

**REPORT OF THE EXPