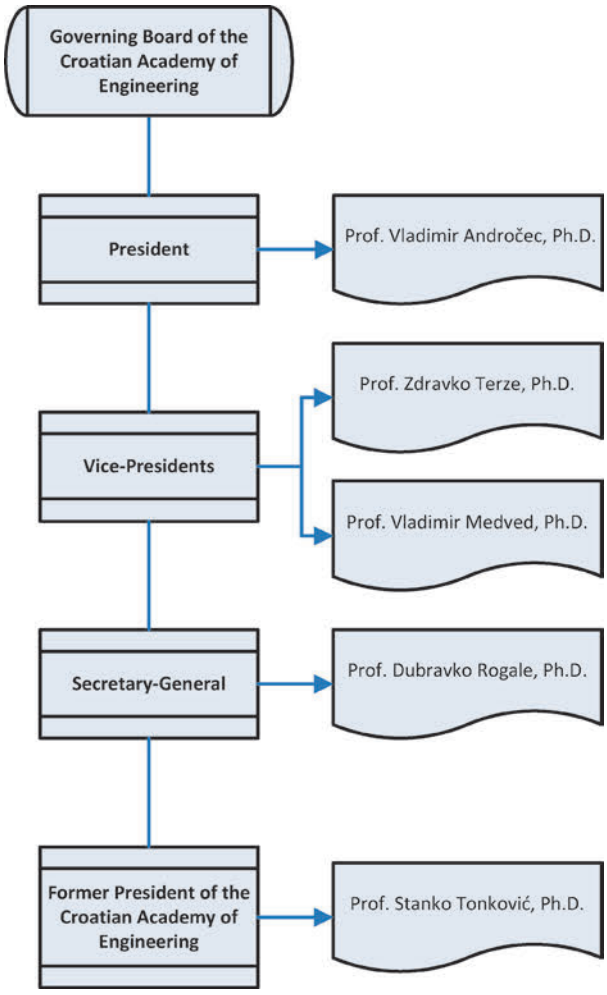

Fig. 2 – Organization of the Governing Board of the Croatian Academy of Engineering 2013 – 2017

- approves payments and fees for the execution of certain tasks and duties in accordance with the Regulations on the Acquisition and Allocation of Income of the Professional Services of the Academy
- decides on the participation of the Academy in the sponsorship of events, meetings and other activities from the scope of the Academy based on the opinion of the relevant Departments.

President of the Academy represents the Academy, presides over the Assembly, convenes the meetings of the Assembly, Presidency and Governing Board, chairs them and supervises decision making and execution of decisions. President of the Academy acts on behalf of the Academy and manages its financial affairs. President of the Academy may assign particular areas of his/her authority to the

Vice-Presidents and Secretary-General. President of the Academy promotes activities of the Academy in administrative structures and in collaboration with industry in Croatia, and according to the program of the Academy in cooperation with foreign countries. President of the Academy is elected for a term of four years with the possibility of reelection for another consecutive mandate.

Vice-Presidents of the Academy carry out tasks under the authority entrusted to them by the President of the Academy. One Vice-President of the Academy is responsible for monitoring and coordinating the work with the Departments of the Academy, and the second Vice-President of the Academy is responsible for the execution of the program, i.e. projects of the Academy, activities of the Standing Committees and monitoring the work of the Science Fund of the Academy. Vice-Presidents are elected for a term of four years with the possibility of reelection for another consecutive mandate.

Secretary-General of the Academy organizes the work of the Professional Services of the Academy, prepares and organizes meetings of bodies, drafts decisions and documents of the Academy, coordinates the work of the bodies of the Academy, supervises the execution of the decisions made by the Academy, performs all tasks entrusted to him/her by the Assembly, the Presidency, the Governing Board and the President of the Academy. Secretary-General of the Academy is elected for a term of four years with the possibility of reelection for another consecutive mandate.

Presidency of the Academy

The Presidency of the Academy is executive body of the Assembly.

The Presidency of the Academy consists of the President of the Academy, two Vice-Presidents of the Academy, the Secretary-General of the Academy, Former President of the Academy as members of the Governing Board, Secretaries of Departments of the Academy, President of the Council of the Centers of the Academy and the Chairpersons of Committees of the Academy, Fig. 3. The mandate of the Presidency lasts 4 years.

The Presidency passes decisions at meetings.

Meetings of the Presidency are held as required, six times a year as a rule.

The Presidency of the Academy is responsible for the following:
- co-ordinates and supervises the work of the Departments, Centers and Committees
- supervises the work of the Governing Board

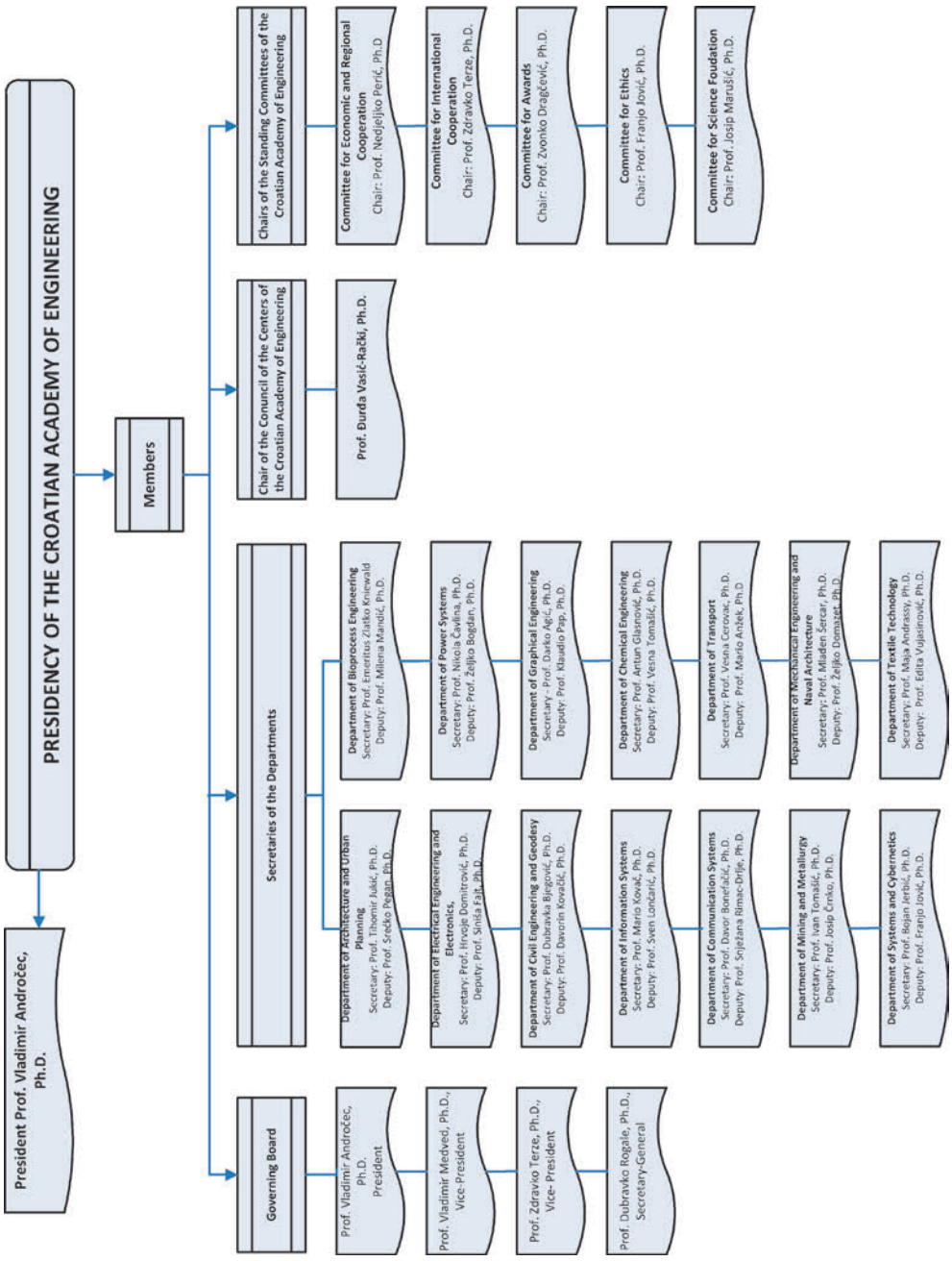

Fig. 3 – Presidency of the Croatian Academy of Engineering 2013- 2017

- makes decisions about the proposals of the Departments, Centers and Committees regarding their activities
- co-ordinates the work of the Departments in preparation for the elections at the Annual Assembly
- determines decision proposals for the Assembly and for electronic voting of the members
- confirms Heads of Centers and Chairpersons of the Committees
- manages the assets of the Academy
- decides about publishing activities
- makes decisions about the change of address of the seat
- considers proposals of the Awards Committee and decides on the awards and acknowledgements
- monitors and promotes activities for the program execution of the Academy
- decides on the establishment of temporary working bodies
- confirms proposed rules, rules of procedure and other documents setting forth the specific business issues of the Academy except those given to the responsibility of other bodies of the Academy
- transfers some powers from the jurisdictions of the Governing Board to other members of the Presidency
- adopts the annual financial plan and program of the Science Fund of the Academy
- decides on the election of members of the Scientific Council of the Academy
- selects and decides on the choice of Administrative (executive) Secretary.

Scientific Council of the Academy

Scientific Council of the Academy is a scientific body of the Academy. Scientific Council of the Academy consists of the representatives of each Department (one per Department) and Chairperson of the Scientific Council, Fig. 4. Members of the Scientific Council of the Academy shall be elected from among members of the Academy and Members Emeriti of the Academy by Departments for a period of four years with the possibility of reelection.

President of the Academy is the function of a member and Chairperson of the Scientific Council, but it is stipulated that he may transfer his powers to the Vice-President. Each Department shall nominate one representative of the Department as a candidate for member of the Scientific Council. Secretary and Deputy Secretary of the Department cannot be candidates for membership of the Scientific Council. Decision on election of members of the Scientific Council (one per Department) is made by the Presidency on the proposal of each Department.

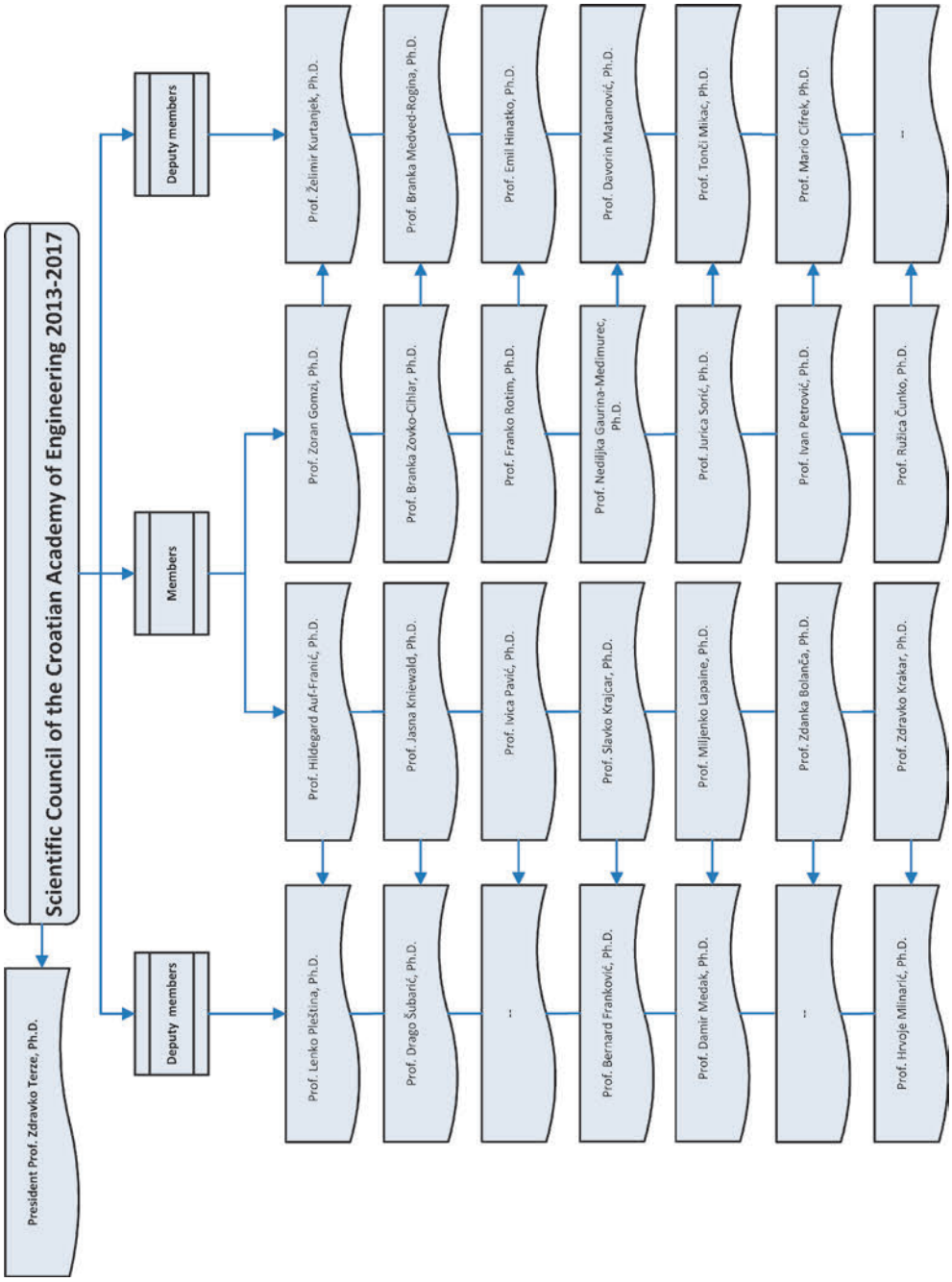

Fig. 4 – Scientific Council of the Croatian Academy of Engineering

The Scientific Council performs the following tasks:
- establishes and implements scientific and professional activities of the Academy to strengthen and promote the scientific status of the Academy
- discusses and decides on scientific and professional issues, i.e. scientific research
- discusses and decides on participation in research projects
- monitors and promotes the work of the Centers
- performs other duties in accordance with the Law on Science and Higher Education.

Organization of the Activities of the Academy

According to the provisions of the Statute the Academy organizes its activities in Departments, Centers, Committees and other organizational forms. The activities and organization of work of the Departments, Centers, Committees and other organizational forms are regulated by the Statute and bylaws and rules of procedure.

Task management of the Academy is carried out by the Departments, Centers and Committees that have no legal personality.

The activities of the Departments and Committees, along with general activities of the Academy, are the following:
- giving opinions and taking stands on the issues referring to their own scope of activities
- proposing plans of their work to the Assembly
- carrying out other functions from their field.

At the head of a Department there is Secretary of the Department of the Academy, Head of the Center of the Academy presides over each Center and at the head of a Committee there is Chairperson of the Committee of the Academy. In the bodies of the Academy a Department of the Academy is represented by Secretary of the Department, Heads of the Centers of the Academy are represented by the President of the Council of the Centers, and each Committee is represented by Chairperson of the Committee. Secretaries of Departments of the Academy and Chairpersons of Committees of the Academy and President of the Council of the Centers and their deputies shall be elected for a term of four years with the possibility of reelection for a successive mandate.

Departments of the Academy

Departments of the Academy are:

Department of Architecture and Urban Planning, Department of Bioprocess Engineering, Department of Electrical Engineering and Electronics, Department of Power Systems, Department of Civil Engineering and Geodesy, Department of Graphical Engineering, Department of Information Systems, Department of Chemical Engineering, Department of Communication Systems, Department of Transport, Department of Mining and Metallurgy, Department of Mechanical Engineering and Naval Architecture, Department of Systems and Cybernetics and Department of Textile Technology, Fig. 5. The Department consists of the members of the Academy and the associates of the Academy. In broader sense the Departments are also constituted of the International Members and Members Emeriti of the Academy. The Departments are founded, merged, divided, abolished and operate pursuant to the decision of the Assembly of the Academy.

Committees of the Academy

Committees are inter-departmental bodies of overall importance for the work of the Academy. Prominent experts from business and persons who are not members of the Academy may collaborate in the Committees. The number of such collaborators cannot be higher than 40% of the total number of the members of the Committee. Figure 6 shows the organizational scheme of five committees of the Academy, their chairs and members.

Centers of the Academy

Center is a scientific research unit of the Academy established for a specific field of science with the aim of conducting scientific research intended for immediate application in the economy. Centers are established pursuant to the Bylaw of the Organization of Centers of the Croatian Academy of Engineering. The initiative to establish a Center is given by the Departments, the proposal is determined by the Governing Board, and the decision is made by the Presidency of the Academy. The Council of the Centers is a coordinative body of the Centers. The President and Heads of the Centers are members of the Council, Fig. 7. The Members of the Council elect the President of the Council of the Centers who will represent them at the Presidency of the Academy and report on the activities of the Centers.

Fig. 5 – Departments of the Croatian Academy of Engineering 2013-2017

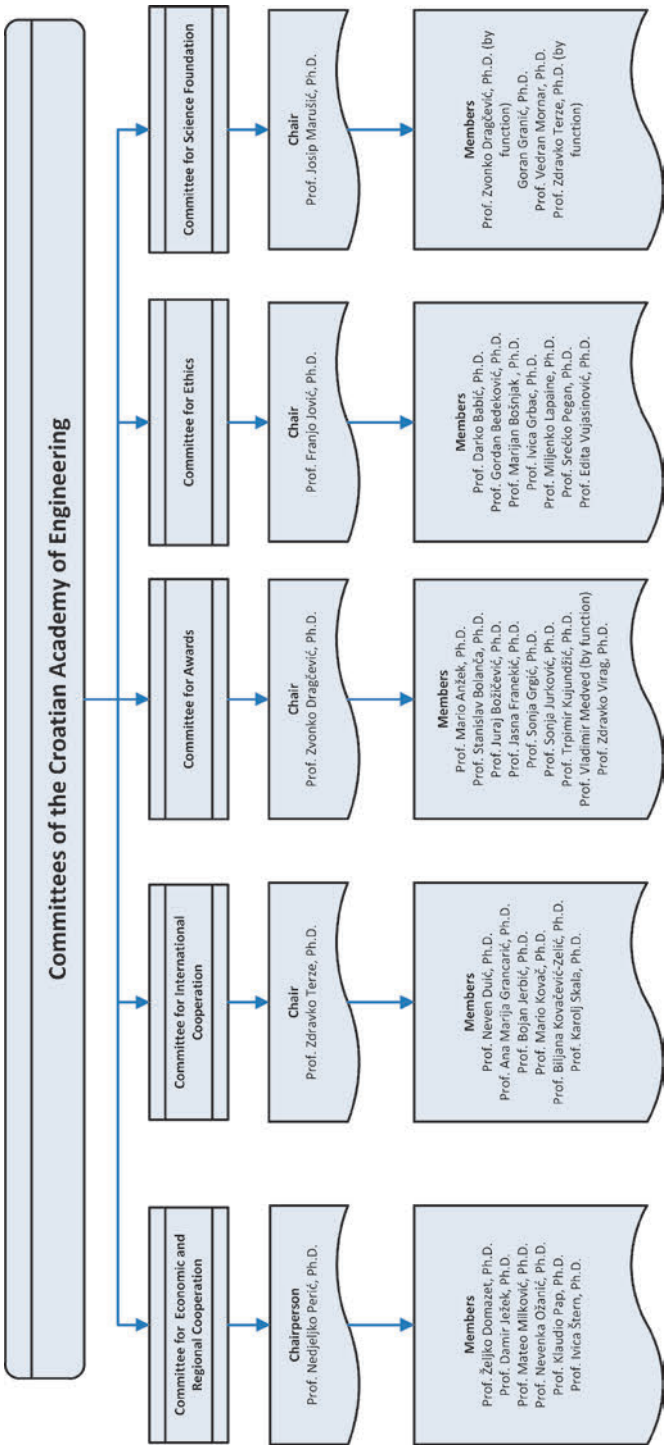

Fig. 6 – Committees of the Croatian Academy of Engineering 2013-2017

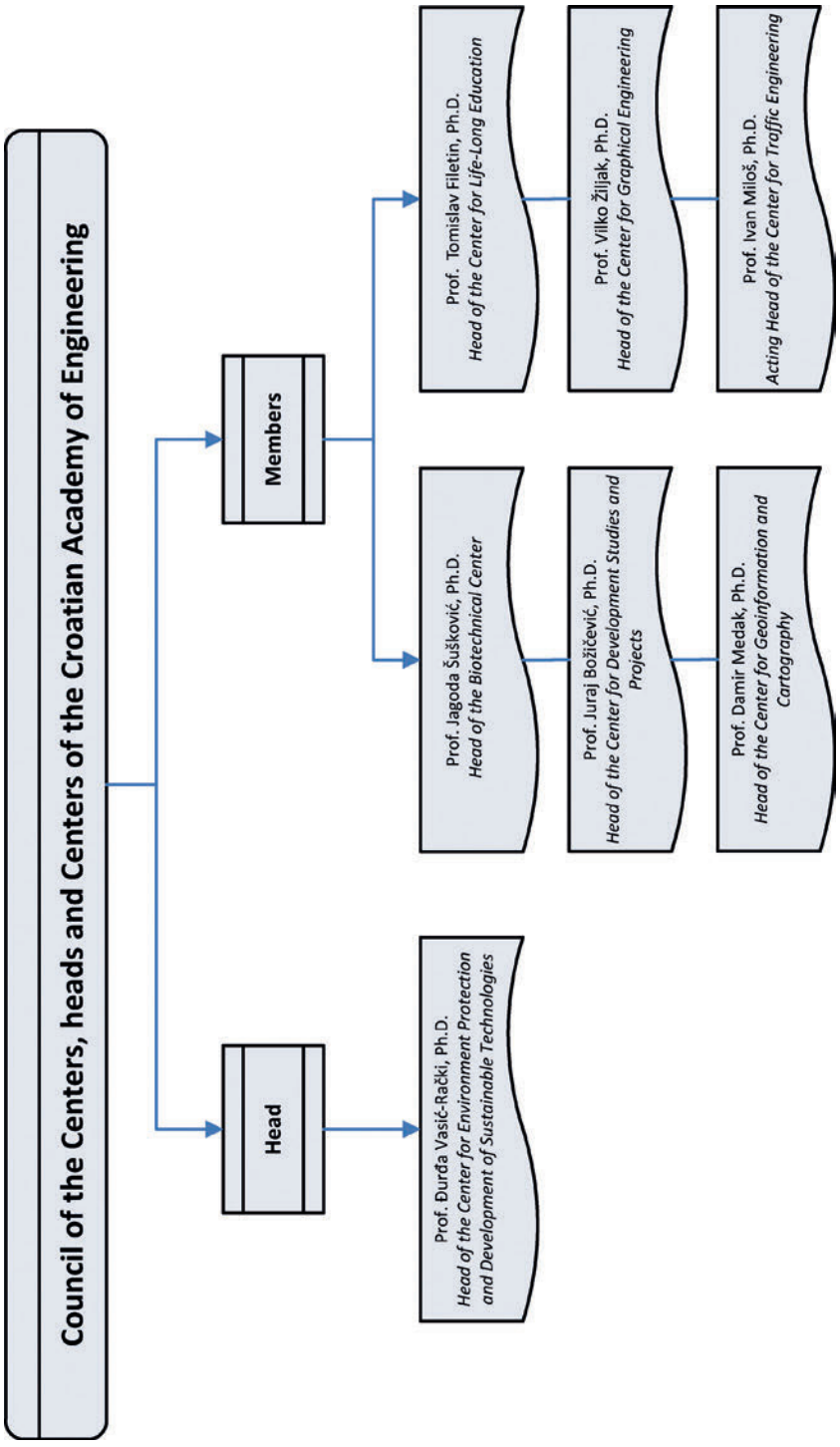

Fig. 7 – Councils of the Centers, Heads and Centers of the Croatian Academy of Engineering 2013-2017

Other Forms of Organization

In addition to the current organization scheme of the Academy, the Academy may establish councils, committees and other organizational forms of temporary character. Decision to establish such bodies will be taken by the Presidency which may cause a change in the organization scheme to a smaller extent.

The Academy has a Professional Service to perform administrative, technical, financial, accounting and other duties necessary for the realization of the activities of the Academy. Secretary-General of the Academy is the head of the administration.

The Academy may entrust an authorized organization with a partial or complete performance of the duties, if it is so decided by the Presidency.

NORMATIVE ACTS OF THE ACADEMY

Secretary-General of the Academy
Prof. Dubravko Rogale, Ph.D.

The first act in the history of the Croatian Academy of Engineering was adopted immediately after its establishment, and adopted by the Assembly of the Academy at its session of 19 January 1993. It had 35 articles and was signed by the Chairman of the foundation meeting Prof. Josip Božičević, Ph.D. During 20 years of work of the Academy the number of normative acts gradually increased. Appropriate normative acts regulate the status of the Academy, its members, organization and activities. The most important act of the Academy is still its modified and amended Statute which contains the most important guidelines that comply with the laws of the Republic of Croatia and good practice of the academic and scientific research community. Other normative acts of the Academy have been harmonized with the Statute of the Academy. These are: the Rules of Procedure of the Departments where the crucial elements of the activity of each of the 14 Academy Departments and the Rules of Procedure of the Scientific Council with similar tasks are stipulated.

Furthermore, there are several regulations of which the Bylaw on the Election of Members is important because it accurately defines the procedures for the election of members of the Academy and also defines conditions that applicants must meet for the election of members of the Academy. In a similar way conceived is the Bylaw on the Science Foundation, which represents a kind of foundation from which the Academy awards are financed. Types of awards and recognitions of the Academy, award presentations and criteria are therefore established by the Bylaw on Academy Awards and Recognitions.

More detailed guidelines of the Academy are stipulated by the Labor Bylaw, and the Bylaw on Organization and Activity of the Centers of the Academy stipulates the work of the Centers as scientific research units of the Academy established for particular areas of science with the aim of implementing scientific and professional projects. Financing, financial operations, acquisition and distribution of income are defined in the Bylaw on Financing and Material Financial Transactions and the Bylaw on the Acquisition and Distribution of Income.

The new Governing Board of the Academy initiated and implemented amendments to the Statute as soon as it took over its mandate during 2013, since there was a

need to shorten and simplify the text of the existing old Statute, as well as the need of harmonization of statutory guidelines in accordance with a number of recent amendments to several more important laws.

The new text of the Statute was adopted by the bodies and members of the Academy, as well as relevant external Croatian institutions, which finally adopted it on May 16, 2014. Afterwards the Governing Board initiated amendments to all other Rules of the Academy so that they were harmonized with the provisions of the new Statute. The opportunity was used that a number of provisions defined in the Statute do not reappear in other normative acts; certain elements of the acts were simplified because they made the functioning and work of the Academy difficult.

Hereinafter the most significant guidelines of the normative acts of the Croatian Academy of Engineering are described:

Statute of the Croatian Academy of Engineering

The Statute of the Croatian Academy of Engineering begins with the first chapter with 5 articles, general provisions defining the status of the Academy as a scientific organization of prominent and distinguished scientists in the field of technical and biotechnical sciences. The definitions used describe the visual shape and dimensions of the symbols of the Academy in the form of seal and flag, the Academy status as a legal non-profit entity that operates on the Croatian territory, the method of its activities and the possibility of becoming members of the international scientific associations and organizations on an equal basis under the condition of reciprocity. The second chapter elaborates the activities of the Academy which cover basic research, applied research and experimental development in engineering, promotion and organization of scientific work, publishing the results of scientific research, work on scientific projects at all levels, making scientific studies, expertise, reports and projects, organization of scientific and professional conferences, publishing and cooperation with other academies at home and abroad. The basic objectives of the Academy as a leading, creative and multidisciplinary organization of the scientists of engineering and technological professions which contributes to the development of engineering sciences and the transfer of knowledge advocating a safe and useful application of technology whereby professionalism and responsible behavior are promoted.

The third chapter defines the organization of the Academy in nine Articles of the Statute and sets the organization of the Academy in Departments, Centers and Committees that perform tasks of the Academy and have no legal personality.

Similar definition is given to the bodies of the Academy as Academy Assembly, Academy Presidency, Governing Board of the Academy and Scientific Council of the Academy. The number and names for all 14 Departments of the Academy are defined as well as the conditions that define the narrower and broader structure of the Department, the way in which the Departments are founded, divided, abolished and operated pursuant to the decision of the Assembly of the Academy. Furthermore, the status of the Committees is defined as an inter-departmental body of overall importance for the work of the Academy. Prominent experts from business and persons who are not members of the Academy may collaborate in the Committees. The centers are defined as scientific research units of the Academy established for their respective fields of science. They implement scientific and professional projects with the aim of their application in economy. The Council of the Centers is defined as the body coordinating the work of the Centers, the composition of the Council, the way of electing and its tasks. In the second part of the third chapter it is defined that at the head of a Department of the Academy there is Secretary of the Department and his deputies, Head of the Center presides over each Center and at the head of a Committee there is Chairperson of the Committee of the Academy, their powers of representation and electoral mandates.

At the end of the third chapter other organizational forms of temporary character such as the foundation of councils, committees and other organizational bodies. It is also defined that the Academy has a Professional Service to perform administrative, technical, financial, accounting and other duties necessary for the realization of the activities of the Academy. .

Membership of the Academy, election criteria, election principles, rights and obligations of members are defined in eight articles of the fourth chapter of the Statute. Natural persons can enter into the category of members of the Academy as a Member, Associate, Emeritus, Honorary Member or International Member of the Academy, a legal entity may be a Supporting Member of the Academy. The basic conditions are given for each category of members, so that a Member of the Academy must have excellent scientific results and/or patents in the field of engineering sciences in the title of scientific adviser or full professor at a university and had been previously elected as associate of the Academy. When being elected, Associate of the Academy should have the title of research associate or some higher title in the field of engineering sciences, and Emeritus of the Academy automatically becomes every member of the Academy in the year in which he/she turns seventy five, or at his/her own request after turning seventy. Honorary Member of the Academy may be a distinguished Croatian or foreign scientist who meets the election criteria, and International Member may be a distinguished scientist who lives and works exclusively abroad. Supporting Member can only be a legal entity whose manager appoints a natural person as a representative.

Furthermore, in the fourth chapter the voting principles are defined. Voting can be electronic and/or through ballots, i.e. secret and public, and voting is conducted with "for", "against" and "abstained". Also, the duration of membership in the Academy is defined as well as ways of the termination of membership, suspension of membership and exclusion from the Academy for exactly specific reasons.

At the end, rights and obligations of all members of the Academy are mentioned in such a way that rights and obligations of natural persons and legal entities. are mentioned in two groups.

In 16 Articles the fifth chapter defines the statutory provisions relating to the bodies of the Academy, namely to Academy Assembly, Presidency of the Academy, Governing Board of the Academy, Scientific Council of the Academy and to the leaders of the Academy such as President of the Academy, Vice-President and Secretary General, Executive Secretary and Professional Services of the Academy.

The Assembly of the Academy is defined as the highest body of the Academy, and this chapter of the Statute describes the responsibilities of the Assembly of the Academy, sessions of the Assembly, ways of convening the Assembly, voting principles of the Assembly and decision-making.

The Presidency of the Academy is executive body of the Assembly. The Presidency of the Academy consists of the President, two Vice-Presidents, the Secretary-General of the Academy, the former President of the Academy, Secretaries of Departments of the Academy, President of the Council of the Centers of the Academy and the Chairpersons of the Committees of the Academy. The term of the office of the Presidency lasts 4 years. The voting procedure at the Presidency is also defined, and tasks and jobs of the Presidency are described in detail.

According to the statutory provisions the Governing Board of the Academy consists of the President, two Vice-Presidents, the Secretary-General and the Former President of the Academy. Jobs and tasks of the Governing Board, the mandate of the members of the Governing Board, the work procedure, voting and decision-making in sessions are also defined by the provisions of the Statute.

Status, tasks, rights and obligations of the President of the Academy, of the Vice-Presidents of the Academy and of the Secretary-General of the Academy are also stipulated.

Scientific Council of the Academy is defined as a scientific body of the Academy. It consists of the representatives of each Department and Chair of the Scientific Council, provisions of electing the members of the Council and the duration of their mandate. Characteristics of tasks performed by the Scientific Council are separately stipulated.

The status and tasks performed by the Executive Secretary, election procedure and dismissal of the Executive Secretary as well as tasks and jobs of the Professional Services of the Academy are similarly stipulated.

Sixth chapter of the Statute of the Academy is devoted to awards and recognitions of the Academy which are once yearly granted for special contributions to science and profession, the achievement of the objectives and programs of the Academy as well as the dedicated work that has contributed to its social recognition.

Academy Awards are: Lifetime Achievement Award The Power of Knowledge, Annual Award Rikard Podhorsky and Award for Young Scientists Vera Johanides.

Acknowledgements of the Academy are: Acknowledgement of the Academy and Medal of the Academy.

In two articles the seventh chapter describes Science Foundation of the Academy, which is a foundation for achieving its funds for awards, co-financing research projects and providing assistance to young scientists. It is stipulated that the fund secures its funds by donations and gifts.

The ninth chapter of the Statute of the Academy stipulates the conditions under which the work of the Academy terminates, and in the tenth chapter are listed transitional and final provisions.

Bylaw on Membership in the Croatian Academy of Engineering

This Bylaw regulates the procedure and criteria for the election of members and the termination of membership in the Academy over 25 articles in five groups. In the first group of the general provisions the Bylaw stipulates that the Academy can have up to 121 members of the Academy, 108 associates of the Academy, 20 honorary members of the Academy and 28 international members of the Academy, and the number of emeriti and supporting members is not limited. The second group of articles refers to the proposal for the election to membership in the Academy. The decision on election shall be made annually on the basis of a proposal of the Governing Board which is approved by the Presidency of the Academy, and then directs a public invitation on the website of the Academy and in the media. Proposals can be made by Departments, the Governing Board or the Presidency of the Academy as well as all Croatian scientific institutions. In the third group of articles the voting procedure in the Assembly is stipulated, and in the fourth group circumstances leading to the termination of membership in the Academy are stipulated.

The Bylaw ends with the fifth group with the concluding provisions in which annexes to the Bylaw are specified: Instructions for the presentation of activities and allocating points and Application Form for Allocating Points to Applicants. It is important to note that the presentation of applicant activities is divided into nine group activities: Publications, Mentorship and reviews, Project manager, Teaching activities, Research and development achievements, Realized projects, Scientific organizations and professional societies, Scientific and professional awards and recognitions and Activities in the Academy. Each group is divided into several subgroups of which each as allocated a definite number of points. Points summary per subgroups and groups forms an exact basis for the assessment of activities of each applicant and the comparison with other applicants.

Rules of Procedure of the work of the Scientific Council of the Academy

The Rules of Procedure of the Scientific Council stipulate the work procedure of the Scientific Council in 10 articles. They describe the work procedure and decision making in the Council, the way of convening the Council and voting in the Council. The Rules of Procedure stipulate the jobs within the competence of the Scientific Council, starting with the strategy of scientific activities of the Academy over the assessment of scientific projects implemented by the Centers of the Academy and organization of scientific conferences to scientific publishing of the Academy. The Rules of Procedure stipulate that the task of the Scientific Council is to encourage members of the Academy to activities necessary to ensure the status of the Academy as a scientific institution. In accordance with that task members of the Scientific Council keep track of information about competitions for scientific and research projects, and shall so inform the leaders of the Academy and afterwards they inform the secretaries of relevant departments.

Rules of Procedure of the work of the Departments of the Academy

The Rules of Procedure of the work of the Departments stipulates the working principle of the Departments as a basic form of the organization of the Academy. The work of the Departments is based on convening sessions of the Departments and through cooperation on various projects accepted by the Presidency and the Assembly.

It is stipulated that the Department can participate in the sessions in the wide and narrow composition. All members make up the wide composition of the Department, and members of the Academy and associate members make up the narrow composition.

It is stipulated that the Department regularly meets in the wide composition; it meets in the narrow composition only on the occasion of election procedure, promotion or termination of membership.

The Rules of Procedure stipulate that the Department, at least once every two years, organizes a scientific conference or a public discussion on the issues covered by the Department.

The Rules of Procedure elaborates decision making at the session of the Department and the voting procedure. Likewise, the election process and the activities of the Secretary of the Department and his deputy are laid down.

Bylaw on the Science Foundation of the Academy

The Bylaw on the Science Foundation has nine articles which stipulate the purpose and the way of functioning of the Science Foundation. It is stipulated that the Foundation is entrusted with co-financing scientific projects involving the Academy, securing funding for the awards granted by the Academy, and helping young scientists in engineering professions. It is stipulated that the Committee of the Science Foundation has five members, including the President of the Foundation. In addition, the Bylaw describes the conditions and procedures in which funds may be achieved and spent, voting principles and decision-making.

Labor Bylaw of the Academy

The Labor Bylaw of the Academy shall regulate the organization of work and systematization of jobs and the rights and obligations of employees who are employed at the Croatian Academy of Engineering. The Bylaw also regulates salaries and other employee benefits, rights and obligations. A special group of bylaw articles is dedicated to work safety and fire protection, as well as all elements required for keeping records of employees.

Jobs systematization provides a brief list and description of jobs performed by employees at workplaces.

A specific list and description of jobs comply with each work place that has a certain name.

Based on these data the Bylaw stipulates the basics of the calculation of employee salaries as well as fees for business trips. The final section of the Bylaw stipulates the conditions and duration of annual leave.

Bylaw on Awards and Recognitions of the Croatian Academy of Engineering

The Bylaw on Awards and Recognitions of the Croatian Academy of Engineering stipulates the conditions for granting the following awards and recognitions: one annual Lifetime Achievement Award The Power of Knowledge, up to five Annual Awards Rikard Podhorsky and up to five Annual Awards to Young Scientists Vera Johanides, one of which is granted to a successful young scientist from economy and to distinguished individuals or institutions to whom the Academy expresses its gratitude by awarding Medals and Acknowledgements of the Academy.

The Bylaw elaborates the criteria for possible proposers of prestigious awards and acknowledgements, criteria for applying for competitions which are announced once per year. The application for the competition contains relevant elements and provisions of the Committee for Awards. The work procedures of the Committee in individual phases as well as the voting procedure are also stipulated.

The Bylaw has four annexes to make the election process transparent and to be based on excellence criteria: Proposal Form for Starting the Procedure with the Proposer's Explanation and Decision, Overview Form for Papers and Activities of the Applicant classified per groups, Additional Criterion for Granting Award "Vera Johanides" to a successful young economist and Proposal Form for Awarding Medals and Acknowledgements of the Academy.

Bylaw on the Organization and Activities of the Centers of the Croatian Academy of Engineering

Pursuant to the statutory provisions the Academy may establish Centers for a specific scientific field or part of the scientific field. Therefore, the Bylaw stipulates details of the work and activities of the Centers. The Bylaw stipulates the establishment procedure of the Centers. A number of provisions points to the requirements

associated with the name of the Center indicating the field of activities of the Center, the needs to ensure the space required for the work and the conditions to be met by a person who will be the head of the Center. In conformity with the statutory provisions the Bylaw elaborates the organization, role and work of the Program Council of the Center and the Council of the Centers. Likewise, funding of the Center, contract closing, conditions and termination of the work of the Centers are also stipulated by the Bylaw.

Normative Acts Associated with Financial Operations of the Academy

The Academy has two bylaws to regulate its business: Bylaw on Funding and Material Financial Transactions and Bylaw on the Acquisition and Distribution of Income**.** Both Bylaws regulate funding of the Academy, material financial transactions and the acquisition and distribution of income. These bylaws have evolved from the law of the Republic of Croatia standardizing business activities of scientific associations and institutions like the Croatian Academy of Engineering and as such are subject to legal provisions and periodic updates. The legal provisions that define the specific items of both bylaws are specific to the way of doing business in the Republic of Croatia and the different ways of doing business in other countries and therefore they are not further elaborated in this text.

Code of Ethics

Code of Ethics does not belong to the group of normative acts of the Academy in form of bylaws and rules of procedure, but it obliges the members of the Croatian Academy of Engineering to ethical behavior. The Code of Ethics stipulates that the members of the Academy realize the significance of the impact of their knowledge and teaching, their projects and achievements, technologies and processes, advice and services on economy development, competitiveness of Croatian products and quality of life by accepting their personal commitment to profession and committing themselves to the highest level of ethical and professional behavior. The principles of sustainable development are accepted as an important support for traditional ethical norms and values.

They oblige themselves to making responsible decisions consistent with the safety, health or welfare of people, prevent damage to other people, their property and reputation and to protect them from false or malicious action. They will also im-

prove the understanding of engineering, its appropriate application as well as the understanding of possible consequences; maintain and improve their technical competence and take over technical tasks for others as they acquired qualification by training and experience.

They will require, accept and offer honest criticism of technical work, recognize and correct errors, and properly assess the contributions of others; they will prevent real or perceived conflicts of interest whenever possible and publish the effects of affected parties, if any.

In their statements they will be honest and realistic basing estimates on the available data, reject bribery in all its forms; honestly treat all persons regardless of race, religion, gender, status, wealth, disability, age or national origin.

At the end of the code of ethics they commit themselves to help colleagues and associates in their professional development and to support them in accepting the Academy's Code of Ethics, and they will publicly and legally defend them when they act in accordance with this code.

Conclusion

The Croatian Academy of Engineering is a complex and organized system apparent from a number of complex normative acts. The normative acts appropriately cover all aspects of the organization and activities, contributing to a organized and efficient work of the Academy as an important scientific institution of the Republic of Croatia.

KEY INDICATORS OF THE SCIENTIFIC FUND OF THE CROATIAN ACADEMY OF ENGINEERING UNTIL 2013

Chairman of the Board of Scientific Fund of the Academy
Prof. Josip Marušić, Ph.D.

Pursuant to Articles 41 and 42 of the Statute of the Croatian Academy of Engineering the Foundation of the Croatian Academy of Engineering (Foundation) worked until 2013 with the following objectives:

- co-financing of research projects involving the Academy
- securing funding for the awards granted by the Academy
- helping young scientists in technical and biotechnical professions, winners of the Award for Young Scientists Vera Johanides, to acquire skills and knowledge and to stimulate their international affirmation through education, attendance at scientific meetings and through promotion in scientific work and research.

The Foundation achieves its funds through donations from the economy, state budget, part of the revenues of the Academy, and gifts or donations from natural persons or legal entities. Decision to accept funds for the activities of the Foundation is made by the Board of the Foundation on the basis of its annual program adopted by the Presidency of the Academy.

The work of the Foundation is run in accordance with the Rules on the Foundation of the Croatian Academy of Engineering issued by the Presidency.

The Foundation of the Academy was established by a donation of the honorary member of the Academy from Canada and Croatian scientist Prof. Branko Ladany. This was followed by the signing of a specific purpose donation agreement with the following institutions in the field of economy and science:

- Končar – Electrical Engineering Institute, Pliva, Zagreb Brewery and Vehicle Center of Croatia and Belupo d.d.

The Committee of the Foundation (5 members) uses purpose-bound donations according to the Bylaw of the Foundation and cooperates with the Committee for Awards of the Academy that grants awards in the following categories:

- Lifetime Achievement Award **The Power of Knowledge** (one award per year)
- Annual Award **Rikard Podhorsky** (up to 5 awards)
- Vera Johanides award for young scientists (5 – one of them for a young scientist from economy)

Unfortunately, in 2009 the amount of purpose-bound donations for granting awards of the Croatian Academy of Engineering was reduced. This also resulted in the reduction of amounts for individual awards. The programs for co-financing research projects involving the members of the Academy were not executed.

Pursuant to the current Statute (May 16, 2014) the Foundation of the Croatian Academy of Engineering has been working as Scientific Fund of the Croatian Academy of Engineering since 2014, and the new Bylaw was adopted at the 7th session of the Presidency of the Croatian Academy of Engineering (October 6, 2014).

Zagreb, November 2014 Chair of the Committee of the Scientific

Chair of the Committee of the Scientific Fund
of the Croatian Academy of Engineering
Prof. *Josip Marušić*, Ph.D.

Reports of the Presidents

CROATIAN ACADEMY OF ENGINEERING
The first ten years – January 19, 1993 – 2003

Presidents
Prof. Josip Božičević, Ph.D. (1993 – 1997)
Prof. Juraj Božičević, Ph.D. (1997 – 2003)

Let our Academy fly as Tin's flier (it flies as swirling leaves / you are born for flying, my darling / the flower without the root is neither for earth nor for rest), because, after a decade of flying, the Academy has fliers, its airfields and its flying hills for its flying offs. However, it should be borne in mind that mindfulness should be preserved despite many circumstances, because scattering always threatens; it should be careful not to hurt its roots, it is only ten years old , because underground roots also know how to find their sunshine. Stay the same; let's pray to fate that it helps you in intentions, in collecting crops, gathering of friends, hosting chance travelers, finding a home for victims, no matter it is about Croatian economy or Croatian people – stay a place of permanent residence, but also a place of permanent residences and also of permanent departures and arrivals. Those who come should feel awe toward the commitment made, because it will be awe-inspiring.

Stanko Sever
on the occasion of the 10th anniversary
of the Croatian Academy of Engineering
10(1) 2003

1. First steps in establishing the Croatian Academy of Engineering

2013 marks the twentieth anniversary of the Croatian Academy of Engineering. In 1991 Hrvatsko društvo za sustave (Croatian Systems Society – CROSS) was founded which supported the beginning of activities. Professors Juraj Božičević, Franjo Jović and Marko Petrinović encouraged the establishment of the Society which will make use of science of systems and system thinking and contribute to a more successful collaboration among professionals so much needed in a newly created state. Already the beginning of activities, first conferences and discussions showed the

importance of engineering and its connections. At that time engineering sciences exhibited disciplinary fragmentation which was a serious impediment to knowledge transfer and successful economic development.

On the basis of these findings Professors Juraj Božičević, President of the Croatians Systems Society, Josip Božičević and Osman Muftić agreed in the autumn of 1992 to overcome the problems by establishing the Croatian Academy of Engineering after the model of scientific societies in the world. They agreed on the contents of the letter written by Juraj Božičević that was sent to colleagues at technical colleges to inform them about the idea. By the end of the year numerous interviews were performed, different opinions on the possible organization of the Academy, the manner of its management and other issues were discussed. In December 1992 everything was ready for the convening of the Inaugural Meeting of the Academy.

The Inaugural Conference of the Academy took place January 19, 1993. Prof. Dražen Aničić, Ph.D., Prof. Branko Bonefačić, Ph.D., Prof. Josip Božičević, Ph.D., Prof. Juraj Božičević, Ph.D., Prof. Leo Budin, Ph.D., Prof. Husein Džanić, Ph.D., Prof. Zijad Haznadar, Ph.D., Prof. Marin Hraste, Ph.D., Prof. Mirko Krpan, Ph.D., Prof. Ivo Marković, Ph.D., Prof. Darko Maljković, Ph.D., Prof. Tomislav Mlinarić, Ph.D., Prof. Osman Muftić, Ph.D. and Prof. Ivo Soljačić, Ph.D. attended the Inaugural Conference. They decided to establish the Croatian Academy of Engineering

Fig. 1 – View of the participants of the Inaugural Conference of the Croatian Academy of Engineering

– HATZ. They adopted the Statute of the Academy and elected a "temporary presidency", collective executive body made up of: Prof. Dražen Aničić, Ph.D., Prof. Josip Božičević, Ph.D. and Prof. Juraj Božičević, Ph.D. Finally, two reviewers' boards were appointed in order to organize elections for the first members of the Academy. The criteria for evaluating, scoring and electing the first members of the Academy were defined.

The guiding principle of the members was to create economic identity, to preserve production, to strengthen the synergy of engineering sciences and mutual understanding of social and engineering sciences, to build the institutional infrastructure and innovation culture and to promote science and education.

It should be noted that the Croatian Civil Engineering Institute provided an initial financial support for the Academy and that its manager Prof. Petar Đukan, Ph.D. showed understanding for this important project. The Institute of Traffic Engineering provided organizational support and Prof. Vladimir Marić, Ph.D. was the administrative secretary.

2. Criteria for the election of members

Distinguished scientists, experts from the field of engineering and bioengineering sciences joined, establishing the Croatian Academy of Engineering. The main issue was how to determine the criterion for the election of the first members. At the conference the founders agreed on a temporal status until the determination of criteria and the announcement of the public competition for members of the Academy, inviting faculties and institutes to propose appropriate candidates. After the first announcement of the public competition for Academy members all the candidates and founders were elected to permanent members and classified according to the same criteria, which with minor corrections are still in force today for the election of members, because they guarantee a strict, wise and just judgment about scientific achievements, teaching activities, contribution to economy and innovation culture as well as activities in scientific and professional societies of candidates.

In the fifties of the 20th century engineering sciences were fragmented as a consequence of dividing into independent studies, and numerous disciplinary faculties were established. Thus, it was a particularly important task of the Academy to introduce synergies into the field. From this point of view it was necessary to ponder upon the criteria for the members from all areas of science, from universities, from scientific and industrial research institutes. Criteria were developed and prepared for discussion by Prof. Juraj Božičević, Ph.D. and Prof. Zijad Haznadar, Ph.D. covering the equivalent evaluation of the possible results of all the different activities:

Each result was rated with a certain number of points, and on this basis the minimum number of points that an individual must have to become a full, extraordinary or associate member of the Academy was determined. We were also aware that the effectiveness of an emerging organization was not a list of operational results of the members, but that these results are the only guarantee that only those joined the community who will try to make THE CROATIAN ACADEMY OF ENGINEERING a prestigious institution, which will be distinguished by quality. The leadership of the Academy, i.e. President, Vice-Presidents, Secretary General and Secretaries of the Departments were responsible for the success of the Academy.

Today, after two decades when we elect the third generation of members, it is interesting to discuss criteria. They would probably be only slightly altered, supplemented with questions that would present the members more as social beings, their characteristics, the attitude towards changes and their knowledge about changes, especially about how they had accepted knowledge brought to science and society by information technology.

After the election of the first permanent members on the basis of the above criteria, **the first leadership of the Croatian Academy of Engineering was elected**: President Prof. Josip Božičević, Ph.D., Vice-President Prof. Dražen Ančić, Ph.D. and Secretary General Prof. Juraj Božičević, Ph.D.

3. Code of Ethics

Initial activities of the Academy showed that the Code of Ethics created in order to match the values of the members and their activities in a social community will play an important role. We also accepted the working motto of the friendly Croatian Systems Society: *positive thinking and constructive action.*

Fig. 2 – The poster of working motto of the Academy during the first ten years, included in the Code of Ethics: positive thinking and constructive action

4. First projects

In collaboration with the Croatian Systems Society the first joint projects were planned, and the development of the Academy was gradually boosted. Initial activities were interconnected with the experience of the Croatian Systems Society, and part of our first conferences was jointly organized. As the Secretary General and at the same time the President of the Croatian Systems Society I was entrusted with defining and proposing a program in which I found great pleasure. I suggested that multidisciplinary *conferences Engineering Sciences for the Croatian Economy* as a basic activity were organized and selected current topics were presented at shorter conferences. Six conferences dealt with the following themes:

- The first conference in 1994 – *Situational Judgment, Guidelines and Developmental Possibilities* was a support of creating a modern institutional infrastructure, and collaboration with natural, social and human sciences.
- The second conference in 1995 – *Creating a Stable and Capable Economy*, vision of intelligent Croatia, identity, Danubian and Mediterranean Croatia
- The third conference in 1997 – *Compatibility and Infrastructure*
- The fourth conference in 1999 – *Systematic Thinking of Sustainable Development*
- The fifth conference in 2001 – *The Progress of Economy and Science. Biosubstrates and Bio-fuels, Acting in Emergency Situations*

Fig. 3 – View of the hall with participants of the Opening Conference (Administration Building of Zagreb Fair)

Fig. 4 – View of the hall with participants of the Opening Conference (Administration Building of Zagreb Fair)

- The sixth conference in 2003 – *Vision of Intelligent Croatia* attracted numerous participants. It is worth mentioning the discussion topics because they covered all the important issues for the operation of the young Croatian state, important for its sustainable future. The participants were invited to discuss the following topics:

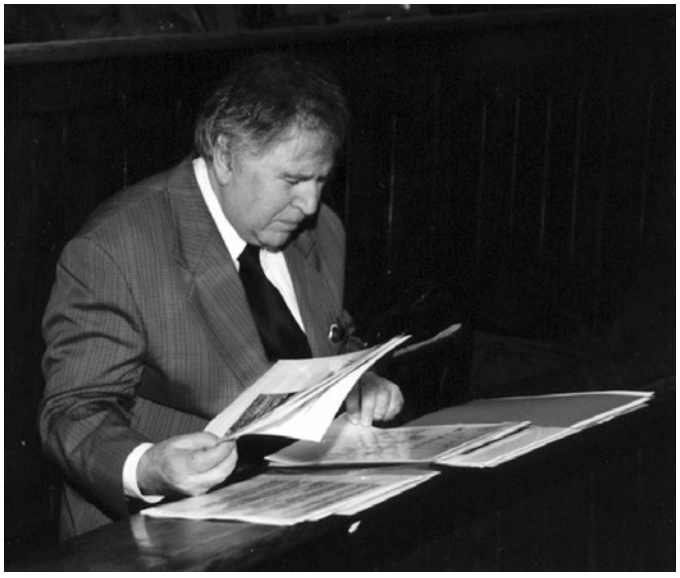

Fig. 5 – President of the Academy Prof. Juraj Božičević, Ph.D.

- Croatian space, its construction and maintenance
  - Natural resources
    - Traffic roads and transport,
    - Geostrategic position, relationships to neighboring countries and the world,
    - People, intellectual capital and values
    - Knowledge and education,
    - Science, research and development,
    - System of government,
    - Institutional infrastructure,
    - Croatian cultural space,
    - Communication and information infrastructure,
    - Energy, environment and sustainable development
    - Impact of climatic changes,
    - Economy and finances,
    - Industry,
    - Service jobs,
    - Protection against natural disasters,
    - Relationship between global and national,
  - National innovation system.

Fig. 6 – Round tables and discussions were the gathering place of the members of the Academy (1998)

Fig. 7 – One of numerous discussions at the Faculty of Science (1999)

The comprehensive topics of the Conference had to serve as an excellent basis for human resources and knowledge necessary for the further consideration of the Croatian development policy for knowledge economy.

It is worth mentioning that the Conferences were announced by original invitations posted in the entrance halls of all Croatian universities and major institutions. The invitation to the Sixth Conference was particularly well accepted which is presented in this article. The author of this and most other announcements was Hrvoje Božičević.

Fig. 8 – "Vision of Intelligent Croatia" – Multidisciplinary Conference, Zagreb, June, 2003

5. Conferences, symposia and colloquia

In parallel with these conferences we organized a number of conferences and contributed to the synergy of technical disciplines and transfer of new knowledge and experiences. In the first place it is necessary to point out a series of conferences under the title of *Scientific Meeting HATA*, which were held in principle once a month.

Some meetings were organized in cooperation with selected societies, and let's mention only the selected ones:

16. Forum *Biotechnology, food technology, university, economy* in cooperation with the Croatian Society of Biotechnology ...

17. Forum *Vision, goals, strategies and activities of the Croatian Academy of Engineering* whose starting point is to find answers to the question: How to be a leading creative and innovative multidisciplinary community of scientists in engineering, how to contribute to the development of engineering sciences and to the transfer of technical knowledge important for the progress of the Croatian economy and welfare of the population?

18. Forum *Relationship of the government, university and industry and its impact on the global business* with guest engagement of Prof. Danko Gajski from the University of California, USA.

19. Forum *Canadian experience of the cooperation of universities and industries* with guest Professor Zvonko Vranešić, Ph.D. from the University of Ontario, Canada

In 1997 we launched the other series of conferences and colloquia *Education for the Information Society*, and included the following interdisciplinary topics and the books of proceedings of the same title were also published:
– The first colloquium – Are we ready to accept changes
– The second colloquium – Multimedia, remote learning and instruction
– The third colloquium – Insights, knowledge and judgment
– The fourth colloquium – Professions of the future, engineers of the future

The colloquia were held under the auspices of the Ministry of Education and Sports and the Ministry of Science and Technology in cooperation with the Croatian Systems Society, with the support of the Faculty of Chemical Engineering, University of Zagreb.

It is necessary to point out the cooperation of prominent professors of the Faculty of Teacher Education and the Faculty of Humanities and Social Sciences.

The last multidisciplinary conference of the decade was held under the auspices of the Ministry of Science and Technology *Using Forest Biomass.* Nearly 100 participants attended the Conference as well as the previous Conference *Materials and Technological Development.* The books of proceedings of the same title were published.

At each annual assembly one of the Academy members gave a plenary lecture, contributing to new knowledge and findings.

6. What will Croatia live on?

The discussions *Products and Production in Croatia* were held once a week during 1998 and 1999 and attracted special interest of the academic community. The discussions were held under the motto *What will Croatia live on?* Nearly all economic activities were covered, and numerous useful conclusions and recommendations were arrived at of which only the most important are pointed out. It is necessary to emphasize that the discussions were attended by Academy members and hundreds of experts from industry and universities. Support was also provided by several faculties and the National and University Library of Zagreb where the most part of discussions took place. The most important conclusions in which production is the most important topic are:

a) Production creates social energy, supports confidence and individuality of the people, and is the basis of economic prosperity. The country without production is poor, sentenced to a subordinate position, and its people to extinction.

b) The engineers are fully aware of the fact that production is fundamental to the autonomy and existence of the state that and associated with economists and other professionals can contribute effectively to the development and advancement of the Croatian economy.

c) There are well-trained engineers in Croatia, who have knowledge and skills which can help them develop products and production, and make products competitive in the international market. With their innovation they can contribute to creating new jobs and increasing employment. If unused, they can lose this potential

d) Croatia must stop the decline in production, it is necessary to deliberately preserve, maintain or develop selected large industrial enterprises, because only with

them small-sized and medium sized enterprises can be developed. The activities of small-sized and medium-sized enterprises should be facilitated; the establishment and the initial activities of small-sized enterprises should be supported by encouraging and supporting entrepreneurship and innovation.

e) The future prosperity of economy must, above all, rely on entrepreneurship, which must be politically supported as a long-term program with the development of advisory services, conditions and values that contribute to innovation.

f) It is necessary to carefully develop awareness of the market and customer, as users of our products, of the fact that no one can avoid competition and that national competitiveness is the responsibility of all, from the teacher to the Government.

g) In education it is important to teach about production, and it is necessary to develop the knowledge that production is a requirement of economic development and increase in the quality of life of entire population.

Furthermore, it is necessary to develop an awareness of the fact that the progress of economy is not inherited, but it is rather created with wise and thoughtfully organized business operations using all available resources.

h) Efforts are necessary to overcome the following as soon as possible:
- Lack of responsibility and care about the production and its stimulation;
- Expensive production, very high and responsible consumption in some parts of the non-production sphere;
- Lack of vision, goals and strategies of economic development, dominance of political over economic objectives, focusing attention on isolated parts of the current effects, which is particularly evident in privatization, in the management of national assets, in reconstruction, etc.
- Underdevelopment of economic, physical and institutional infrastructure and its adaptation to the European model;
- Limitations of the cognitive capabilities of the complex European, world and own economic circumstances to understand other people's strategies;
- Lack of trained, experienced and responsible leaders and managers in many areas; poor and irresponsible management of the company;
- Insufficient utilization of the available professional potential, creative and work capabilities of people, specifically engineers, experts in the field of exact sciences and technology;
- Mismatched funding and planning of the development of science and technology to the needs of the Croatian economy, and also the vague role of universities and scientific institutes in supporting economic development;
- Failure of education to adapt to market economy, especially the extremely poor and inappropriate management of higher education;

h) If production is advocated, the principles of sustainable development should be respected in the broadest sense, meaning to take care about the future generations and about long-term health and environmental integrity.

– It includes care about:
  Quality of life (not just about revenue growth)
  Fair relationships among people, including poverty prevention
  Harmonious relationships among generations because in the future people deserve at least the environment which we are enjoying today Ethical dimensions of human welfare

7. The first centers of the Croatian Academy of Engineering

In an effort to contribute to economy development and that members use their expertise, we decided to establish Centers and to preserve the Departments solely as the research units of the Academy. Interdisciplinary and multidisciplinary activities of the centers are advocated separately: advisory, organization of discussions and expert meetings, project development, and assessment and review of projects, preparation and publication of studies and similar activities.

The first center – Center for Development Studies and Projects – CEDEP had an additional purpose of preserving intergenerational cooperation and creating conditions for the work of retired members.

The second center – Center for Biotechnology was developed in cooperation with the Faculty of Food Technology and Biotechnology and Pliva Research Institute.

The third center was conceived as a gathering place of members who will devote themselves to contemporary issues of sustainable development. Therefore, Prof. Mladen Črnjar, Ph.D., was asked to propose an access to the organization and future activities in collaboration with Prof. Bombeles of the United States. The death of Prof. Bombeles broke up the establishment of the Centre.

8. Bulletins and annuals of the Academy

In 1994 the bulletin TEHNIČKE ZNANOSTI (Engineering Power) was launched in which numerous members published their views. It also reports on the activities and conference conclusions, the activities of members, on the dissertation defended at engineering faculties and other important news.

The bulletin in English ENGINEERING POWER has been published since 1998. It was designed to present the activities of the Academy and to cover various important events in the field of engineering sciences in Croatia, and based on the history of engineering sciences and publishing to present the technical and manufacturing culture of Croatia.

The books of proceedings of the Conferences and other selected conferences, part of which were published in cooperation with the Croatian Systems Society, were well received by the public. In addition to the results of scientific and professional work, the papers published covered all the issues relevant to build the country, especially institutional structure.

The analysis of activities of the Academy showed that the meetings held at the national level proved successful, that their contribution to the synergy of technical disciplines and the initiative for interdisciplinarity were very useful, that it should be preserved, and that disciplinary meetings should be avoided and left to disciplinary scientific and professional societies. After establishing the publication Annual of the CROATIAN ACADEMY OF ENGINEERING it was concluded that the members would publish their papers in English.

The first annual was published in Croatian, and all the subsequent annuals were published in English. Prof. Dražen Aničić, Ph.D. made a significant contribution to their contents and editing.

9. Awards

The Croatian Systems Society takes special care of the young generation, and already at the beginning of its activities it launched a competition for the award *Power of Knowledge.* Young people from all over Croatia applied for the first competition, original ideas on the subject of City as a Complex System. As financial funding was limited, the idea had to be abandoned; the Secretary General of CROSS Alojzije Caharija, Ph.D. proposed the idea of joint awarding to the leadership of the Academy. At a working meeting of the leaderships of CROSS and of it was agreed that the Academy initiated the awarding of distinguished scientists in the field of engineering sciences and the award *Power of Knowledge* becomes the highest annual award of the Academy for the contribution to the development of the Academy and to the promotion of engineering sciences.

Then it was decided to introduce two more awards:

a) One of them is intended for successful engineers in industry and was named after Prof. Rikard Podhorsky, Ph.D., a distinguished university professor, the founder and first editor in chief of the Technical Encyclopedia.

b) The other one is intended for successful young scientists for their outstanding research results and is named after Prof. Emer. Vera Johanides, Ph.D., a distinguished professor in biotechnology, a Honorary Member of the Croatian Academy of Engineering who particularly supported young researchers.

Criteria and evaluation of candidates to be awarded were discussed. Many participants expressed their misgivings that the awards would be devalued if reduced only to a certain form of scoring success in the profession, and the rating of the candidate as a social being was ignored, including their ethnicity and relationship to the environment.

It was concluded that after giving awards characteristics were discussed and positive experiences were transferred to the next group of evaluators.

10. Cooperation with media, with the spheres of government and economy

Media reported very briefly on our meetings, and very rarely on certain conclusions, more on the presence of prominent persons from the sphere of government, as well as on their occasion speeches.

Conferences were usually attended by representatives in charge of science and technology. In 2000 the Minister of Science and Technology, Prof. Hrvoje Kraljević, Ph.D. accepted our proposal of cooperation on the development strategy of Croatia, and after the publication of our book Croatian Development Policy for Knowledge Economy (edited by Prof. Juraj Božičević, Ph.D., Croatian Academy of Engineering, Zagreb, 2000) we joined the realization of the project TEST important for the support of innovation projects.

It is important to mention the cooperation with the Croatian Chamber of Commerce in which we did not find interlocutors that would help us to inspire and initiate individual development projects, which we advocated, for example, to create an institutional infrastructure. However, holding conferences in the Great Council Hall was very beneficial to us.

In October 2001 we organized a round table discussion under the title of *The Perception of Engineering in Croatia* with the participation of members of the Croatian Academy, communicologists, sociologists and journalists. They discussed issues of the overall effects on media and ways to promote the knowledge about technology and its role in the development of Croatian society and economy. The question how to think about the media in a new way as an important means of strengthening Croatian existence, how to transfer as much knowledge as possible to citizens and how to stimulate innovation and the creation of entrepreneurial culture was especially emphasized. The book of proceedings of the same title was published. It was also concluded that another round table discussion of the same topic should be organized and discussions of the most important issues, especially on the effect of the most recent information technologies, should be deepened.

11. The creation of distributed computing infrastructure in CROATIA – CRO GRID

Guided by ever increasing demands for stronger distributed network computing in science we aimed to establish an advanced scientific research infrastructure. Professor Karolj Skala, Ph.D. from the Ruđer Bošković Institute launched the CRO GRID project initiative in 2002, which was approved and prosecuted into the further development phase by Prof. Juraj Božičević, Ph.D., President of HATZ .

Members of the Croatian Academy of Engineering gathered in solemn assembly in 2003 on the occasion of the 10th anniversary of the establishment the Academy and announced by proclamation, on February 5th 2003, that "*The creation of research infrastructure is becoming increasingly important for the progress of science and the application of a direct impact on technological innovation and social competitiveness, and contributes to the development of adaptive knowledge-based economy. In this regard, we particularly emphasize construction projects of modern distributed computing network CRO GRID for comparative use of the computer* ".

By the end of 2003, the Ministry of Science, Education and Sports approved the complex technological infrastructure project CRO GRID coordinated by prof. Leo Budin with three sub-projects coordinated by FER (Middleware) prof. Srbljić, RBI (Applications) prof. Skala and SRCE (Infrastructure) Dobrinić BSc. 11 institutions and 54 researchers from Croatian universities and RBI were involved in the CRO GRID project. This led ultimately to the creation of a national eInfrastructure in 2006, known as CRO NGI, which is additionally becoming to be part of the EU EGI e-Infrastructure with nodes at FSB-Split, RBI-Zagreb and SRCE-Zagreb which is technically supported by SRCE.

12. Cooperation with universities, Croatian Academy of Sciences and Arts and Academy of Medical Sciences of Croatia

Since the members of the Academy are mostly members of the university community, it is natural that they are interested in education conferences which attracted a lot of interest and in the cooperation of members of all areas of science.

Three interdisciplinary conferences on the overall issues of higher education with particular support from Zagreb University took place. It should also be emphasized that the cooperation of university teachers of Split University and Rijeka University were at a high level. Discussions were substantial, and numerous helpful messages were sent to university institutions and spheres of political decision-making on science and education; so, the main conclusions were:

The academic community should
– guarantee the students an excellent education necessary for life
– well – thought – out scientific work
– increase socially necessary knowledge resources through research
– contribute to the preservation and strengthening of national culture and identity
– judge world developments and the impact of other people's strategies on economy and culture
– have a critical attitude towards socially negative phenomena which are crucial for survival and sustainable future
– strengthen the systematic care for education quality assurance.

The cooperation with the Croatian Academy of Sciences and Arts was not easy, because some of our colleagues doubted whether to join the Croatian Academy of Engineering or a new department of the Academy of Sciences and Arts (HAZU), which was in the process of foundation and in 1995 it had a rather small number of members. Its leadership did not support our proposal on cooperation between the academies which would be joined by the Academy of Medical Sciences of Croatia. Moreover, with the help of politics it influenced the decision of the Croatian Parliament to change the original names. We managed to keep the original name in English Croatian Academy of Engineering and the original acronym HATZ. The Croatian Parliament on the initiative of the Academy of Sciences and Arts changed our name. We have become Hrvatska akademija tehničkih znanosti – Croatian Academy of Engineering.

The Croatian Academy of Sciences and Arts founded the Department of Technical Sciences 4 years later after founding the Croatian Academy of Engineering in 1997. However, any effort of the Croatian Academy of Engineering and the Minister of

Science and Technology, Prof. Ivica Kostović, Ph.D. to develop the strong Croatian Academy of Engineering which could contribute in cooperation with the Croatian Academy of Sciences and Arts and the Academy of Medical Sciences of Croatia to developing and strengthening the Croatian scientific community failed. Only some of the older members of the Croatian Academy of Engineering, such as academician Dragutin Fleš, who advocated cooperation between the academies, were inclined to the idea. Below is the final part of the text written by Academician Dragutin Fleš and published in the bulletin Tehničke znanosti (Engineering Power).

This brief review of the activities of members of the Department of Technical Sciences of the Croatian Academy of Sciences and Arts and members of the Croatian Academy of Engineering shows that both institutions have similar responsibilities towards profession and society. One of these responsibilities is associated with the rapid development of science and technology, so engineers must continually update their knowledge in order to be able to accept the "unpredictable reality." The other responsibility of both academies is not only to monitor technology development, but also to promote and to use the developed technology in our country. They should simultaneously direct their activities at trade development, environmental concern and economic development. Because of the overlapping of scientific fields and similar responsibilities towards profession and society it is understandable that since the first days of the establishment of the Croatian Academy of Engineering there has been a considerable cooperation between both academies. This cooperation is mostly done through scientific councils and committees of Croatian Academy of Sciences and Arts and includes all fields of science and art, and the Croatian Academy of Engineering can be organized more intensely and better. However, we developed an excellent cooperation with the Academy of Medical Sciences of Croatia. The cooperation started with frequent meetings and conversations of both Managements. We talked about possible topics from the fields of medicine and technology, information and biochemical technologies and nanotechnologies in medicine, in particular the development of a collaborative climate.

We initiated a series of joint conferences, the Forums on communications between doctors and engineers, and we call attention only to the initial conferences:
– The first forum *Biotechnology and Biomedicine* was held in February, 1999
– The second forum *Team Work of Doctors and Engineers* was held in October, 1999, etc.

We were particularly proud to have organized the Conference *Telemedicine in Croatia,* in the organization of which the Faculty of Electrical Engineering and Computing, University of Zagreb, and CARNet participated. Sixteen invited experts presented their own experiences in the application of telemedicine in different areas of medicine, and there was a roundtable discussion on the development of telemedicine and its applications in Croatia. It is important to point out the leading role

of our honorary member Prof. Kurt Richter, Ph.D. in the organization of this meeting.

13. Becoming members of CAETS

Once we gained the reputation in Croatia as a result of our activities, we started thinking about international cooperation in 2008. We wrote to academies in Great Britain, Sweden, USA and the Czech Republic, reporting on the establishment and activities of the Croatian Academy of Engineering. As I stayed in London, I visited the Royal Academy of Engineering which played a significant role in the activities of CAETS. I presented the activities of the Croatian Academy of Engineering and the vision of its development. I talked about the plans of the Croatian Academy of Engineering to join CAETS, a prestigious global community.

The communication with the Vice-President of CAETS Steven N. Anastasion was particularly encouraging and beneficial.

Mr. Michael Lavalou, CAETS President and member of the French National Academy of Engineering and Mr. William C. Salmon, CAETS Secretary General came to evaluate our work and to decide about our membership. They arrived in Zagreb at the end of March 2000 and during several days they appraised our work, visited the Faculty of Electrical Engineering and Computing and the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. They were satisfied with the acquired experience and announced to support the membership of the Croatian Academy of Engineering in CAETS.

14. Preparations for becoming a member of Euro-CASE

Several official letters were exchanged before becoming a member of Euro-CASE; even a working meeting was convened in May of 2001 in Zagreb in which we participated as “observer members” at the Conference ”Euro-CASE Workshop on Reduction of Energy Consumption and Greenhouse Gas Emissions in Europe“ with the aim to adopt an exemplary *Declaration on Reduction of Energy Consumption with GHG emissions in Europe* based on the experiences of member states and observer states and on the basis of an expert discussion.

Croatian experiences were presented on behalf of the Croatian Academy of Engineering by Prof. Vladimir Mikuličić, Ph.D. We were invited to cooperation, and a

representative of the Croatian Academy of Engineering should join the working group for energy of Euro-CASE.

15. 10th anniversary and the transition into the 21st century

We marked the tenth anniversary ceremonially, and a plan for development and activities in the further four-year period had been prepared. By courtesy of our member, the Dean of the Faculty of Food Technology and Biotechnology and the Rector of the University of Zagreb an abandoned one-story house was placed at our disposal. Thus, conditions for the new leadership of the Croatian Academy of Engineering were created to build the Academy House and much-needed working premises.

The anniversary address by the President should be pointed out because its content makes a contribution to the conclusion of the presentation on the establishment and the start of activities of the Croatian Academy of Engineering:

One of the basic human characteristic is the ability to maintain, develop and improve the system in which people live and the environment in which they work.

To be successful in these activities, people must have clear goals, positive values, knowledge and capability for organized and team work at their disposal.

In the early nineties, when we started thinking about the founding of the Academy, challenges with which Croatia and Croatian state leadership will be confronted after the achievement of national independence were clear to us, and also at the moment of creating global systems that rapidly changed overall relations in the world.

Moreover, one by one, every single thing in human life has been touched by science and then with the help of technology it has enveloped the spirit and life of people.

The application of new technologies, especially information ones, affected human expression, thought, communication and prompted the overall changes in human activities. We started to live in a highly turbulent, fragmented social environment with a wide range of values, goals, lifestyles and resources in an effort to realize them. We, engineers, scientists in the field of engineering and biotechnical sciences understood that we live in an unsteady world of rapid and dramatic changes, but also in a world of great opportunities.

We knew that we would not be able to fully comprehend and utilize them if we do not overcome their disciplinary fragmentation and do not encourage connections and cooperation of all engineering fields, and then improve the communications among professionals from engineering and natural-science, social and human areas. We have established the Croatian Academy of Engineering aware that knowledge and unity in knowledge can keep us and, then well organized we can preserve the available potential and the ability to work, and thus adequately contribute to the creation of the Croatian state.

And so, today we celebrate the tenth anniversary of existence and work, and we are pleased to point out the successful realization of our basic mission:

To contribute excellently and actively to the development of engineering and biotechnical sciences and knowledge transfer important for the progress of the Croatian economy and for the welfare of people.

We proudly inform: we held more than a hundred public meetings – forums, discussions, colloquia symposia, congresses and conferences; we published 20 books with a total of 3160 pages containing 440 papers. Almost 3000 experts attended our conferences. In addition, the bulletin TEHNIČKE ZNANOSTI (Engineering Power) is published four times a year, and occasionally the bulletin ENGINEERING POWER in English. The Annual is published in English. Our programs are created mainly around the basic meeting, multidisciplinary conference ENGINEERING SCIENCES FOR CROATIAN ECONOMY. This year we will hold the sixth multidisciplinary conference, and in the next decade of our work, starting from the first week of February 2004, we will begin a new program under the title of TECHNICAL DAYS.

Members of the Academy did volunteer work for thousands of hours, but without the help of our supporting members: engineering and biotechnical faculties of the Universities of Zagreb, Osijek, Rijeka and Split, colleges, institutes and several companies, it would have been difficult to develop all these activities.

The results of our meetings are various useful conclusions and recommendations to the spheres of political and economic decision-making. We speak freely and in an organized manner, we propose and advocate numerous useful activities, but we cannot affect the realization of our best ideas.

However, not to mention our numerous initiatives and ideas, I will point out that in 2000 we were elected to a full member of the International Council of Academies of Engineering and Technological Sciences (CAETS) headquartered in Washington, which provides an excellent opportunity for promotion.

We strive to achieve a better cooperation with the Croatian Academy of Arts and Sciences and the Academy of Medical Sciences of Croatia because only by working together we can make advantage of our not inconsiderable potential for the welfare of Croatia. We have developed cooperation with a number of professional societies, particularly with the Croatian Systems Society, but also with the Croatian Engineering Association and with the Croatian Academy of Educational Sciences.

For the anniversary celebration, we decided to publish a convenient Proclamation of our basic point of view, on which we intend to rely in the future work.

At the Ceremonial assembly held on February 5, 2003 in Zagreb on the occasion of the tenth anniversary of the establishment and functioning of the Academy the Proclamation was published.

16. Conclusion and future outlook

In its initial activities the Croatian Academy of Engineering had certain difficulties, and officials of state institutions, as well as of the Ministry of Science and Technology, the Academy is was not seen as a respected community of scientists. For example, in 1996 a request for entry into the Register of scientific organizations according to the Law on Scientific Research Activity was submitted to the Ministry, but the request was not accepted. We sent the request over and over again despite notices of rejection. We were aware that we developed a very successful activity and made our contributions. That outwitting lasted until the beginning of 2000, when the Academy was finally entered into the Register. Thus, the conditions were created that one day in the future the Academy acquires the status of a scientific organization. Over the past decade numerous non-members were of great help in the work of the Academy in the organization of scientific conferences. In token of gratitude we tried to repay them naming them member friend. Their friendly activity was an important contribution to the consideration and realization of new contents in the program of work.

At the same time we decided to appoint older university professors, scientists who had contributed to the progress of engineering and biotechnical sciences, education of young scientists and contributed to the development of scientific infrastructure and strengthening of cooperation with scientific institutions as *honorary members.* We marked the 10th anniversary by publishing the publication *Who is Who in the Croatian Academy of Engineering* in English and thus we presented all the members of the Academy to the world.

We must also mention supporting members, primarily the faculties which enabled the activities and existence.

In our publications and articles as well as conference discussions we reflected upon actual issues of engineering sciences, economy and society as well as upon own sustainable development and sustainable future. We were especially aware of the importance of preserving the Academy as an open scientific society and the danger under the influence of social conditions at the beginning of the 21st century. The Academy does not neglect their patriotic role and does not want to become a closed society, which has its own purpose. I emphasize the terms of sustainability:

– Science, research and development in the function of the Croatian economy, security and identity.

– Need to encourage and strengthen best possible communication between authorities and experts.

– Multidisciplinary teamwork as a prerequisite for the successful management of economic policy and decision-making.

Acknowledgement

When I was Secretary-General and then President of the Academy, I successfully cooperated with the first president Prof. Josip Božičević, Ph.D. to whom I am especially grateful for the knowledge transfer in organizational skills, but also to Prof. Dražen Aničić, Ph.D. first Vice-President and then Secretary-General, a skilled associate without whose wisdom and leadership skills we could not realize the described comprehensive program. With special gratitude I emphasize the cooperation of Vice-Presidents Prof. Ivo Alfirević, Ph.D. and Prof. Mirko Krpan, Ph.D.

Prof. Jasna Kniewald, Ph.D., selflessly took care of international cooperation together with the Secretary-General. Particularly useful were my talks on development issues with Prof. Zijad Haznadar, Ph.D., and Prof. Darko Maljković, Ph.D. I emphasize that the work of all associates on these projects was voluntary.

Conferences and many other events were preceded by short musical performances by choirs, classical ensembles and soloists, which created an additional positive atmosphere, being a particular feature of our activities.

CROATIAN ACADEMY OF ENGINEERING 2003 – 2009

Presidents
Prof. Emer. Zlatko Kniewald, Ph.D.

Becoming a Full Member of the Croatian Academy of Engineering, elected on the Annual Assembly in 1998 in the Department of Bioprocess Engineering, I have also accepted The Act of Constitution HATZ with all duties and obligations as a HATZ member. From the time when I became the HATZ member until the beginning of my presidential mandate I have organized three conferences about the Biotechnology (1999, 2001 and 2003) with Croatian Academy of Medical Sciences, Scientific Council for Agriculture and Forestry of the Croatian Academy of Sciences and Arts, Croatian Society of Biotechnology and PLIVA Inc. These Conferences were international, with English speaking lecturers, and after the Conferences there were published Proceedings as internationally recognized publications.

My presidential mandate started on July 1st 2003 and was terminated in June 30th 2009. In the first year (2003) administrative consolidation and location of HATZ were dominant activities. Due to the great help of the Faculty of Food Technology and Biotechnology and the University of Zagreb we have rented an old and quite damaged building on the location of Kačićeva Street 28, which was restored with the financial support of The Ministry of Science, Education and Sports of the Republic of Croatia and activities of our members Prof. Jure Radić, Ph.D., Prof. Mladen Obad Šćitaroci, Ph.D., Prof. Nedjeljko Frančula, Ph.D. and Prof. Hildegard Auf-Franić, Ph.D. Furthermore, HEP donated funds for adaptation and organization of HATZ Library. Total HATZ income in the mentioned period is shown on Table 1.

Table 1.

year	HATZ Income (Kunas)
2002	226.866,00
2003	667.509,00
2004	527.029,00
2005	851.667,00
2006	1,479.350,00
2007	835.372,00
2008	760.821,00
2009 (planned)	759.400,00

Fig. 1a) Hired premises of the Academy on 10 March, 2003

Fig. 1b) Premises renovation

Fig. 1c) Opening session of the Presidency of the Academy on the new premises on 13 February 2004

Fig. 1d) Renovated House of the Academy on 9 September, 2005

Activity of HATZ was greatly increased with the inauguration of Governing Board in 2003, which consists of the HATZ President, two Vice-Presidents, Secretary General and Former President with the technical support of only one employed Business Secretary. This type of organization is also active in 2014.

On July 1, 2003 websites of HATZ were already opened but were inactive. After restoration and with new contents websites were reopened, thanks to our member Prof. Miljenko Lapaine, Ph.D. and his team, and by 2009 had about 350.000 visitors.

In order to promote its activities HATZ published 200 posters (in format A2 and A3), in Croatian and English, with the description of location, structure, activities, sponsors and broad spectrum of workshops that can be organized for the purpose of industry.

At 2003 there were 14 HATZ Departments and 8 Standing Committees. This organization is still active although, during 2004 The Department of Chemical Engineering was divided in the Department of Chemical Engineering and the Department of Textile Technology and since then there are 15 departments. In the period until 2005 HATZ got its flag and in 2008 HATZ gold plated medals were prepared for distinguished HATZ visitors or HATZ members who achieved extraordinary results within the HATZ in the past period. Until 2009 only one of the 100 produced medals was assigned, and it was to our honorary member prof. Kurt Richter (AUT) for his activities with Austrian Academy of Sciences before signing bilateral agreement with HATZ. Bilateral agreement among HATZ and Austrian Academy of Sciences was signed on June 18, 2009.

In 2003 HATZ started to organize Centers as specialized places within the Academy for promotion and development of specific projects for the needs of industry. At that time there were two Centers: Center for Development Studies and Projects, Head Prof. Juraj Božičević, Ph.D. and Biotechnical Center, Head Prof. Zlatko Kniewald, Ph.D. Later on four other Centers were organized there: Center for Life-Long Education, Head Prof. Tomislav Filetin, Ph.D., Center for Geoinformatics and Cartography, Head Prof. Nedjeljko Frančula, Ph.D., Center for Graphical Engineering, Head Prof. Vilko Žiljak, Ph.D. and Center for Environment Protection and Development of Sustainable Technologies, Head Prof. Đurđa Vasić Rački, Ph.D. During the period from 2003 to 2009 Centers were active with the different dynamics which is visible within the Annual HATZ reports.

Due to the lack of money regular competition and distribution of Annual Awards: Power of Knowledge, “Rikard Podhorsky” and “Vera Johanides” were not possible in 2003. The foundation of the Academy has been established by donation of our Honorary Member from Canada and Croatian scientist Prof. Emer. Branko Ladany, Ph.D. After signing the Agreements of donation with Institute Končar Inc., PLIVA Inc. and Zagrebačka pivovara Inc. and later until 2009 agreements for HATZ Foun-

Fig. 2a) Signing the Agreement with the Vehicle Center of Croatia, Ltd.

Fig. 2b) Signing the Agreement with Belupo d.d.

Fig. 2c) Signing the Agreement with the Hungarian Academy of Engineering

dation and Awards fund were also signed with the "Centar za vozila Hrvatske" and Belupo Inc. Foundation was active and successful until the end of 2009. These activities provided funds, from 2004 until 2009, for up to five "Vera Johanides" awards for young scientists (not HATZ members) and up to three "Rikard Podhorshy" awards and one Power of Knowledge award annually (for HATZ members).

The previous president of HATZ, Prof. Juraj Božičević, Ph.D., made great efforts for international recognition of HATZ. In 2000 we were elected as a regular member of CAETS on the October 13 Council Meeting, Beijing, China. He also made first activities for HATZ membership in Euro-CASE. Committee for International Cooperation (head prof. Jasna Kniewald) organized great activities until 2003 as well as from 2003 to 2009. Regular HATZ participation in Annual meetings of CAETS and participation in international projects such as "Engineering Education", "Oceans and the World's Future" (2005 Cairns, Australia) and "Environment and Sustainable Growth" (2007 Tokyo, Japan) were among others activities of HATZ that made great promotion of our knowledge, tradition, possibilities and willingness for cooperation among the engineers and technologists among the world. In 2021 presidency of CAETS will be located in HATZ – Croatia, which is a great honour for each of CAETS member's countries and we must be prepared for this responsible duty.

In 2005 our full openness has been realized through our admission to full membership of the Croatian Academic and Research Network (CARNet) and transfers all our activities to our server, and subsequent organization of the entire service network through the University.

In 2005 HATZ President (Prof. Emer. Zlatko Kniewald, Ph.D.) and HAZU President (Academician Milan Moguš) were invited and delegated from Croatian Government in Beijing, China on the 10th Anniversary of Chinese Academy of Engineering and on June 2 signed two separate Agreements for cooperation with the Chinese Academy of Engineering. They were also received by China Prime minister.

We have succeeded in the communication with Euro-CASE and in 2005 HATZ was accepted as an observing member of Euro-CASE, because only countries that are full EU members can become the Euro-CASE member. Intensive and permanent cooperation among HATZ and Euro-CASE finally gave results and HATZ become a regular Euro-CASE member in 2009 when Croatia received an invitation to become an EU member. Euro-CASE and CAETS were supporting all of our international activities, particularly the celebration of 150 Years of Nikola Tesla birth that was accompanied with the several activities listed on the end of this report.

Croatian scientists, HATZ members, traditionally have good cooperation with scientists from Hungary. This was the reason to sign (June 28, 2006) the bilateral agreement for cooperation with the Hungarian Academy of Engineering.

HATZ members participated on CAETS meetings 2003 – 2008 at Los Angeles, USA; Stavanger, Norway; Cairns, Australia; Brussels, Belgium; Tokyo, Japan; The Hague, Netherlands. Several CAETS Statements have been adopted by HATZ and corresponding Croatian governmental authorities were also informed about its contents.

Activity of HATZ was recognized within and outside Croatia with several specialized meetings where several HATZ members participated very often together with the foreign participants:

1. February 27, 2004, "Current Approaches to the Education of Engineers" Zagreb,
2. November 13-17, 2004, "The First Congress of the Croatian Scientists from Homeland and Abroad" Zagreb – Vukovar, in cooperation with the Ministry of Science, Education and Sports Republic of Croatia.
3. February 26, 2005. "Development of new technologies and products in Croatia", Zagreb,
4. June 3, 2005, "Ethics in Application and Development of the Engineering Sciences", Zagreb,
5. July 10, 2005, CAETS Meeting "Oceans and the World's Future" invited lecture "The Ocean and its Environment as a Source of Food Production", Cairns, Australia,
6. February 27, 2006, "National Security and Transport Perspectives in Croatia" organized by Croatian Parliament, Zagreb,
7. September 7, 2006, "Human Resources in the fighting of terrorism" organized by Republic of Croatia Ministry of the Interior – Police Academy, Zagreb,
8. February 28, 2006, Knowledge-Based Croatia – A Possible Contribution of the Croatian Scientists", Zagreb,
9. June 27 – 28, 2006, Central celebration, in cooperation with the Croatian Parliament – On the occasions of «2006 – The Year of Nikola Tesla» and 150th Anniversary of his birth NIKOLA TESLA (1856 – 1943) and International Scientific and Professional Meeting "The Life and Work of Nikola Tesla", Zagreb,
10. June 28-29, 2006, "The visions and work of Nikola Tesla: Today and Tomorrow, Zagreb,
11. September 13th 2006, Symposium "Tesla in Croatia", UNESCO house, Paris, France,
12. October 7 – 11 2006, "Marie Curie Workshop", Celebrating Nikola Tesla, Zagreb & Belgrade,
13. November 24, 2006, "With Tesla in the development of Croatia", Zagreb, May 7-10, 2007

Fig. 3a) – Opening speech of President Stjepan Mesić, the celebration of "The 150th Anniversary of the Birth of Nikola Tesla"

Fig. 3b) – "The Life and Work of Nikola Tesla", Vatroslav Lisinski Concert Hall, Zagreb, June 27, 2006

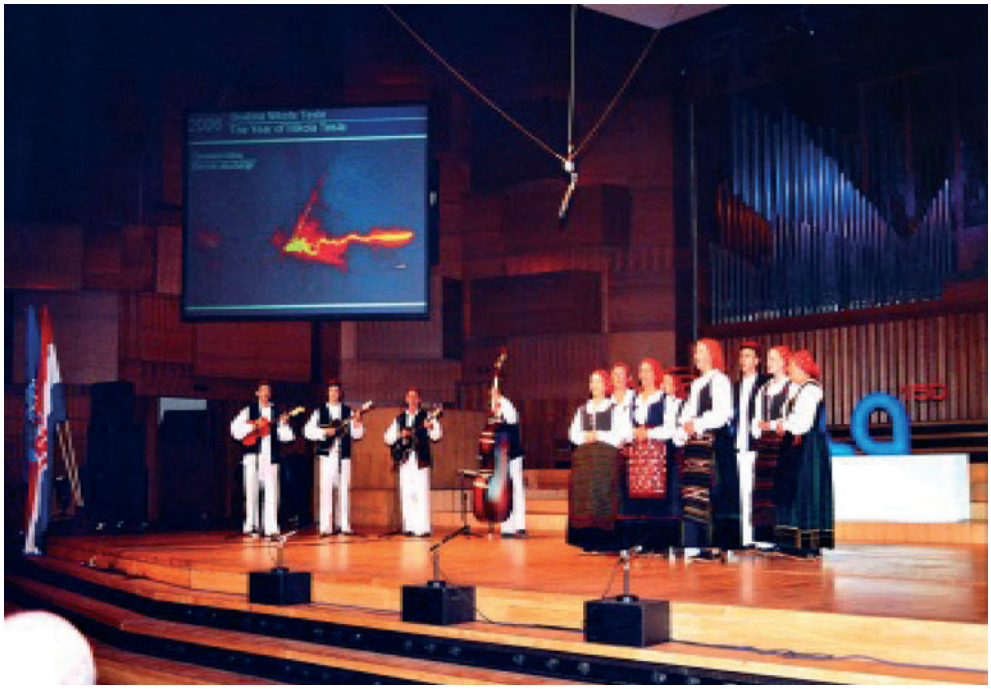

Fig. 3c) – "The Life and Work of Nikola Tesla", Vatroslav Lisinski Concert Hall, Zagreb, June 27, 2006

Fig. 3d) – First slide of Gordana Kovačević, M.Sc. presentation at the Symposium "Tesla in Croatia", UNESCO House, Paris, France, September 13, 2006

14. "The Second Congress of Croatian Scientists from Homeland and Abroad", Split, in cooperation with the Ministry of Science, Education and Sport of the Republic of Croatia
15. October 23-26, 2007, "Environment and Sustainable Growth" – invited lecture "Participation of Croatia as a West Balkan Country in European Scenarios about Energy and Greenhouse Gas Emissions", Tokyo, Japan
16. November 8-10, 2007, "Engineering Education The Bologna Process " 3 years later ", Zagreb,
17. December 12, 2008, "Nikola Tesla – from Childhood to New Yorker hotel" Polytechnic University, Madrid, Spain invited plenary lecture delegated by Ministry of Science, Education and Sports Republic of Croatia.

For the items: 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15 16, Proceedings, Book of Abstracts or separate lecture papers were published.

Croatian Academy of Engineering organized these Annual Assembly Meetings:

1. 17. Annual Assembly of HATZ, February 2003, 10th Anniversary of HATZ 1993 – 2003, and election of candidates for the new Governing Board of the Academy,
2. 18. Annual Assembly of HATZ, May, 28, election of the new Governing Board of the Academy, starting with the July 1, 2003,

In the period 2003 – 2009

1. 19. Annual Assembly of HATZ, February 27, 2004,
2. 20. Annual Assembly of HATZ, February 26, 2005,
3. 21. Annual Assembly of HATZ, February 28, 2006,
4. 22. Annual Assembly of HATZ, March 9, 2007
5. 23. Annual Assembly of HATZ, March 14, 2008
6. 24. Annual Assembly of HATZ, March 14, 2009, election of the new Governing Board of the Academy, starting with the July 1, 2009,

Publications of the Croatian Academy of Engineering:

1. ANNUAL OF THE CROATIAN ACADEMY OF ENGINEERING 2003.
2. ANNUAL OF THE CROATIAN ACADEMY OF ENGINEERING, 2004.
3. ANNUAL 2005 OF THE CROATIAN ACADEMY OF ENGINEERING,
4. ANNUAL 2006 OF THE CROATIAN ACADEMY OF ENGINEERING,
5. ANNUAL 2007 OF THE CROATIAN ACADEMY OF ENGINEERING,
6. ANNUAL 2008 OF THE CROATIAN ACADEMY OF ENGINEERING.

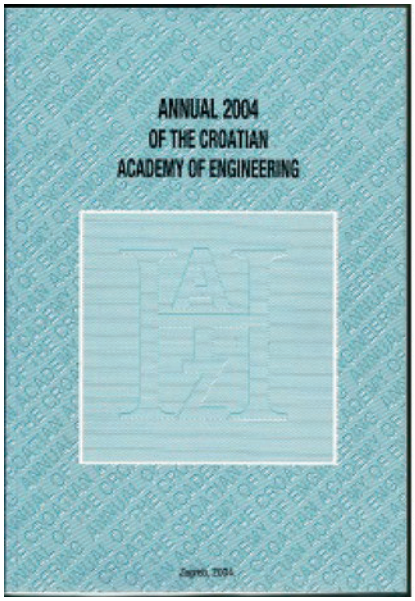

Fig. 4a) – Annual 2004 of the Croatian Academy of Engineering

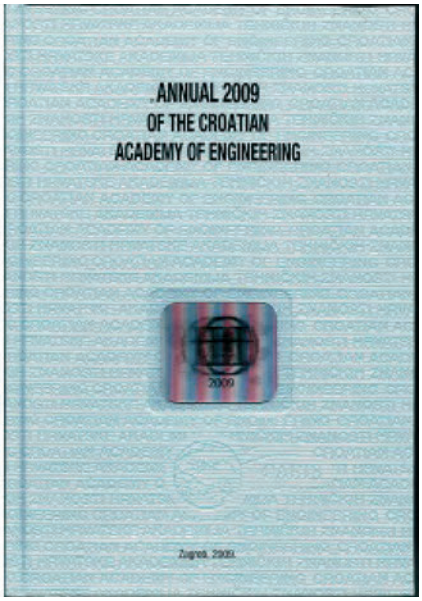

Fig. 4b) – Annual 2009 of the Croatian Academy of Engineering

Tehničke znanosti, Bulletin of the Croatian Academy of Sciences, in Croatian

1. Vol. 10 (3) and (4) 2003.
2. Vol. 11 (1) and (2) 2003
3. Vol. 12 2005,
4. Vol. 13 2006,
5. Vol. 14 2007,
6. Vol. 15 2008,
7. Vol. 16 2009.

Engineering Power, Bulletin of the Croatian Academy of Sciences, in English

1. Vol. 3 2004,
2. Vol. 4 (1) and (2) 2005,
3. Vol. 5. 2006,
4. Vol. 6. 2007,
5. Vol. 7. 2008,
6. Vol. 8. 2009,

Fig. 5 – Award Appreciation from Stavanger

In this report there are not presented any particular activities of the Departments, Centres and Standing Committees while most of them are described at above mentioned HATZ publications. Besides, in the period from 2003 – 2009 great administrative archives were collected and is now available for every interested HATZ member or anyone other. Through TV, radio, newspapers and by invitations to newspaper reporters, HATZ was distributed in all current news.

During this period HATZ administration had one permanently employed person, even during the absence of Ms. Melanija Strika, due to illness; unemployed persons were selected from the Zagreb Employment Bureau. From 2003 – 2009 accounting was led through approved private office.

In the end I would like to thank all the members of the Government Board, Presidency, Department Secretaries and Standing Committees members, as well to all HATZ members for their efforts to make HATZ better and more recognizable in Croatia and abroad.

For me it was an honor and pleasure to be your President from 2003 – 2009.

CROATIAN ACADEMY OF ENGINEERING 2009 – 2013

President
Prof. Emer. Stanko Tonković, Ph.D.

In the electoral process of the Electoral Commission for elections of the new Governing Board in the spring of 2009 at the Assembly held on March 14, 2009 the new leadership, the new Governing Board and the composition of the new Presidency of the Croatian Academy of Engineering for a mandate period from July 01, 2009 to June 30, 2013 was confirmed. The leadership of the Croatian Academy of Engineering was elected: Prof. Stanko Tonković, Ph.D., President, Prof. Miljenko Lapaine, Ph.D., and Prof. Vilko Žiljak, Ph.D., Vice-Presidents and Goran Granić, Ph.D., Secretary-General, and according to the Statute of the Croatian Academy of Engineering the former President, Prof. Emer. Zlatko Kniewald, Ph.D. was associated to the Governing Board. The joint session of the new and former Presidency the Croatian Academy of Engineering was held on June 30, 2009.

The opening (constituting) session of the new Governing Board of the Croatian Academy of Engineering was organized on Tuesday, July 7, 2009, in the Academy House, Kačićeva 28, Zagreb. During the four-year mandate the Governing Board held 27 sessions, and the Presidency held 13 sessions, dealing with activities according to the Statute of the Croatian Academy of Engineering and the activities of the regular work of the Croatian Academy of Engineering. The Scientific Council of the Croatian Academy of Engineering held 3 sessions (3rd Session – Joint Session of Scientific Council and Governing Board on February 2, 2012). Four Assemblies of the Academy were held (March 27, 2010; May 05, 2011; December 20, 2012 and May 21, 2013).

In the beginning of the mandate, as President, I participated at the CAETS conference (CAETS Convocation 2009 – Global Natural Resources – Management and Sustainability) in Calgary, Canada, from 13 to 17 July, 2009. From 2009 to 2011 I was a member of the Board of Directors of CAETS. Successful cooperation with CAETS continued throughout all the mandate period.

On September 11, 2009 the Ministry of Science, Education and Sports issued **License for Scientific Activity** in the scientific field of Engineering Science. Accordingly, the Croatian Academy of Engineering was entered into the Register of scientific organizations under number 0338.

In the meantime effort was being performed on the text of the Statute of the Croatian Academy of Engineering. Special recognition for this activity goes to Goran Granić, Ph.D.

The 25th Annual Assembly of the Academy was held on Saturday, March 27, 2010. At the Assembly the new Statute of the Croatian Academy of Engineering and Ordinance on the Election of members of the Croatian Academy of Engineering (amended in the fall of 2012). Basic features of the new Statute are the simplification and harmonization with the statutes of most similar academies in the world, the ending of the status of extraordinary members, and the introduction of the electronic voting as equal to other models of voting.

Fig. 1 – Assembly of the Academy, March 27, 2010

According to the new Statute the Croatian Academy of Engineering has members, associates, emeriti, honorary members, international members, member friends and supporting members. During the entire mandate, and thereafter, the process of transition of extraordinary and full members in the unique status member of the Academy, and the recruitment of new associate members continued. The procedures were very complex and time consuming.

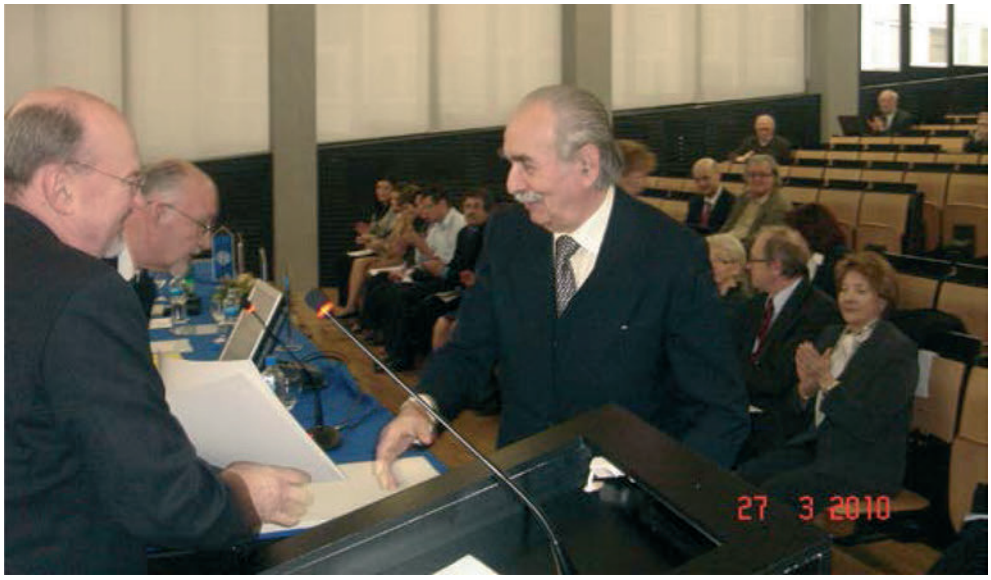

Fig. 2 – Prof. Marijan Bošnjak, Ph.D. receiving the Academy Award for his life – long activities in the Academy at the Assembly of the Academy, March 27, 2010

In September 2010, the Academy was visited by President of the Republic of Croatia, Prof. Ivo Josipović, Ph.D. We discussed the role of the Academy and Engineering Sciences in the development of the Croatian economy and industry. Acknowledgement and Medal of the Academy were given to the President.

Fig. 3 – Presentation of Acknowledgement and Medal of the Academy to the President of the Republic of Croatia Prof. Ivo Josipović, Ph.D. while visiting the House of the Academy in September, 2010

Fig. 4 – Rector of the University of Zagreb, Prof. Aleksa Bjeliš, Ph.D. visited the House of the Academy in April, 2011

In April 2011 the Rector of the University of Zagreb, accompanied by the Vice-Rector, member of the Academy Prof. Bojan Baletić, Ph. D. visited the Academy.

On January, 2014 the Symposium "Engineering Ethics and Croatian Economy" at the Faculty of Electrical Engineering and Computing organized by the Ethics Committee of the Croatian Academy of Engineering and the Faculty of Electrical Engineering and Computing was held.

The publishing activity of the Academy continued. During my mandate period two Annuals of the Croatian Academy of Engineering (2009 and 2010/11) were published as well as three issues of the Bulletin "Tehničke novosti / Engineering Power".

Special mention should be made of Annual 2009 of the Croatian Academy of Engineering, in which, along with conceptual novelties, a new "Who is Who" was published, which required great efforts by of the Governing Board and Presidency of the Croatian Academy of Engineering.

The central celebration on the occasion of the 300th anniversary of the birth of Rugjer Bošković was held at Vatroslav Lisinski Concert Hall on May 17, 2011 organized by the Croatian Academy of Engineering and the Ministry of Science, Educa-

tion and Sports. In front of a large audience, as President of the Academy, I opened celebration and expressed my admiration and praise of the character and work of Rugjer Bošković. The Minister of Science, Education and Sports Radovan Fuchs, Croatian Parliament Speaker Luka Bebić and Croatian President Ivo Josipović gave their occasion speeches too. In the opinion of those present and the press much credit for the success of this celebration goes to Krešimir Dolenčić (director), Aljoša Paro (scenic design), Willem Miličević (video and photo processing) and executive producer Goran Granić, Ph.D. As President I especially expressed gratitude to Secretary-General Goran Granić, Ph.D., who was one of the main organizers of the celebration.

Fig. 5 – President of the Academy, Prof. Stanko Tonković, Ph.D., opening speech on the occasion of the celebration of the 300th anniversary of the birth of Ruđer Bošković, Vatroslav Lisinski Concert Hall, May 17, 2011

Fig. 6 – President of the Republic of Croatia, Prof. Ivo Josipović, Ph.D., opening speech on the occasion of the celebration of the 300th anniversary of the birth of Ruđer Bošković, Vatroslav Lisinski Concert Hall, May 17, 2011

Fig. 7 – Assembly of the Academy, May 17, 2011

The 26th Annual Assembly of the Croatian Academy of Engineering was held on Tuesday, May 17, 2011, after the celebration of the 300th anniversary of the birth of Rugjer Bošković at Vatroslav Lisinski Concert Hall.

Pursuant to articles 16 and 46 of the Statute a new categorization of membership was implemented, and full members became Academy members, most of extraordinary members were converted to the status of Academy members, associate members became Academy associates, corresponding members became international members of the Academy, members emeriti became Academy emeriti, honorary members became honorary members of the Academy, member friends became friends of the Academy, and supporting members became supporting members of the Academy. Decisions were given to all members of the Academy. As President, I particularly thanked Prof. Juraj Božičević, Ph.D. (who performed the duties of Secretary-General and President of the Academy) and Prof. Dražen Aničić, Ph.D. (former Secretary General of the Academy), who are also among the founder members of the Academy, for their great contribution to the development and work of the Academy.

On 28 September, 2011, the Croatian Academy of Engineering marked the life and work of its honorary member Prof. Emeritus Vera Johanides who died in 2000, with an appropriate scientific symposium. Prof. Vera Johanides was the founder of biotechnology, in particular biochemical engineering in Croatia. Marking the work of Prof. Emeritus Vera Johanides was performed jointly by Croatian Academy of Engineering and Faculty of Food Technology and Biotechnology, University of

Fig. 8 – Prof. Jasna Franekić, Ph.D. receiving the Academy Award "Power of Knowledge" at the Assembly of the Academy, May 17, 2011

Zagreb in cooperation with the Biotechnology Foundation of the Faculty of Food Technology and Biotechnology of the University of Zagreb, Croatian Society for Biotechnology and donors from the industry.

On this occasion the memorial bust of Vera Johanides was unveiled in the park of the Academy House. The bust was made by sculptor Prof. Slavomir Drinković, Ph.D. In this way the Academy honored one of its first members, a renowned and acknowledged scientist from the field of biotechnology.

In the winter of 2012 problems with my health unfortunately began. They lasted, with brief interruptions, until the end of my mandate, of course affecting my activity and work in the Croatian Academy of Engineering.

For health reasons, I could not perform my duties in the period **from January 23, 2012 to June 11, 2012 and from November 20, 2012 to June 20, 2013**. Pursuant to Article 35, paragraphs 2 and 3 of the Statute of the Croatian Academy of Engineering Secretary-General Goran Granić Ph.D. and Prof. Vilko Žiljak, Ph.D., Vice-President of the Academy deputized for me during my absence.

In the first period Goran Granić, Ph.D., led a series of sessions of bodies of the Croatian Academy of Engineering, especially of the Awards Committee and the procedure for the election of new members, for which I am sincerely grateful.

In July 2012, members of the Governing Board Prof. Miljenko Lapaine, Ph.D. (July 10, 2012) and Goran Granić, Ph.D. (July 04, 2012) resigned from all their positions in the Croatian Academy of Engineering.

In March 2012 the Croatian Academy of Engineering signed the Agreement on Scientific and Technical Cooperation with the Academy of Medical Sciences of Croatia, the Croatian Academy of Legal Sciences and the Academy of Forestry Sciences.

Unfortunately, because of illness I was not present at a very successful meeting held on September 3, 2012, in Zagreb (Sheraton Hotel) between senior representatives of the Chinese Academy of Engineering and the Croatian Academy of Engineering. The meeting was led by Prof Vilko Žiljak, Ph.D., Vice-President of the Croatian Academy of Engineering and by Prof. Pan Yunhe, Vice-President of CAE. As a result of the meeting the Agreement on Cooperation between the Croatian Academy of Engineering and the Chinese Academy of Engineering was signed on January 23, 2013

After long discussions and consultations, at the initiative of Prof. Juraj Božičević, Ph.D., Head of the Center for Development Studies and Projects of the Academy and Prof. Franjo Jović, Ph.D., Secretary of the Department of Systems and Cybernetics "The Talks about the Present and Future of Engineering in Croatia" were initiated which encourage socializing, thinking and exchange of views on major development issues.

The 27th Annual Assembly of the Croatian Academy of Engineering was held on December 20, 2012. Besides the regular items on the Agenda of the Assembly, I particularly emphasize the election of new members and associates of the Academy, the announcement of the public competition for the appointment to the remaining places in the Departments of the Academy and the election of the Commission for starting the official announcement of the competition and the election of the new leadership of the Croatian Academy of Engineering for the mandate period from July 1, 2013 to July 1, 2017.

Along with the co-organizers the University of Zagreb, Faculty of Food Technology and Biotechnology, Croatian Society of Biotechnology and Biotechnology Foundation, the Academy was the organizer of the second international symposium "Vera Johanides – Biotechnology in Croatia by 2020". This exceptionally successful symposium was held 10 – 11 May 2013 in the Great Hall of the University of Zagreb. A detailed report with peer-reviewed papers in the Annual 2013 of the Croatian Academy of Engineering is foreseen.

During the spring of 2013, pursuant to the Statute of the Academy the elections of the new leadership of the Academy were held. At the session held on May 14, 2013 the Presidency of the Academy accepted the Report of the Commission for the election of new leaders of the Croatian Academy of Engineering chaired by Prof. Karolj Skala, Ph.D. It was decided to conduct electronic voting.

The new leadership of the Croatian Academy of Engineering was elected by voting for a mandate period from July 01, 2013 to June 30, 2017 in the following composition:

- Prof. Vladimir Andročec, Ph.D., President
- Prof. Vladimir Medved, Ph.D., Vice-President
- Prof. Zdravko Terze, Ph.D., Vice-President
- Prof. Dubravko Rogale, Ph.D., Secretary General

On 21 May, 2013 the 20th anniversary of founding the Croatian Academy of Engineering was held at the Mimara Museum. In a festive environment, along with other guests and occasion speeches, the celebration was led by my deputy, Prof. Vilko Žiljak, Ph.D. The course of the celebration is also available on video recording.

The 28th Annual Assembly of the Croatian Academy of Engineering was held after the anniversary celebrations, on the same day, May 21, 2013. I did not attend the Assembly, but all data can be found in the Minutes and the video recording of the Assembly. The most important fact is that the Assembly accepted the new leadership of the Academy in the abovementioned composition. New leadership began operating on July 1, 2013.

In the second mentioned period Prof. Vilko Žiljak, Ph.D. was, among other things, especially active and involved in the preparations of organizing and holding the 27th and 28th Annual Assembly of the Academy and the celebration of the 20th anniversary of founding the Croatian Academy of Engineering for which I am very thankful to him.

More detailed information about everything that happened in this period can be obtained at the Secretariat of the Academy, or from me personally or from the members of Governing Board, particularly for the periods when Goran Granić, Ph.D. (February 23, 2012 to June 11, 2012) and Prof. Vilko Žiljak, Ph.D. (November 20, 2012 to June 20, 2013) deputized for me.

I would like to express my sincere gratitude to the whole Governing Body for their efforts, conscientiousness, and time taken to execute ungrateful and burdensome obligations and enable the successful work of the Academy in the mentioned period.

AWARDS OF THE MEMBERS OF THE CROATIAN ACADEMY OF ENGINEERING FROM 1993 TO 2013

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

With regard to the scientific, professional and innovative importance of their achievements, members of the Croatian Academy of Engineering received a number of prizes, awards and decorations, some of which are listed in this monograph evaluated by the Editorial Board as the most important:

- National Awards for Scientific Research Work "Nikola Tesla";
- National Science Awards;
- Order of the Croatian Star with the effigy of Ruđer Bošković
- Order of the Croatian Star with the effigy of Nikola Tesla
- Award Fran Bošnjaković

Members of the Croatian Academy of Engineering received a number of other major awards at home and abroad, but they are not listed in this monograph because of restrictions to the content. The list of these awards is available on the website (www.hatz.hr) and in the section of members.

National Awards for Scientific Research Work (1993)

- Solarić, Nikola, Prof. Emer. Ph.D. (retired) (1993)

National Science Awards (1994 – 2013)

- Krakar, Zdravko, Prof. Ph.D. (2001)
- Haznadar, Zijad, Prof. Ph.D. (retired) (2004)
- Radić, Jure, Prof. Ph.D. (2004)
- Čorić, Većeslav, Prof. Ph.D. (2005)
- Katović, Drago, Prof. Ph.D. (2005)
- Vasić-Rački, Đurđa, Prof., PhD (2005)

- Feretić, Danilo, Prof. Emer. Ph.D. (retired) (2007)
- Lovrić, Tomislav, Prof. Emer. Ph.D. (retired) (2007)
- Perić, Nedjeljko, Prof. Ph.D. (2007)
- Alfirević, Ivo, Prof. Ph.D. (2008)
- Tonković, Zdenko, Assoc. Prof. Ph.D. (2008)
- Marušić, Josip, Prof. Ph.D. (2009)
- Kralik, Gordana, Prof. Emer. D.Sc, Dr.h.c. (2010), (2013)
- Pap, Klaudio, Assist. Prof. Ph.D. (2010)
- Žiljak, Vilko, Prof. Ph.D. (2010)
- Hranueli, Daslav, Prof. Ph.D. (2011)
- Šubarić, Drago, Prof. Ph.D. (2011)
- Kelemen, Tomislav, Prof. Ph.D. (retired) (2013)
- Ožanić, Nevenka, Prof. Ph.D. (2013)

Award Fran Bošnjaković (1995-2013)

- Senjanović, Ivo, Prof. PhD (1995)
- Androić, Boris, Prof. PhD (1996)
- Feretić, Danilo, Prof. emer. Ph.D. (retired) (1996)
- Galović, Antun, Prof. Ph.D. (1999)
- Bogdan, Željko, Prof. Ph.D. (2001)
- Hraste, Marin, Prof. Emer. Ph.D. (retired) (2001)
- Filetin, Tomislav, Prof. Ph.D. (2003)
- Haznadar, Zijad, Prof. Ph.D. (retired) (2003)
- Soljačić, Ivo, Prof. Ph.D. (retired) (2005)
- Gomzi, Zoran, Prof. Emer., Ph.D. (retired) (2006)
- Radić, Jure, Prof. Ph.D. (2006)
- Glasnović, Antun, Prof. Ph.D. (2007)
- Katović, Drago, Prof. Ph.D. (2007)
- Perić, Nedjeljko, Prof. Ph.D. (2009)
- Terze, Zdravko, Prof. Ph.D. (2010)
- Grancarić, Ana Marija, Prof. Ph.D. (2012)

Order of the Croatian Star with the effigy of Ruđer Bošković – for Science (1995-2013)

- Božičević, Josip, Prof. Ph.D. (retired) (1995)
- Brnić, Josip, Prof. Ph.D. (1995)
- Ćosić, Krešimir, Prof. Ph.D. (1995)

- Lovrić, Tomislav, Prof. Emer. Ph.D. (retired) (1995)
- Radić, Jure, Prof. Ph.D. (1995)
- Andročec, Vladimir, Prof. Ph.D. (1996)
- Majdandžić, Niko, Prof. Ph.D. (1996)
- Tonković, Stanko, Prof. Emer. Ph.D. (retired) (1996)
- Hraste, Marin, Prof. Emer. Ph.D. (retired) (1997)
- Rogale, Dubravko, Prof. Ph.D. (1997)
- Alfirević, Ivo, Prof. Ph.D. (1998)
- Auf-Franić, Hildegard, Prof. Ph.D. (1998)
- Feretić, Danilo, Prof. Emer. Ph.D. (retired) (1998)
- Krumes, Dragomir, Prof. Ph.D. (1998)
- Lelas, Vesna, Prof. Ph.D. (1998)
- Ugrinović, Kosta, Prof. Ph.D. (retired) (1998)
- Kralik, Gordana, Prof. Emer. D.Sc, Dr.h.c. (2007)
- Milković, Mateo, Prof. Ph.D. (2007)
- Butković, Mirko, Prof. Ph.D. (2008)
- Kovač, Mario, Prof. Ph.D. (2008)

Order of the Croatian Star with the effigy of Nikola Tesla – for invention and innovation (1995 – 2013)

- Szavits-Nossan, Antun, Prof. Ph.D. (1997)
- Radić, Jure, Prof. Ph.D. (1998)
- Kniewald, Zlatko, Prof. Emer. Ph.D. (retired) (2006)
- Markotić, Anto, Prof. Ph.D. (2011)

Awards conferred in 2014

- Pegan, Srečko, Prof. Ph.D.

Award Fran Bošnjaković (2014)

AWARD RECIPIENTS OF THE CROATIAN ACADEMY OF ENGINEERING (2002-2013)

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

On the occasion of 20th anniversary of the Croatian Academy of Engineering we wish to point out the Awards of the Croatian Academy of Engineering, which have been awarded annually since 2002 and for contributions to science and profession and the achievement of the objectives and programs of the Academy, as well as the dedicated work that has contributed to its social recognition of the Academy. Awards of the Academy are:

- Lifetime Achievement Award ***The Power of Knowledge*** (awarded since 2002);
- Annual Award ***Rikard Podhorsky*** (awarded since 2004);
- Award for Young Scientists ***Vera Johanides*** (awarded since 2002);
- Award for a Successful Young Scientist from Economy ***Vera Johanides*** (awarded since 2012).

Lifetime Achievement Award *The Power of Knowledge*

- Haznadar, Zijad, Prof. Ph.D. (retired) (2002)
- Frančula, Nedjeljko, Prof. emer. Ph.D. (retired) (2003)
- Bošnjak, Marijan, Prof. Ph.D. (retired) (2004)
- Alfirević, Ivo, Prof. Ph.D. (2005)
- Janović, Zvonimir, Prof. Ph.D. (retired) (2006)
- Zovko-Cihlar, Branka, Prof. Ph.D. (retired) (2007)
- Božičević, Juraj, Prof. Ph.D. (retired) (2008)
- Ugarčić-Hardi, Žaneta, Prof. Ph.D. (2009)
- Franekić, Jasna, Prof. Ph.D. (2010)
- Aničić, Dražen, Prof. Ph.D. (retired) (2011)
- Auf-Franić, Hildegard, Prof. Ph.D. (2012)

Godišnja nagrada *„Rikard Podhorsky“*

- Franekić - Čolić, Jasna, Prof. Ph.D. (2004)
- Nikolić, Gojko, Prof. Ph.D. (2004)
- Perić, Nedjeljko, Prof. Ph.D. (2004)

- Sever, Stanislav, Prof. Ph.D. (retired) (2004)
- Auf-Franić, Hildegard, Prof. Ph.D. (2005)
- Majdandžić, Niko, Prof. Ph.D. (2005)
- Radošević, Jagoda, Prof. Ph.D. (2005)
- Sorić, Zorislav, Prof. Ph.D. (2005)
- Grgić, Sonja, Prof. Ph.D. (2006)
- Šušković, Jagoda, Prof. Ph.D. (2006)
- Tomas, Srećko, Prof. Ph.D. (2006)
- Višković, Alfredo, Assist. Prof. Ph.D. (2006)
- Wolf, Hinko, Ph.D. (2006)
- Franković, Bernard, Prof. Ph.D. . (2007)
- Petrović, Ivan, Prof. Ph.D. (2007)
- Ujević, Darko, Prof. Ph.D. (2007)
- Zrnčević, Stanka, Prof. Ph.D. (2007)
- Bonefačić, Davor, Prof. Ph.D. (2008)
- Dragčević, Zvonko, Prof. Ph.D. (2008)
- Filetin, Tomislav, Prof. Ph.D. (2008)
- Medved-Rogina, Branka, Assoc. Prof. Ph.D. (2008)
- Mikulić, Dinko, Assist. Prof. Ph.D. (2008)
- Galović, Antun, Prof. Ph.D. (2009)
- Jurković, Sonja, Prof. Ph.D. (2009)
- Marušić, Josip, Prof. Ph.D. (2010)
- Pap, Klaudio, Assist. Prof. Ph.D. (2010)
- Salopek, Branko, Prof. Ph.D. (2010)
- Kurtanjek, Želimir, Prof. Ph.D. . (retired) (2011)
- Lelas, Vesna, Prof. Ph.D. (2011)
- Medved, Vladimir, Prof. Ph.D. (2011)
- Šubarić, Drago, Prof. Ph.D. (2012)
- Cifrek, Mario, Prof. Ph.D. (2013)
- Tonković, Zdenko, Assoc. Prof. Ph.D. (2013)

Nagrada mladom znanstveniku *„Vera Johanides“*

- Perl, Antonija, Ph.D. (2002)
- Gaurina Srček, Višnja, Ph.D. (2003)
- Velić, Darko, B.Sc. (2003)
- Durgo, Ksenija, M.Sc. (2004)
- Garašić, Ivica, B.Sc. (2004)
- Grgić, Mislav, Ph.D. (2004)
- Jukić, Ante, Ph.D. (2004)
- Slačanac, Vedran, Ph.D. (2004)
- Budžaki, Sandra, M.Sc. (2005)

- Halassy-Špoljar, Beata, Ph.D. (2005)
- Lacković, Igor, Ph.D. (2005)
- Pavlović, Hrvoje, M.Sc. (2005)
- Trgo, Marina, Ph.D. (2005)
- Ambruš, Davorin, M.Sc. (2006)
- Komes, Draženka, Prof. Ph.D. (2006)
- Pribanić, Tomislav, Assist. Prof. Ph.D. (2006)
- Suligoj, Tomislav, Assist. Prof. Ph.D. (2006)
- Zelić, Bruno, Prof. Ph.D. (2006)
- Babić, Jurislav, Assoc. Prof. Ph.D. (2007)
- Baotić, Mato, Ph.D. (2007)
- Rezić, Iva, Ph.D. (2007)
- Tarbuk, Anita, M.Sc. (2007)
- Vasić, Darko, M.Sc. (2007)
- Čačić-Kenjerić, Daniela, Ph.D. (2008)
- Hursa, Anica, Ph.D. (2008)
- Krešić, Greta, Ph.D. (2008)
- Vašak, Mario, Ph.D. (2008)
- Vrsalović-Presečki, Ana, Ph.D. (2008)
- Bucić-Kojić, Ana, Ph.D. (2009)
- Findrik, Zvjezdana, Ph.D. (2009)
- Kopjar, Mirela, Ph.D. (2009)
- Otmačić Ćurković, Helena, Ph.D. (2009)
- Petošić, Antonio, Ph.D. (2009)
- Karšaj, Igor, Ph.D. (2010)
- Mužic, Marko, Ph.D. (2010)
- Molnar, Goran, Ph.D. (2010)
- Režek Jambrak, Anet, Ph.D. (2010)
- Jelavić, Mate, Ph.D. (2011)
- Dejanović, Igor, Ph.D. (2011)
- Đakulović, Marija, Ph.d. (2011)
- Skorin-Kapov, Nina, Assistant Prof., Ph.D. (2011)
- Beganović, Jasna, Ph.D. (2011)
- Ante Elez, Ph.D. (2012)
- Jokić, Stela, Assistant Prof., Ph.D. (2012)
- Lerga, Jonatan, Ph.D. (2012)
- Lörincz, Josip, Assistant Prof., Ph.D. (2012)
- Žagar, Martin, Ph.D. (2012)
- Filipović-Grčić, Dalibor, Ph.D. (2013)
- Ačkar, Đurđica, Assistant Prof., Ph.D. (2013)
- Poljak, Mirko, Ph.D. (2013)
- Marčić (Jurić-Kaćunić), Danijela, Ph.D. (2013)
- Mišković, Nikola, Ph.D. (2013)

INTERNATIONAL COOPERATION OF THE CROATIAN ACADEMY OF ENGINEERING FOR THE PERIOD 1997-2014

Prof. Zdravko Terze, Ph.D.
Prof. Jasna Kniewald, Ph.D.
Prof. Vladimir Medved, Ph.D.

Croatian Academy of Engineering was established in 1993, immediately after the constitution of the Republic of Croatia. The main objective of the establishment was promotion of the engineering (including biotechnical) sciences through the organized activity of their members by advancing engineering 'best-practice' for the benefit of economy and technological development of the Republic of Croatia. To this end, the Academy was not established in order to develop a competitive spirit with the existing academies (Croatian Academy of Sciences and Arts, Academy of Medical Sciences of Croatia), but in order to collaborate with them (as well as with the industrial subjects) to support a scientific and technological advancement immediately after the defensive war. In this context, one of the first activities of the Croatian Academy of Engineering was to establish a strong international cooperation which could serve as a platform for promotion of the excellence of the Croatian academic and industrial institutions, allowing for the exchange of the ideas and 'know-how' engineering procedures.

Although Croatian Academy of Engineering celebrates today its twenty year anniversary, and political circumstances and sociological framework in Republic of Croatia have changed a lot since 1993, an advancement of the international cooperation in science and engineering is still one of the main activities of the Academy. In this context, Croatian Academy of Engineering organized a number of scientific events and conferences, often in collaboration with other Croatian academies, universities and industrial subjects. For example, four international conferences on biotechnology were held in Zagreb from 2000 to 2005 (follow-up publications "Current Studies in Biotechnology" Vol. I-IV were published accordingly, Editor Prof. Zlatko Kniewald, Ph.D., member of the Croatian Academy of Engineering), and those conferences were organized in collaboration with Academy of Medical Sciences of Croatia, Scientific Council for Agriculture and Forestry of the Croatian Academy of Sciences and Arts, Croatian Society for Biotechnology, Faculty of Food Technology and Biotechnology, and Pliva Inc.

Fig. 1 – International Scientific Conference 'ECCOMAS - Multibody Dynamics 2013'. Opening of the Conference at the Faculty of Mechanical Engineering and Naval Architecture, Zagreb, July 2013. The Conference was attended by 270 delegates from 38 countries.

Fig. 2 – 'ECCOMAS - Multibody Dynamics 2013'. Welcome Reception at the National University Library in Zagreb. Croatian Academy of Engineering was supporting institution of the Conference, together with the renowned international scientific associations such as IUTAM, ASME and ECCOMAS. The conference was held under auspicies of Croatian Academy of Sciences and Arts.

Fig. 3 – 'ECCOMAS - Multibody Dynamics 2013'. Working part of the Conference at the Faculty of Mechanical Engineering and Naval Architecture, Zagreb (session chairman Prof. Dr. Ing. Friedrich Pfeiffer, Emeritus of Excellence TU Munich).

Also, in the recent times, Croatian Academy of Engineering was a supporting institution of the distinguished scientific conference "ECCOMAS - Multibody Dynamics 2013", (ECCOMAS - European Community on Computational Methods in Applied Sciences) which was held in Zagreb in 2013 (two years after Brussels in 2011, and two years before Barcelona 2015). It was organized under the auspices of the Croatian Academy of Sciences and Arts and sponsored by two Croatian companies (e.g. Končar and AVL), but also by the most prominent world organizations in the field of mechanical engineering, and computational and applied mechanics (ASME, IUTAM, ECCOMAS, IFToMM etc). Selected expanded papers of the Conference "ECCOMAS - Multibody Dynamics 2013" were published in a book by the international publisher Springer in the year 2014, and whose editor is a member of the Croatian Academy of Engineering, Prof. Zdravko Terze, Ph.D.

Before we proceed with a report of the activities of the Academy, we would like to mention that, in order to fulfill their social mission, the Academies of engineering sciences (or similar associations of engineers/scientists) are established all over the world. The Royal Swedish Academy of Engineering Sciences (IVA) was established in 1919, being the first academy in the field of engineering sciences. Many other countries followed the example of Sweden. Considering the globalization of markets, intense international exchange of scientists and fast development, but also

even faster obsolescence of technologies and specific technological solutions, the first joint meeting of the established academies (1st Convocation) - which in various forms was finally established as CAETS (International Council of Academies of Engineering and Technological Sciences. Inc.) - was held in 1985. The founders of CAETS were the Academies of USA, UK, Sweden, Australia and Mexico. CAETS was founded as a non-profit organization with the permanent seat in the National Academy of Engineering (NAE) in Washington, DC. Until 1999 CAETS received another 17 member states.

In the context of Croatian Academy of Engineering, becoming a member of CAETS was a long process which is preceded by preparation of the official documents, and invitation to a CAETS delegation to visit the Croatian Academy of Engineering. Furthermore, it was necessary to address all related issues, then a report was sent to all CAETS members which finally made a decision by voting. In late March of 2000 President of CAETS Prof. Michel Lavalou and Secretary-General William Salmon visited the Croatian Academy of Engineering in order to get acquainted with the activities of the Academy. In October 2000, Croatian Academy of Engineering was admitted to full membership of CAETS together with Korea, Slovenia, and Uruguay at the October meeting of CAETS in Beijing. Afterwards, in 2005 Germany was admitted, and South Africa was admitted in 2009. The membership of the Croatian Academy of Engineering in CAETS was one of the most important obligations because CAETS was either sponsor or co-organizer of a number of activities in Croatia since the establishment of the Croatian Academy of Engineering. This contributed to international recognition not only of the Academy, but also of the Republic of Croatia worldwide.

It should be noted that the President of the Croatian Academy of Engineering, Prof. Juraj Božičević, Ph.D., initiated and contributed significantly to the beginning of international affirmation of the Academy. Thus, after constituting individual Departments of the Academy, the individual Committees with the specific fields of activities were established. It must be remembered that the establishment of the Academy and its first international appearance on the international scene happened at a time when Croatia fought its own battle for the integrity of the territory and the gradual approach to European integrations (EU) and the achievement of international security by joining NATO. Although the first official request of the Academy for accession to the Euro-CASE (The European Council of Applied Sciences and Engineering) was rejected because the members of the Euro-CASE were restricted to the EU member states only, in the year 2003 new contacts were established with the Euro-CASE association. As a result, the associate membership of Croatian Academy of Engineering was established in 2005 whereby the Academy participated in the activities, but without voting rights in enforcing decisions. However, the delegation of the Academy took active part in the sessions of CAETS and Euro-CASE which significantly contributed to the decision of

Euro-CASE to propose its members to admit the Croatian Academy of Engineering to full membership by way of exception. This means that the Academy was one of the first institutions of Croatia that was admitted to full membership of an association in which there are only EU members, namely before the full EU membership.

In addition to the execution of programs within the assumed obligations of CAETS and Euro-CASE, the Croatian Academy of Engineering contributed to the affirmation of Croatia at home and abroad by disseminating information on its activities at the international conferences and by using different media (such as www and Academy annuals, the bilingual bulletin Engineering Power/Tehničke znanosti). Also, the activities of all members of the Academy should be specially emphasized in this context since these activities within the framework of their professional contacts were very important in this kind of affirmation (especially considering high scientific and professional standards that are required to achieve status 'member of Croatian Academy of Engineering').

It is clear that all the above activities and objectives were possible only in organized form and with above-average engagement of individual members exclusively on a voluntary basis. Therefore, we should start from the very beginning and establishment of the first Committee for International Cooperation (later renamed to Committee for Academic International Cooperation) which was established at the session of the Presidency of the Academy on 2 July, 1997, composed of Chair Prof. Jasna Kniewald, Ph.D., and the members Prof. Ivan Ilić, Ph.D., and Prof Mate Sršen, Ph.D. Despite the fact that the organization scheme of the Committee was correctly developed and conceived, non-optimal conditions and lack of the fixed premises of the Academy made the work of the majority of the Committee members very difficult. The President of the Academy Prof. Juraj Božičević, Ph.D., proposed, and the Presidency adopted and elected the Chairs of the Committees on 10 July, 2001. In addition to the Committee for International Academic Cooperation, the Committee for Cooperation with Scientists in the World was established and chaired by Prof. Ivan Ilić, Ph.D., and consisting of the members: Prof. Tomislav Mlinarić, Ph.D., Prof. Juraj Bartolić, Ph.D., Prof. Damir Kalpić, Ph.D., and Assistant Prof. Nenad Debrecin, Ph.D. These committees were acting according to their programs to the next election meeting of the Academy in 2003 when new leadership of the Academy was elected (President Prof. Zlatko Kniewald, Ph.D.). In the mandate period from 2003-2005 the Committee for International Cooperation consisted of Chair Prof. Jasna Kniewald, Ph.D, and members: Prof. Božidar Biondić, Ph.D., Prof. Juraj Božičević, Ph.D., Prof. Ivan Ilić, Ph.D., Prof. Stanko Tonković, Ph.D., and Prof. Vilko Žiljak, Ph.D., and the constituting session was held on 25 September, 2003.

The second session of the Committee for International Academic Cooperation was held on 21 October 2003, together with the Committee for Cooperation with Scientists in the World, and it was agreed on joint activities in the next period. At this session proposals of involving our scientists in some current projects of CAETS were accepted: Prof. S. Tonković, Ph.D., and Prof. V. Medved, Ph.D.: "Bioengineering in Sports Medicine" and "Intelligent Rehabilitation Systems" - platform "Biomedical" holder RAEng (Great Britain); Prof. S. Pegan, Ph.D., proposed the project under the title of "Transnational and Intra-National Changes in Regional Planning" - platform "Sustainable Development" holder ATV (Denmark); Prof. I. Ilić, Ph.D., proposed the project under the title "Ecomobil - Vehicle for the Future" platform "Energy/Environment", holders IVA (Sweden), NTVA (Norway) and FACTE (Finland). At this meeting it was also approved that the Croatian Academy of Engineering takes part in the implementation of the platform "Education" whose holder was NAE (USA), and the Academy accepted it and created the platform "Agriculture and its Environment" (manager of the working group Prof. Z. Kniewald, Ph.D.) for the CAETS project "Future Engineering Challenges". The mandate of the members of the Committee was the same as the mandate of the members of the Presidency and lasted two years. At the Assembly held in 2005 it was adopted that the mandate lasts four years; this was the reason that the mandate of the chairpersons of the Committees and that of the secretaries of the Departments was also changed to a four year period. In the mandate period 2005-2009 the Committee for International Cooperation consisted of Chair Prof. Jasna Kniewald, Ph.D, and members Prof. Zvonimir Janović, Ph.D., Prof. Srećko Pegan, Ph.D., Prof. Stanko Tonkovć, Ph.D., and Prof. Vilko Žiljak, Ph.D.

In 2009 Prof. Vladimir Medved, Ph.D., was elected to the Chair of the Committee for International Cooperation, and the members of the Committee were Prof. Stanko Tonković, Ph.D., Prof. Vladimir Koroman, Ph.D., Prof. Bernard Franković, Ph.D., Prof. Jasna Franekić, Ph.D. and Prof. Mislav Grgić, Ph.D., who occupied their posts to 2013. The most recent mandate period began in 2013. Prof. Zdravko Terze, Ph.D., took over the Chair of the Committee for International Cooperation. The members of the Committee are: Prof. Ana Marija Grancarić, Ph.D., Prof. Biljana Kovačević Zelić, Ph.D., Prof. Bojan Jerbić, Ph.D., Prof. Karolj Skala, Ph.D., Prof. Mario Kovač, Ph.D., and Prof. Neven Duić, Ph.D.

Although parts of international activities are also presented in other chapters of this book, there are several activities that have to be emphasized. First, it should be mentioned that cooperation with the Austrian Academy of Sciences was established due to the special efforts of our honorary member Prof. Kurt Richter, Ph.D.

Prof. Richter made his great contribution in 2006 when the Academy was entrusted to mark the 150th anniversary of the birth of Nikola Tesla according to the decision

Fig. 4 – Prof. K. Richter, Ph.D. receives acknowledgement as honorary member of Croatian Academy of Engineering, Zagreb, 2008. Professor Karl Richter made his great contribution in supporting cooperation between Croatian Academy of Engineering and Austrian Academy of Sciences.

of the Croatian Parliament. Furthermore, thanks to Prof. K. Richter a meeting was organized in Vienna with the President of the Austrian Academy of Sciences Prof. Herbert Mang, Ph.D., who was then invited by the Croatian Academy of Engineering to pay a visit to Zagreb where he held a lecture at the University of Zagreb, and in 2009 a cooperation agreement was signed with the Austrian Academy of Sciences.

As a participant in the implementation of the project on the education of engineers, Croatian Academy of Engineering organized a roundtable in Cairns, Australia, at CAETS Convocation. We also participated with a thematic lecture at the World Congress "World Education of Engineers" in Budapest when, based on our notification of the abolition of the title engineer in Croatia, an official support was given to start the recovery of the title engineer in the higher education system of the Republic of Croatia, which was successful. This text should also mention the contribution of more than 20 members of the Academy who in cooperation with the State Intellectual Property Office worked on the translation of the sixth edition of the International Patent Classification from English to Croatian from 1996-1998. This way Croatia ranks among only a few countries that have their own classification in

Fig. 5 – Participants of the CAETS meeting in Tokyo in 2007, during the visit to JAMSTEC technology centre.

their own language. This was also the moment when a new Croatian terminology in the field of engineering and biotechnical sciences was created in order to encourage innovations and to protect intellectual property which is one of the missions of the Croatian Academy of Engineering.

The international cooperation of the Academy resulted in the first funds for the Fund for Awards donated at 2005 by Prof. Emeritus Branko Ladany, honorary member of Croatian Academy of Engineering, member of the Canadian Academy of Engineering (CAE) and the Croatian Academy of America, New York, USA. The Croatian Academy of Engineering took also on its social task by starting capital infrastructure projects for the Republic of Croatia. For example, a member of the Academy, Prof. Karolj Skala, Ph.D., from Institute Ruđer Bošković initiated the establishment of CRO GRID project on which 11 institutions and 54 researchers took part and which formed the basis for building the national eInfrastucture in 2002 which integrated Croatia into European Grid Infrastructure. Prof. Juraj Božičević, Ph.D., President of the Croatian Academy of Engineering, played an important role during implementation of this project.

In the period of this report, three international cooperation agreements were signed: Memorandum of Agreement on Cooperation with the Chinese Academy of Engineering (2004) (with the Chinese Academy of Engineering an additional document "CAE-HATZ Memorandum of Understanding" was signed in 2013 after the visit of the CAE delegation to the Croatian Academy of Engineering in December 2012), Memorandum of Agreement on Cooperation with the Hungarian Academy of Engineering (2006), and Memorandum of Agreement on Cooperation with the Austrian Academy of Sciences (2009).

Fig. 6 – Signing Memorandum of Agreement on Cooperation with the Chinese Academy of Engineering, Beijing, 2004.

Fig. 7 – Signing Memorandum of Agreement on Cooperation with the Hungarian Academy of Engineering, Zagreb, 2006.

Bilateral cooperation with these and other academies has been continuing to the present day, and in this context the visit of the member of the Academy Prof. Bernard Franković Ph.D., to Budapest should be mentioned, where the CAETS annual meeting and the symposium under the name of "Innovative Approaches to Engineering Education" were held. On behalf of the Croatian Academy of Engineering the symposium was attended by Prof. Bernard Franković, Ph.D., and Prof. Karolj Skala, Ph.D., members of the Academy. Prof. Bernard Franković, Ph.D., was present as a representative of the Croatian Academy of Engineering in CAETS Board of Directors, while at the Conference on Innovative Approaches to Engineering Education Prof. Karol Skala, Ph.D., presented FP7 project "Embedded Computer Engineering Learning Platform-E2LP", which was developed by Institute Ruđer Bošković and Faculty of Electrical Engineering and Computing from Zagreb, in cooperation with seven other EU institutions.

In order to assist an effective exchange of information between different subjects and engineering/research sectors, as well as domestic and foreign entities, the Academy continuously supports conferences and scientific events, promoting excellence and engineering 'best-practice' orientation. To this end, US National Academy of Engineering and Euro-CASE have together, for the first time, organized a workshop entitled: "EU-US Frontiers of Engineering Workshop 2010", in Cambridge, UK (August 31. - September 03.2010). Purpose of the workshop was to assemble at one place leading engineers of younger generation by both partners in order to discuss, intensively and in multidisciplinary manner, key modern engineering problems. Workshop had four sub-themes: Bio-inspired Engineering, Materials Ecology, Augmented Reality and Signal Processing. The organizing commitee consisted of four pairs (EU and US) of co-chairs, one for each of the sub-themes, with common leading chairs Professor Sergio Verdu, Princeton University, and Professor Richard Williams, University of Leeds.

Academy was invited to propose candidates which could serve as co-chairs for particular sections, and we have among our members selected and nominated Professor Mislav Grgić, at that time Associate of the Academy in the Department of Communication Systems, and member of the Commitee for International Cooperation. Among other conditions, such as excellence in research and significant track record, etc., Professor Grgić also fulfilled the „under the fourty"-age condition. Professor Grgić was elected on behalf of the organizer as european co-chair for the section „Signal Processing". His American partner was Richard Baraniuk, Victor E. Cameron Professor, Department of Electrical and Computer Engineering, Rice University. Remaining co-chairs selected included experts from premier world engineering academic institutions such as M.I.T., Johns Hopkins University, University of Califirnia-Berkeley, Stanford, Delpt University, Royal Institute of Technology, Sweden, ETH, Zürich, to name just the most prominent ones. The established network of young engineering experts and leaders bears a great potential value for development of both academic and industrial colaboration worldwide.

Fig. 8 – Professor Mislav Grgić giving a presentation at the „EU-US Frontiers of Engineering Workshop 2010“ in Cambridge, UK. Prof. Mislav Grgić, PhD associate member of the Croatian Academy of Engineering in the Department for Communication Systems, served as a member of organizing committee of the workshop.

In the present days, the Academy also continuously informs its members about the activities related to the application of scientific and development projects within the framework of EU research programs, such as Horizon 2020 and other programs, and representatives of the Academy participate in national conferences and information days in the promotion of international activities. This practice encourages the cooperation of individual institutions in Croatia and abroad and creates a network framework for the flow of information and research ideas.

In this context, the Academy also organizes workshops and symposia in order to support further development of the traditional engineering fields within newly established international collaborations, but also with the aim of promoting new technologies and industrial challenges of the future. These activities should allow for better incorporation of Croatian engineers and scientists into very competitive EU research ambient of the highly-advanced engineering fields, such as nanotechnology and space. Speaking of latter, Croatian Academy of Engineering organized successful international event “Horizon 2020 Space Workshop” in June, 2014 in Zagreb, where, for the first time in Croatia, space technologies and field-potential for Croatian companies have been discussed.

Fig. 9 – 'Horizon 2020 - Space Workshop'. Opening of the workshop at the Faculty of Mechanical Engineering and Naval Architecture, Zagreb, June 2014. The event was organized by the Croatian Academy of Engineering in collaboration with Institute Ruđer Bošković and the Agency for Mobility and EU Programmes, Croatia.

As it was in the past, representatives of the Academy participate in number of activities organized by our international partners. President Prof. Vladimir Andročec, Ph.D., participated in the meeting of representatives of the Academies members of Euro-CASE with representative of the European Commission in Bruxelles - Seminar "Independent Science- and Technology-Based Policy Advice from Euro-CASE", and report on the work of the Croatian Academy of Engineering was published in the regular Annual Report of Euro-CASE in 2013. Following an invitation of the Board of Euro-CASE, the Croatian Academy of Engineering nominated its two members, Prof. Zdravko Terze, Ph.D., and Prof. Mario Kovač, Ph.D., to be members of ERC (European Research Council) Scientific Council, the governing body which promotes scientific excellence with EU research programs. The Academy also participated in voting a member of the CAETS Board of Directors for the period 2014-2016.

ELECTED MEMBERS OF THE ACADEMY

(Members of the Academy, Emeriti of the Academy and Associates of the Academy)

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

For Members of the Academy, Emeriti of the Academy and Associates of the Academy may be elected persons who meet conditions according to the Statute and the Bylaw on Membership of the Academy.

Member of the Academy may be a Croatian citizen with generally acknowledged scientific results and/or patents in the field of technical and biotechnical sciences who has the status of a scientific advisor or Full Professor of a university, who is elected by the Assembly and who, on the occasion of submitting the candidature for a member according to the Statute commits himself/herself that after the election he/she will actively participate in the work of the Academy, take part in projects and activities of the Academy, contribute to its reputation and honor the Code of Ethics of the Academy.

Emeritus of the Academy becomes every member of the Academy in the year in which he/she turns seventy five. Member of the Academy can become Emeritus of the Academy after turning seventy on personal request.

Associate of the Academy may be a citizen of the Republic of Croatia with the title of research associate or some higher title in the field of engineering and/or biotechnical sciences who is elected by the Assembly and who, when submitting the candidature for a member according to the Statute commits himself/herself that after the election he/she will actively participate in the work of the Academy. Membership in the Academy of the Associate Member stops in the year when he/she turns seventy years of age.

Hereinafter is the list of members in the categories after the 29th Annual Assembly of the Academy on 16 May 2014:

Members of the Academy

1. Agić Darko, Assoc. Prof. Ph.D. (retired)
2. Andročec Vladimir, Prof. Ph.D.
3. Anžek Mario, Prof. Ph.D.
4. Bartolić Juraj, Prof. Ph.D.
5. Begušić Dinko, Prof. Ph.D.
6. Berberović Sead, Prof. Ph.D.
7. Bogdan Željko, Prof. Ph.D.
8. Bogunović Nikola, Prof. Ph.D.
9. Bolanča Stanislav, Prof. Ph.D. (retired)
10. Bolanča Zdenka, Prof. Ph.D. (retired)
11. Bonefačić Davor, Prof. Ph.D.
12. Brnić Josip, Prof. Ph.D.
13. Cerovac Vesna, Prof. Ph.D.
14. Čaušević Mehmed, Prof. Ph.D.
15. Čavlina Nikola, Prof. Ph.D.
16. Čorić Većeslav, Prof. Ph.D.
17. Črnko Josip, Prof. Ph.D.
18. Čunko Ružica, Prof. Ph.D. (retired)
19. Ćosić Krešimir, Prof. Ph.D.
20. Debrecin Nenad, Prof. Ph.D.
21. Domazet Željko, Prof. Ph.D.
22. Domitrović Hrvoje, Assoc. Prof. Ph.D.
23. Dragčević Zvonko, Prof. Ph.D.
24. Duić Neven, Prof. Ph.D.
25. Dujmović Darko, Prof. Ph.D.
26. Filetin Tomislav, Prof. Ph.D.
27. Franekić Jasna, Prof. Ph.D.
28. Franković Bernard, Prof. Ph.D.
29. Galović Antun, Prof. Ph.D.
30. Gaurina-Međimurec Nediljka, Prof. Ph.D.
31. Glasnović Antun, Prof. Ph.D.
32. Gomzi Zoran, Prof. Emer., Ph.D. (retired)
33. Grancarić Ana Marija, Prof. Ph.D.
34. Granić Goran, Assist. Prof. Ph.D.
35. Grbac Ivica , Prof. Ph.D.
36. Grbavac Vladimir, Prof. Ph.D.
37. Grgić Mislav, Prof. Ph.D.

38. Grgić Sonja, Prof. Ph.D.
39. Hranueli Daslav, Prof. Ph.D.
40. Jelaska Damir, Prof. Ph.D.
41. Jović Franjo, Prof. Ph.D.
42. Jukić Tihomir, Assoc. Prof. Ph.D.
43. Jurković Sonja, Prof. Ph.D.
44. Komadina Pavao, Prof. Ph.D.
45. Koroman Vladimir, Prof. Ph.D.
46. Kovač Mario, Prof. Ph.D.
47. Krajcar Slavko, Prof. Ph.D.
48. Krakar Zdravko, Prof. Ph.D.
49. Kralik Gordana, Prof. emer. D.Sc, Dr.h.c.
50. Križan Božidar, Prof. Ph.D.
51. Krumes Dragomir, Prof. Ph.D.
52. Kurtanjek Želimir, Prof. Ph.D. (retired)
53. Lapaine Miljenko, Prof. Ph.D.
54. Lelas Vesna, Prof. Ph.D.
55. Lipovac Vladimir, Prof. Ph.D.
56. Lončarić Sven, Prof. Ph.D.
57. Majdandžić Niko, Prof. Ph.D.
58. Mandić Milena, Prof. Ph.D. (retired)
59. Markotić Anto, Prof. Ph.D.
60. Marović Pavao, Prof. Ph.D.
61. Medak Damir, Prof. Ph.D.
62. Medved Vladimir, Prof. Ph.D.
63. Medved Rogina Branka, Assoc. Prof. Ph.D.
64. Mihanović Ante, Prof. Ph.D.
65. Mikac Tonči, Prof. Ph.D.
66. Milković Mateo, Prof. Ph.D.
67. Modlic Borivoj, Prof. Ph.D.
68. Moguš Milanković Andrea, Ph.D.
69. Mornar Vedran, Prof. Ph.D.
70. Mrnjavac Edna, Prof. Ph.D.
71. Mrša Zoran, Prof. Ph.D.
72. Novak Srđan, Prof. Ph.D.
73. Obad Šćitaroci Mladen, Prof. Ph.D.
74. Parac-Osterman Đurđica, Prof. Ph.D.
75. Pegan Srečko, Prof. Ph.D.

76. Perić Nedjeljko, Prof. Ph.D.
77. Petrović Ivan, Prof. Ph.D.
78. Radić Jure, Prof. Ph.D.
79. Rogale Dubravko, Prof. Ph.D.
80. Roje Vesna, Prof. Ph.D.
81. Salopek Branko, Prof. Ph.D.
82. Skala Karolj, Prof. Ph.D.
83. Sorić Jurica, Prof. Ph.D.
84. Sorić Zorislav, Prof. Ph.D.
85. Sršen Mate, Prof. emer. Ph.D. (retired)
86. Stipaničev Darko, Prof. Ph.D.
87. Šercer Mladen, Prof. Ph.D.
88. Šubarić Drago, Prof. Ph.D.
89. Šušković Jagoda, Prof. Ph.D.
90. Terze Zdravko, Prof. Ph.D.
91. Tomas Srećko, Prof. Ph.D.
92. Tomašić Ivan, Prof. Ph.D.
93. Tomašić Vesna, Prof. Ph.D.
94. Tomšić Željko, Assoc. Prof. Ph.D.
95. Tripalo Branko, Prof. Ph.D.
96. Ugarčić Žaneta, Prof. Ph.D.
97. Vasić-Rački Đurđa, Prof. Ph.D.
98. Veža Ivica, Prof. Ph.D.
99. Virag Zdravko, Prof. Ph.D.
100. Vrkljan Darko, Prof. Ph.D.
101. Zrnčević Stanka, Prof. Ph.D.
102. Žagar Mario, Prof. Ph.D.
103. Žiljak Vilko, Prof. Ph.D.
104. Županović Ivan, Prof. Ph.D.

Emeriti of the Academy

1. Alfirević Ivo, Prof. Ph.D. (retired)
2. Androić Boris, Prof. Ph.D. (retired)
3. Aničić Dražen, Prof. Ph.D. (retired)
4. Auf-Franić Hildegard, Prof. Ph.D. (retired)
5. Ban Drago, Prof. Ph.D. (retired)

6. Benčić Zvonko, Prof. Ph.D. (retired)
7. Beslać Jovo, Prof. Ph.D. (retired)
8. Biondić Božidar, Prof. Ph.D. (retired)
9. Bošnjak Marijan, Prof. Ph.D. (retired)
10. Božičević Josip, Prof. Ph.D. (retired)
11. Božičević Juraj, Prof. Ph.D. (retired)
12. Butković Mirko, Prof. Ph.D. (retired)
13. Damić Vjekoslav, Prof. Ph.D. (retired)
14. Duraković Senadin, Prof. emer. Ph.D. (retired)
15. Dvornik Josip, Prof. emer. Ph.D. (retired)
16. Feretić Danilo, Prof. emer. Ph.D. (retired)
17. Ferić Miljenko, Prof. Ph.D. (retired)
18. Figurić Mladen, Prof. Ph.D. (retired)
19. Frančula Nedjeljko, Prof. emer. Ph.D. (retired)
20. Golubović Adrijano, Prof. Ph.D. (retired)
21. Haznadar Zijad, Prof. Ph.D. (retired)
22. Hebel Zdravko, Prof. Ph.D. (retired)
23. Hnatko Emil, Prof. Ph.D. (retired)
24. Hraste Marin, Prof. Ph.D. (retired)
25. Ilić Ivan, Prof. emer. Ph.D. (retired)
26. Janović Zvonimir, Prof. Ph.D. (retired)
27. Janjanin Simo, Prof. Ph.D. (retired)
28. Jelenčić Ivan, Prof. Ph.D. (retired)
29. Jerič Viljem, Prof. Ph.D. (retired)
30. Juras Ivan, Prof. Ph.D. (retired)
31. Karlović Damir, Prof. emer. Ph.D. (retired)
32. Katavić Ivan, Prof. Ph.D. (retired)
33. Katović Drago, Prof. Ph.D. (retired)
34. Kelemen Tomislav, Prof. Ph.D. (retired)
35. Kniewald Jasna, Prof. Ph.D. (retired)
36. Kniewald Zlatko, Prof. Emer. Ph.D. (retired)
37. Kos Vesna, Prof. Ph.D. (retired)
38. Kos Zorko, Prof. Ph.D. (retired)
39. Kviz Boris, Prof. Ph.D. (retired)
40. Liščić Božidar, Prof. Ph.D. (retired)
41. Lovrić Tomislav, Prof. emer. Ph.D. (retired)
42. Ljuljka Boris, Prof. Ph.D. (retired)
43. Marušić Josip, Prof. Ph.D. (retired)

44. Mikula Miroslav, Prof. Ph.D. (retired)
45. Mikukličić Vladimir, Prof. Ph.D. (retired)
46. Orešković Vladimir, Prof. Ph.D. (retired)
47. Pilić-Rabadan Ljiljana, Prof. Ph.D. (retired)
48. Rotim Franko, Prof. Ph.D. (retired)
49. Rožić Nikola, Prof. Ph.D. (retired)
50. Sečen Josip, Prof. Ph.D. (retired)
51. Senjanović Ivo, Prof. Ph.D. (retired)
52. Sever Stanislav, Prof. Ph.D. (retired)
53. Solarić Nikola, Prof. emer. Ph.D. (retired)
54. Soljačić Ivo, Prof. Ph.D. (retired)
55. Somek Branko, Prof. Ph.D. (retired)
56. Šerman Nikola, Prof. Ph.D. (retired)
57. Štern Ivica, Prof. Ph.D. (retired)
58. Tonković Stanko, Prof. emer. Ph.D. (retired)
59. Ugrinović Kosta, Prof. Ph.D. (retired)
60. Valter Zdravko, Prof. Ph.D. (retired)
61. Verić Franjo, Prof. Ph.D. (retired)
62. Zovko-Cihlar Branka, Prof. Ph.D. (retired)
63. Žagar Zvonimir, Prof. Ph.D. (retired)
64. Žanetić Ratimir, Prof. Ph.D. (retired)

Associates of the Academy

1. Afrić Winton, Assist. Prof. Ph.D.
2. Andrassy Maja, Prof. Ph.D.
3. Babić Darko, Assoc. Prof. Ph.D.
4. Babić Jurislav, Assoc. Prof. Ph.D.
5. Baletić Bojan, Assoc. Prof. Ph.D.
6. Barbir Frano, Prof. Ph.D.
7. Bedeković Gordan, Assist. Prof. Ph.D.
8. Bjegović Dubravka, Prof. Ph.D.
9. Car Stjepan, Ph.D.
10. Cifrek Mario, Prof. Ph.D.
11. Čišić Dragan, Assoc. Prof. Ph.D.
12. Dalbelo Bašić Bojana, Prof., Ph.D.
13. Fajt Siniša, Assist. Prof. Ph.D.

14. Fertalj Krešimir, Prof. Ph.D.
15. Gojo Miroslav, Prof. Ph.D.
16. Grgić Davor, Assist. Prof. Ph.D.
17. Grladinović Tomislav, Assist. Prof. Ph.D.
18. Herceg Zoran, Prof. Ph.D.
19. Hocenski Željko, Prof. Ph.D.
20. Horvat Dubravko, Prof. Ph.D.
21. Horvat Predrag, Prof. Ph.D.
22. Jajac Branislav, Prof. Ph.D.
23. Jerbić Bojan, Prof. Ph.D.
24. Ježek Damir, Prof. Ph.D.
25. Kalpić Damir, Prof. Ph.D.
26. Kliček Božidar, Prof. Ph.D.
27. Komen Vitomir, Assoc. Prof. Ph.D.
28. Kos Serđo, Prof. Ph.D.
29. Kos Tomislav, Prof. Ph.D.
30. Kovačević-Zelić Biljana, Prof. Ph.D.
31. Kovačić Davorin, Prof. Ph.D. (retired)
32. Kralj Damir, Ph.D.
33. Kropar Vančina Vesna, Prof. Ph.D.
34. Kujundžić Trpimir, Assist. Prof. Ph.D.
35. Lovreček Mladen, Assist. Prof. Ph.D.
36. Malarić Krešimir, Assist. Prof. Ph.D.
37. Malbaša Niko, Ph.D.
38. Mandžuka Sadko, Ph.D.
39. Marić Zvonimir, Prof. Ph.D.
40. Matanović Davorin, Prof. Ph.D.
41. Matejiček Franjo, Prof. Ph.D.
42. Math Miljenko, Prof. Ph.D.
43. Matijašević Ljubica, Prof. Ph.D.
44. Medica Vladimir, Prof. Ph.D.
45. Meštrović Krešimir, Prof. Ph.D.
46. Mikulić Dinko, Assist. Prof. Ph.D.
47. Milković Marin, Prof. Ph.D.
48. Miloš Ivan, Prof. Ph.D.
49. Mlinarić Hrvoje, Assist. Prof. Ph.D.
50. Mrša Vladimir, Prof. Ph.D.
51. Munjiza Ante, Prof. Ph.D.

52. Ožanić Nevenka, Prof. Ph.D.
53. Pap Klaudio, Assist. Prof. Ph.D.
54. Pavić Ivica, Prof. Ph.D.
55. Pavković Branimir, Prof. Ph.D.
56. Penava Željko, Assoc. Prof. Ph.D.
57. Peran Zdravko, Prof. Ph.D.
58. Pleština Lenko, Prof. Ph.D.
59. Pozderović Andrija, Prof. Ph.D.
60. Pribanić Tomislav, Assist. Prof. Ph.D.
61. Pribičević Boško, Prof. Ph.D.
62. Puž Goran, Ph.D.
63. Rimac Drlje Snježana, Assist. Prof. Ph.D.
64. Ružinski Nikola, Prof. Ph.D.
65. Srbljić Siniša, Prof. Ph.D.
66. Sućeska Muhamed, Ph.D.
67. Szavits-Nossan Antun, Prof. Ph.D.
68. Šantek Božidar, Prof. Ph.D.
69. Šarić Slavko, Prof. Ph.D.
70. Šarolić Antonio, Prof. Ph.D.
71. Šimić Zdenko, Prof. Ph.D.
72. Šljivac Damir, Prof. Ph.D.
73. Tonković Zdenko, Assoc. Prof. Ph.D.
74. Udiljak Toma, Prof. Ph.D.
75. Ujević Darko, Prof. Ph.D.
76. Veršić Zoran, Assoc. Prof. Ph.D.
77. Viličić Ivan, Prof. Ph.D.
78. Višković Alfredo, Assist. Prof. Ph.D.
79. Vražić Mario, Prof. Ph.D.
80. Vujasinović Edita, Prof. Ph.D.
81. Zelenika Saša, Prof. Ph.D.
82. Zelić Bruno, Prof. Ph.D.
83. Zeljko Mladen, Assist. Prof. Ph.D.
84. Žutobradić Srđan, Prof. Ph.D.

INTERNATIONAL MEMBERS OF THE ACADEMY

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

International Members of the Academy may be distinguished Croatian or foreign scientists in the field of engineering sciences who meet the criteria for membership in the Academy, with international reputation, living abroad. When submitting the candidature for a member according to the Statute, they commit themselves that after the election he/she will participate in the work of the Academy according to his/her best abilities and they are elected by the Assembly of the Academy at the proposal of the Presidency.

Hereinafter is the overview of the international members of the Academy after the 29th Assembly of the Academy on 16 May 2014.

1. **Ahić-Đokić Melita,** Prof. Ph.D.
2. **Geršak Jelka,** Prof. Ph.D.
3. **Lipičnik Martin,** Prof. Ph.D.
4. **Kipphan Helmut**, Prof. Ph.D. Ing. Habil.
5. **Mitra Sanjit Kumar,** Prof. Ph.D.
6. **Palik František**, Ph.D. (retired)
7. **Podhradsky Pavol,** Prof. Ph.D.
8. **Rajendrakumar Anayath,** Prof. Ph.D.
9. **Soljačić Marin,** Prof. Ph.D.
10. **Vranešić Zvonko George,** Prof. Ph.D. (retired)

SUPPORTING MEMBERS OF THE ACADEMY
as stated by October, 2014

Past-President of the Academy
Prof. Emer. Stanko Tonković, Ph.D.

The Croatian Academy of Engineering (hereinafter "the Academy") is a scientific organization of distinguished and prominent scientists in the field of technical and biotechnical sciences (hereinafter "technical sciences") with the objective of promoting technical sciences, gathering and encouraging co-operation of the scientists of different technical, biotechnical and other professions in order to support efficient scientific and economic development of Croatia without gaining any profit (Article 1 of the Academy Statute).

Like all non-profit organizations, the Croatian Academy of Engineering has exceptionally limited financial resources. Regular costs of the Secretariat, maintenance of the building, computer and communication systems, web sites, membership fees in CAETS and Euro-CASE, etc. are unfortunately inevitable. The supporting members of the Academy mostly ensure the existence of the Academy, since membership fees, help of the Ministry of Science, Education and Sports as well as of sponsors of individual events are not sufficient. Each supporting member, a legal entity or private donor is especially appreciated and registered in the archive of the Academy. The person authorized to represent the supporting member of the Academy or private donor has a right to inspect the operations of the Academy and receives regular information about news from the work of the Academy. All suggestions are welcome in hope and desire that they will improve the work of the Academy.

Excerpts from legal documents of the Academy:

Supporting Member of the Academy may only be a legal entity. Decision about its admission is made by the Assembly of the Academy on the proposal of the Presidency. Representative of the legal entity for cooperation with the Academy is appointed by the person authorized to represent the legal person and the Academy will elect him/her Supporting Member **(Article 17 of the Academy Statute).**

Proposal for the election of supporting member of the Academy, pursuant to Article 17 of the Statute of the Academy, is submitted to the Governing Board of the Academy. The proposal generally includes:

- Letter of Intent of the legal entity or private donor who stands for a supporting member
- Statement of the authorized and responsible person in a legal entity or private donor on the amount of the annual material contribution to the Academy

Decision about the proposal for a supporting member of the Academy is made by the Presidency of the Academy on the proposal of the Governing Body. Supporting member status shall cease upon receipt of his/her written statement of reasons for the termination of membership as a supporting member of the Academy. Upon termination of supporting member status the mandate of the representative of the supporting member shall also cease (Article 11 of the Ordinance of the Academy on the Election of Members).

Here, we express our sincere gratitude to all of them for their support and understanding, and hope for an even better future cooperation.

Supporting Members of the Academy

(admitted January 19, 1993 – June 30, 2013)

1. Alstom Croatia, Ltd., Engineering, Karlovac, www.alstom.com
2. Brodarski Institute, Ltd., Zagreb, www.hrbi.hr
3. Croatian Association of Technical Culture, Zagreb, www.hztk.hr
4. Energy Institute Hrvoje Požar, Zagreb, www.eihp.hr
5. Faculty of Architecture, Zagreb, www.arhitekt.hr
6. Faculty of Chemical Engineering and Technology, Split, www.ktf-split.hr
7. Faculty of Chemical Engineering and Technology, Zagreb, www.fkit.hr
8. Faculty of Civil Engineering, Architecture and Geodesy, Split, www.gradst.hr
9. Faculty of Civil Engineering, Osijek, www.gfos.hr
10. Faculty of Civil Engineering, Rijeka, www.gradri.hr
11. Faculty of Civil Engineering, Zagreb, www.grad.hr
12. Faculty of Electrical Engineering and Computing, Zagreb, www.fer.unizg.hr

13. Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, Split, www.fesb.hr
14. Faculty of Electrical Engineering, Osijek, www.etfos.hr
15. Faculty of Engineering, Rijeka, www.riteh.hr
16. Faculty of Food Technology and Biotechnology, Zagreb, www.pbf.hr
17. Faculty of Food Technology, Osijek, www.ptfos.hr
18. Faculty of Forestry, Zagreb, www.sumfak.hr
19. Faculty of Geodesy, Zagreb, www.geof.hr
20. Faculty of Graphical Engineering, Zagreb, www.grf.hr
21. Faculty of Maritime Studies, Rijeka, www.pfri.hr
22. Faculty of Mechanical Engineering, Slavonski Brod, www.sfsb.hr
23. Faculty of Mechanical Engineering and Naval Architecture, Zagreb, www.fsb.hr
24. Faculty of Metallurgy, Sisak, www.simet.hr
25. Faculty of Mining, Geology and Petroleum Engineering, Zagreb, www.rgn.hr
26. Faculty of Textile Technology, Zagreb, www.ttf.hr
27. Faculty of Transport and Traffic Sciences, Zagreb, www.fpz.hr
28. HEP, Inc., Zagreb, www.hep.hr
29. IGH Institute, Inc., Zagreb, www.igh.hr
30. INA, Inc., Zagreb, www.ina.hr
31. Institute of Transportation and Communications, Zagreb, www.fpz.hr/ipv/
32. Josip Juraj Strossmayer University of Osijek, www.unios.hr
33. Karlovac University of Applied Sciences, www.vuka.hr
34. Končar – Electrical Engineering Institute, Inc., Zagreb, www.koncar-institut.hr
35. OIV – Transmitters and Communications, Ltd., Zagreb, www.oiv.hr
36. Polytechnics of Zagreb, www.tvz.hr
37. Supra Net, Ltd., www.supranet.hr
38. Uljanik Shipyard, Inc., Pula, www.uljanik.hr
39. University of Zagreb, www.unizg.hr
40. Vehicle Center of Croatia, Ltd., Zagreb, www.cvh.hr

Supporting Members of the Academy
(admitted July 1, 2013 –)

41. Croatia Airlines, Zagreb, www.croatiaairlines.com
42. DOK-ING, Ltd., Zagreb, www.dok-ing.hr
43. INETEC – Institute for Nuclear Technology, Ltd., Zagreb, www.inetec.hr/en/
44. INGRA, Inc., Zweigstelle, Düsseldorf, Germany, www.ingra.hr
45. OIKON, Ltd. – Institute for Applied Ecology, Zagreb, www.oikon.hr
46. Pliva Croatia, Inc., Zagreb, www.pliva.hr
47. PODRAVKA, Inc., Koprivnica, www.podravka.hr
48. PRONING DHI, Ltd., Zagreb, www.proning-dhi.hr
49. TEHNIX, Ltd., www.tehnix.hr
50. University of Dubrovnik, www.unidu.hr
51. Zagrebačke otpadne vode, Ltd., Zagreb, www.zov-zagreb.hr

More detailed information and facts about **Supporting Members** can be found at their web pages or Academies' web page www.hatz.hr or by personal contact in the Secretariat of Academy.

HONORARY MEMBERS OF THE ACADEMY

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

Honorary Member of the Academy may be a distinguished Croatian or foreign scientist who meets the criteria for membership in the Academy and who, by his/her lifelong activity, has made considerable contribution to the affirmation, recognition and reputation of engineering sciences in Croatia and abroad. Honorary members are elected by the Assembly of the Academy at the proposal of the Presidency.

Hereinafter is the list of Honorary Members of the Academy after the 29th Annual Assembly held on 16 May 2014:

1. **Gajski Daniel**, Prof. Ph.D.
2. **Kirinčić Josip,** Prof. Ph.D. (retired)
3. **Ladanyi Branko,** Prof. Emer. Ph.D. (retired)
4. **Lončarić Rudolf,** Prof. Ph.D. (retired)
5. **Primorac Dragan**, Prof. Ph.D., MD
6. **Richter Kurt**, Prof. Ph.D. (retired)
7. **Rožanić Igor,** Prof. Ph.D. (retired)
8. **Sokolija Kemo,** Prof. Ph.D.

DECEASED MEMBERS OF THE CROATIAN ACADEMY OF ENGINEERING (1993-2013)

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

On the occasion of the 20th anniversary of our Academy, with respect and gratitude we remember our members who died during this period and their contribution to the Academy, as well as the Croatian science and economy was held on 16 May 2014.

As the Academy recategorized its membership in 2010 pursuant to the valid Statute, the members who died before 2010 are listed in their old categories (Full Member of the Academy, Associate Member of the Academy, Collaborating Member of the Academy, Member Emeritus of the Academy, Correspondent Member of the Academy, Honorary Member of the Academy and Member Amicus of the Academy).

The members who died in 2010 and later are listed in their new categories (Member of the Academy, Associate of the Academy, Emeritus of the Academy, International Member of the Academy, while the category of of Honorary Member of the Academy was not changed). The category of Member Amicus of the Academy ceased to exist by adopting the new Statute of the Academy on 16 May 2014.

For certain deceased members we could not find certain data, although we did our best and searched our database and Archives, and therefore we apologize to the readers.

Ban, Siniša, Prof. Emer. Ph.D.
Born: 1914
Died: 2007
Department of Bioprocess Engineering
Honorary Member of the Academy (admitted 2000)

Bonefačić, Branko, Prof. Ph.D.
Born: 1923
Died: 1995
Department of Traffic and Transportation (admitted 1994)

Brlić, Vladimir, Ph.D.
Born: 1949
Died: 2011
Department of Communication Systems
Associate of the Academy (admitted)

Damjanić, Frano, Prof. Ph.D.
Born: 1944
Died: 1998
Department of Civil Engineering and Geodesy
Associate Member of the Academy (admitted 1994)

Dujmović, Nenad, Prof. Ph.D.
Born: 1942
Died: 2013
Department of Transport
Member of the Academy (admitted 2009)

Džanić, Husein, Prof. Ph.D.
Born: 1933
Died: 1994
Department of Chemical Engineering
Full Member of the Academy (admitted 1993)

Filajdić, Mirko, Prof. Ph.D.
Born: 1920
Died: 1998
Department of Bioprocess Engineering
Honorary Member of the Academy (admitted 1994)

Fleš, Dragutin, Prof. Emer. Ph.D.
Born: 1921
Died: 2005
Honorary Member of the Academy (admitted 1998)

Fritz, Franjo, Prof. Ph.D.
Born: 1932
Died: 1996
Department of Civil Engineering and Metallurgy
Associate Member of the Academy (admitted 1994)

Gamulin, Antun, Prof. Ph.D.
Born: 1931
Died: 1998
Department of Mechanical Engineering and Naval Architecure
Associate Member of the Academy (admitted 1994)

Glancer Šoljan, Margareta, Prof. Ph.D.
Born: 1944
Died: 2008
Department of Bioprocess Engineering
Associate Member of the Academy (admitted 2000)

Hrs, Ivo, Assist. Prof. Ph.D.
Born: 1937
Died: 1999
Department of Electrical Engineering and Electronics
Collaborating Member of the Academy (admitted 1994)

Johanides, Vera, Prof. Emer. Ph.D.
Born: 1917
Died: 2000
Department of Bioprocess Engineering
Honorary Member of the Academy (admitted 1994)

Kolombo, Marijan, Ph.D.
Born: 1925
Died: 2009
Member Amicus of the Academy (admitted 2002)

Konja, **Gordana,** Prof. Ph.D.
Born: 1944
Died: 1998
Department of Bioprocess Engineering
Associate Member of the Academy (admitted 1994)

Kordić, Zdenko, Prof. Ph.D.
Born: 1949
Died: 2004
Department of Mechanical Engineering and Naval Architecture
Associate Member of the Academy (admitted 1994)

Kostelić, Aurel, Prof. Ph.D.
Born: 1933
Died: 1997
Department of Mechanical Engineering and Naval Architecure
Associate Member of the Academy (admitted 1994)

Krpan, Mirko, Prof. Emer. Ph.D.
Born: 1924
Died: 2006
Department of Mechanical Engineering and Naval Architecure
Member Emeritus of the Academy (admitted 1993)

Lopašić, Vatroslav, Prof. Ph.D.
Born: 1911
Died: 2003
Honorary Member of the Academy (admitted 1994)

Lovrić, Josip, Prof. Ph.D.
Born: 1928
Died: 2012
Department of Transport
Emeritus of the Academy (admitted 1993)

Lovrić, Paško, Prof. Ph.D.
Born: 1937
Died: 1997
Department of Civil Engineering and Geodesy
Full Member of the Academy (admitted 1994)

Lukačević, Zvonimir, Prof. Ph.D.
Born:1935
Died:1998
Department of Mechanical Engineering and Naval Architecure
Associate Member of the Academy (admitted)

Maljković, Darko, Prof. Ph.D.
Born: 1935
Died: 2003
Department of Mining and Metallurgy
Full Member of the Academy (admitted 1993)

Marić, Vladimir, Prof. Ph.D.
Born: 1939
Died: 2009
Department of Bioprocess Engineering
Full Member of the Academy (admitted 1994)

Marković, Ivan, Prof. Ph.D.
Born:
Died: 2005
Department of Traffic and Transportation
Associate Member of the Academy (admitted 1993)

Miliša, Ante, Prof. Ph.D.
Born: 1937
Died: 2006
Department of Electrical Engineering and Electronics
Collaborating Member of the Academy (admitted 1994)

Mlinarić, Tomislav, Prof. Emer. Ph.D.
Born: 1932
Died:
Department of Transport
Member Emeritus of the Academy (admitted 1993)

Muftić, Osman, Prof. Emer. Ph.D.
Born: 1934
Died: 2010
Department of Systems and Cybernetics
Member Emeritus of the Academy (admitted 1993)

Muljević, Vladimir, Prof. Emer. Ph.D.
Born: 1913
Died: 2007
Honorary Member of the Academy (admitted 1993)

Plenković, Zlatko, Prof. Ph.D.
Born: 1917
Died: 2003
Honorary Member of the Academy (admitted 1994)

Podhorsky, Rikard, Prof. Ph.D.
Born:1902
Died: 1994
Honorary Member of the Academy (admitted 1994)

Popović, Krešimir, Prof. Ph.D.
Born: 1940
Died: 2003
Department of Chemical Engineering and the Related Fields
Associate Member of the Academy (admitted 1994)

Prikril, Boris,
Born: 1915
Died: 1995
Honorary Member of the Academy (admitted 1994)

Richter, Branimir, Prof.Ph.D.
Born: 1920
Died: 2012
Honorary Member of the Academy (admitted 2001)

Sertić, Vladimir, Prof. Ph.D.
Born: 1935
Died: 2002
Department of Chemical Engineering
Full Member of the Academy (admitted 1994)

Sladoljev, Želimir, Prof. Emer. Ph.D.
Born: 1932
Died: 2012
Department of Mechanical Engineering and Naval Architecture
Emeritus of the Academy (admitted 1993)

Smrkić, Zlatko,
Born: 1924
Died: 1995
Honorary Member of the Academy (admitted 1994)

Staniša, Branko, Prof. Ph.D.
Born: 1941
Died: 2013
Department of Power Systems
Emeritus of the Academy (admitted 1998)

Šantić, Ante, Prof. Emer. Ph.D.
Born: 1928
Died: 2008
Department of Electrical Engineering and Electronics
Full Member of the Academy (admitted 1994)

Štefanko, Stjepan, Prof. Ph.D.
Born: 1944
Died: 2013
Department of Electrical Engineering and Electronics
Associate Member of the Academy (admitted 1994)

Štulhofer, Mladen, Ph.D.
Born: 1924
Died: 2010
Honorary Member of the Academy (admitted 2001)

Wolf, Radenko, Prof. Ph.D.
Born: 1919
Died: 1997
Honorary Member of the Academy (admitted 1994)

Topolnik, Dražen, Prof. Ph.D.
Born: 1927
Died: 2014
Department of Transport
Emeritus of the Academy (admitted 2001)

Zenter, Ervin, Prof. Ph.D.
Born: 1931
Died: 2014
Department of Communication Systems
Emeritus of the Academy (admitted 1998)

Zgaga, Zoran, Prof. Ph.D.
Born: 1956
Died: 2011
Department of Bioprocess Engineering
Associate of the Academy (admitted 2000)
Members of the Croatian Academy of Engineering deceased in 2014

MEMBERS AMICI OF THE ACADEMY (2000-2013)

Secretary of the Editorial Board
Melanija Strika, B.S. (Prof. Soc.)

The category of Member Amicus of the Academy (2000-2013) was introduced in 2000, and ceased to exist by adopting the new Statute of the Academy on 16 May 2014. Members Amici of the Academy could become Croatian and foreign scientists, experts, entrepreneurs and other natural persons employed at institutions and companies that are supporting members of the Academy. Also, members amici could become individuals independent of legal entities and profession or job they pursed and who wanted to support and encourage the work of the Academy and participate in its work. Members Amici were elected by the Assembly of the Academy on the proposal of the Presidency.

Pursuant to the new Statute of the Academy in 2014 this category ceased to exist. On this occasion the Academy wishes to express gratitude to all former members amici for their contribution and interest for the activities of the Academy.

1. **Andrašec, Marijan**, Ph.D.
   Member Amicus (admitted 2002)
   State Institute for Measurements, Ulica grada Vukovara 78,
   10000 Zagreb

2. **Bauk, Antun**, M.Sc. (retired)
   Member Amicus (admitted 2002)
   INA – Naftaplin d.d., Šubićeva 29, 10000 Zagreb

3. **Bolanča, Matko**, MD.
   Member Amicus (admitted 2005)
   Pliva Hrvatska d.o.o., Ulica grada Vukovara 49, 10000 Zagreb

4. **Boras, Damir**, Prof. Ph.D.
   Member Amicus (admitted 2007)
   University of Zagreb, Maršal Tito Square 14, 10000 Zagreb

5. **Caharija, Alojz**, Ph.D. (retired)
   Member Amicus (admitted 2000)
   University of Zagreb, Faculty of Chemical Engineering and Technology,
   Savska cesta 16/5A, 10000 Zagreb

6. **Carić, Antun**, Assoc. Prof. Ph.D.
   Member Amicus (admitted 2002)
   KATE-KOM, Drvinje 109, 10000 Zagreb

7. **Čavlek, Miroslav**, Ph.D.
   Member Amicus (admitted 2000)
   University of Zagreb, Faculty of Agriculture, Svetošimunska 25,
   10 000 Zagreb

8. **Čović, Željko**, M.Sc.
   Member Amicus (admitted 2002)
   Pliva Hrvatska, Inc., Ulica grada Vukovara 49, 10000 Zagreb

9. **Črnjar, Mladen**, Ph.D.
   Member Amicus (admitted 2002)
   Primorsko-goranska County, Public Institution Institute of Physical Planning,
   Splitska 2/II, 51000 Rijeka

10. **Hofman, Marcel**, Prof. Ph.D.
    Member Amicus (admitted 2005)
    Hondsbergen 2, BE-3080 Tervuren, Belgium

11. **Husar, Ivan**, Assoc. Prof. Ph.D. (retired)
    Member Amicus (admitted 2002)
    Jukićeva 10, 10000 Zagreb

12. **Jakobović, Zvonimir**, Prof. Ph.D. (retired)
    Member Amicus (admitted 2002)
    Lexicographical Institute "Miroslav Krleža", Frankopanska 26,
    10000 Zagreb

13. **Jergović, Blanka**, Ph.D.
    Member Amicus (admitted 2002)
    Croatian Radio-Television, Croatian Radio, 1 Program, Prisavlje 3,
    10000 Zagreb

14. **Kolombo, Marijan**, Prof. Ph.D. (deceased 2009)
    Member Amicus (admitted 2002)
    INA – Petroleum Refinery Rijeka (retired 1990)

15. **Milčić, Branimir**, B.Sc. (retired)
    Member Amicus (admitted 2002)
    Vilka Šefera 8, 10000 Zagreb

16. **Mravak, Ivan**, M.Sc.
    Member Amicus (admitted 2005)
    Hrvatska elektroprivreda, Inc., Ulica grada Vukovara 37, 10000 Zagreb

17. **Šešok, Tatjana,** Mr. Pharm.
    Member Amicus (admitted 2005)
    BELUPO D. D., Danica 5, 48 000 Koprivnica

PROGRAM OF WORK OF THE GOVERNING BOARD OF THE CROATIAN ACADEMY OF ENGINEERING FROM 2013 TO 2017

President of the Academy
Prof. Vladimir Andročec, Ph.D.
Secretary-General of the Academy
Prof. Dubravko Rogale, Ph.D.

Preparing the candidacy for the leadership of the Croatian Academy of Engineering for the mandate period 2013-2017 a group of candidates including Prof. Vladimir Andročec, Ph.D., Prof. Vladimir Medved, Ph.D., Prof. Zdravko Terze, Ph.D. and Prof. Dubravko Rogale, Ph.D. conceived a program of activities of the Croatian Academy of Engineering (HATZ) which also represented the pre-election program of the group. The program included seven sub-groups of activities and a requirement to expand the organizational structure of the Academy.

New Governing Board of the Croatian Academy of Engineering will be leading the Academy in the next four-years mandate starting from July 1, 2013:
(from left to right) Prof. Stanko Tonković, Ph.D., Past-President of the Academy, Prof. Zdravko Terze, Ph.D., Vice-President of the Academy, Prof. Vladimir Andročec, Ph.D., President of the Academy, Prof. Vladimir Medved, Ph.D., Vice-President of the Academy, Prof. Dubravko Rogale, Ph.D., Secretary-General of the Academy

Starting point and expansion of scientific and technological influences

The candidates for the new leadership of the Academy began making its program of work and activities of the Academy, starting from the fact that in the last 20 years of the Academy's existence and work has been marked by numerous changes in the field of engineering sciences that were a stimulus to the development of new technologies. The candidates for the new leadership of the Academy began creating their program of work and activities of the Academy, starting from the fact that in the last 20 years of the Academy's existence and work have been marked by numerous changes in the field of engineering sciences that were a stimulus to the development of new technologies. It noticeably affected the state of the world and Croatian economy, the introduction and organization of new types of production and quality infrastructure. Furthermore, changes occurred in the area of human resources which affected different thinking about human resources. In addition, the role of the Academy of Engineering changed significantly, which initially played an extremely important role in stimulating synergies of engineering sciences, the development of infrastructure areas, the cooperation with economic and social disciplines, but now it itself had to adapt to changes and innovate their work procedure.

Thinking about the future of the Academy as a scientific community with the purpose of gaining support for their further existence, the candidates for the new leadership of the Academy studied the experiences of other academies in the world and Europe as well as of learned societies in the world. They concluded that the excessive preoccupation with past and present events causes disorientation in what inevitably happens and blurs tomorrow, positive vision and constructive activity. In a new period it is necessary to form the Academy as a working unit, which will help individuals and organizations, society in a broader sense, to prepare systematically for the future, acquire predicting and discussing skills, support and develop innovation culture, acquire and apply knowledge, communicate with authorities and economic infrastructure and engage in industry-science links. It was necessary to take into account that the world of work is gradually reshaped, and the question is raised how the individuals will deal with new circumstances, and what to do to overcome them in order to systematically overcome the consequences of knowledge obsolescence.

In the preceding period of its existence the Academy reinforced its staff and organizational structure. Thus, prerequisites were provided for active activities in which a series of notable results were achieved. However, circumstances in the world and Croatia significantly changed. It was also observed that the impact of globalization is growing, technology and information society are rapidly developing producing

results on which world and Croatian economy are based. With a number of advantages, this development was poorly predictable and recognized in Croatia, resulting in a deep economic crisis. The Croatian economy was weakened by war and transition problems, and poorly coped with changes and did not always have a clear vision of development, although it is a major component to be implemented for the prosperity of Croatia and its citizens. Cognitive, social and economic changes that have occurred particularly stressed the importance of the Academy and the role in overcoming problems and challenges in considering projects and ideas that will contribute to the development of the economy and thus of the wider community. Therefore, the future program of work of the Academy was based on these premises.

Strategic program and plan of activities

It is possible to develop the work of the Academy in several ways, taking into account its real power and mission. The program of work emphasizes:

a) Strengthening the cooperation with businesses entities, universities, institutes and ministries and to use the title of associate members instead of the previous title supporting members, to increase their numbers and to connect them better with the Academy through the work of the Departments and especially through the projects of the existing Centers of the Academy which have been established for these purposes. As for this cooperation there are two Standing Committees of the Academy: Committee for Economic and Regional Cooperation and Committee on Economic Cooperation and Promotion, they should be activated as the coordinating body or be dissolved. This strengthening of ties with economy and governmental institutions and the realization of a number of projects and contracts would increase the benefit of members as well as considerably strengthen the financial base of the Academy, and the revenue funds should be used for its development.

b) Organization of specialized conferences of each Department of the Academy dealing with current topics in the field of work of the Department. This would mean a larger number of events each year, which would not significantly burden the membership, but give meaning to the work of the Department.

c) Continuation of holding Central Conferences of the Academy “Technical Sciences for the Croatian economy” as scientific and professional conferences which proved to be a very useful gathering place of scientists and businessmen in the first decade of the Academy’s activities.

d) Strengthening of marketing campaigns to promote the Academy as a top scientific institution of the Croatian economy. This especially refers to the adoption of a declaration with views of contemporary problems of the Croatian economy and proposals on strategic development of Croatia. Scientific and technological themes and projects of interest for the development of the Croatian economy in the field of engineering and biotechnical sciences shall be proposed to relevant and responsible authorities. They should be realized by the Academy and associate members.

e) Continuation of supporting the publishing of books and publications of the Academy and the introduction of sponsorship in publishing books and papers of the Academy members; in this way they become editions of the Academy. The publication of a special representative annual of the Croatian Academy of Engineering on the occasion of the 20th Anniversary of the establishment of the Academy which would be promoted on the basis of Anniversary 2013 is especially envisioned.

f) Encouraging all members to work within the bodies of the Academy and to recognize their interest and make a contribution to the work of the Academy, and especially to the implementation of this program, which would steer the Academy in the direction of a useful, respected and engaged Croatian institution recognized in Europe and worldwide.

The Croatian Academy of Engineering is expected to impose itself , primarily to the political elite, as a reference institution in decision-making in engineering sciences, education, industrial policy and technological development, e.g. as far as the following topics and objectives are concerned:

- the Government provides initial support for large/capital productive emerging investments, and if necessary, it is also a co-investor on a temporary basis,
- it acts in public in such a way that it confirms industry and production in the mind of Croatian society,
- it creates an attitude towards politics in which science and industry jointly set basic social objectives and tasks in industrial policy.

The Croatian Academy of Engineering is expected to be active regarding other important topics such as:

- clear strategies of the development of Croatia and industrial policies,
- implemented clustering as an organizational model for international market presence, for development activities, for reducing costs and increasing competitiveness,
- improvement of the legislation favorable for the industry,
- improvement of the work of associations and other institutions relying on industry.

Model of membership mobilization

The members of the Academy are expected to cooperate in the academic community on strategic changes:

- they should update curricula introducing the criterion of future needs of the Croatian society, especially the needs of economy,
- they should reorganize universities in order to increase the efficiency of teaching and research in accordance with socially responsible activates,
- they should increase the focus of engineering faculties on the cooperation with industry, and connect financing research work with the needs of industry and its development projects.

Way to improve the efficiency of spending EU funds

Over the past decades, Croatia has failed to do lots of things, and therefore it is unrealistic to expect a stellar rise, but problem solving and effort to immediately achieve basic goals: increasing employment, higher industrial production, higher technological level of production, better standard of living as well higher level of social innovation, as a basis for the next development cycle present a challenge to the Academy. In the next period up to 2035 (a new development cycle), Croatia could, relying on the foundations created in the past, do a step forward which could position it at the level of development of the average EU28. Without a job well done by 2025, it will not be possible to make any significant shift in the new development cycle.

Due to the expected accession and successful integration into the European Union and the importance of engineering sciences and engineering professions in the revitalization of the Croatian economy the Croatian Academy of Engineering should be actively involved in the harmonization process of Croatian industrial entities (companies and institutes) in a new business and economic environment.

Since such an adaptation will often assume the necessity of technological development in individual areas, for which EU funds will be available, the action plan of the Croatian Academy of Engineering in the coming period will imply mediation between the academic community and business entities in order to increase the number of applications for structural projects as well as the efficiency of spending EU funds. Namely, the joint coordinated action of major industrial companies, small and medium sized enterprises (SME) and the entities of the academic community (universities and institutes) is often the basis for the preparation of successful EU consortia. The lack of information and professional connections and insuf-

ficient education of certain entities represents the main reason for the lack of project preparation. In this regard, in accordance with its central social position between the academic and economic community the Croatian Academy of Engineering should assume an important role in the field of information, expert preparation and provide assistance in the implementation of individual projects. These activities can be realized directly within the departments of the Croatian Academy of Engineering that will be encouraged to organize professional and preparatory workshops in accordance with the announcement of particular EU competitions whose monitoring and announcements will be one of the tasks of the Croatian Academy of Engineering. The Academy will be prompted to directly participate in the "partnership architecture" of individual projects, where the Academy can make an enormous contribution, both in terms of operational and technical preparation of project themes, and in the important role of coordinating activities, and particularly in the dissemination of the results achieved.

It is particularly important to understand the economic and social situation in Croatia, and on the basis of these facts suggest projects and develop them in cooperation with economy, governing bodies and academic community.

Examples of such structural projects with the objectives:
- regulated institutional Croatian innovation system,
- large and high-quality industrial zones protected from devastation and conversion, and a designed program of their development,
- traditional industries are in the process of innovation and
- industry should dispose of mechanisms to prompt innovation including all intellectual and other resources.

Program implementation by organizing conferences

The Croatian Academy of Engineering, as a forum for technical scientific and professional elite, have the responsibility and opportunity to initiate discussions on important topics within their scope of work, and to stand up for publication, understanding and use of knowledge and conclusions from these discussions.

Everything pointed out so far is the source of a number of themes for the activities of the Academy. Innovation and participation of the whole scientific community should be in the focus of considerations.

It is therefore necessary to consider the synergy of engineering sciences and then engineering and social sciences.

As the central project of our program of conferences we suggest the Multidisciplinary Conference "Engineering and Biotechnological Sciences for the Croatian economy" as the continuation of successful conferences from the first decade of activities of the Croatian Academy of Engineering. They should be certainly accommodated to significant contemporary topics.

The second project-conference should be based on knowledge of the Departments of the Academy and the title would be "Current Department Issues and Development Messages".

These would be conferences which would be organized by the Departments prompting discussions about important issues in the field of engineering sciences and economy. They would make a particular contribution to mutual understanding and possible cooperation among individual fields of engineering sciences, medicine, technology and other topics.

The third conference under the title of "Innovation Culture and its Strengthening" is envisaged as a regular annual event which would encompass various themes from the development of innovation ecology, over the protection of intellectual property to financing innovative undertakings. Special attention should be paid to cooperation with industry.

Effectiveness in enhancing ethical and moral integrity in engineering profession and society

Following the establishment of the Academy discussions engineering ethics started, and the first members agreed on the Code of Ethics which has been in force to the present day. It is the starting point which has been considered up to the present day. In preparation for the competition for membership in the Governing Board for the next four-year period we discussed what that period brings and what should be particularly emphasized in today's Code of Ethics. Is it intergenerational cooperation? Is it separate care for the young generation, which today must seek employment in the world and is exposed to moral dilemmas?

We also know that examples from the past are not suitable for teaching applied ethics in the circumstances of new technologies, which have the potential to radically change the fundamental nature of human life. In our culture of generational isolation, intergenerational pedagogy offers a form of learning that could, in some sense, compensate existing social separations.

Finance

The financial plan shall be based on the current method of financing and spending funds, seeking to find new sources and methods of financing.

Financial resources will be, besides membership fees, which should not be the main source of income, provided by:
- cooperation with government institutions
- cooperation with economy on the integrative principle
- implementing projects of the Academy (professional, scientific and international)
- spending of funds primarily related to the running costs, development, publication and holding of conferences.

Conclusion

On the basis of the guidelines of the qualification program in applying for the candidacy for the new leadership of the Academy the members of the Academy recognized the basic values contained in the program. On the basis of this program a group of candidates won the trust of members of the Academy and were elected to lead the Academy in the mandate period 2013-2017. The results achieved so far show that the new Governing Board of the Academy has been implementing their program guidelines successfully along with a number of other needs determined by the turbulent daily life to which the leaders of the Academy are successfully adapting.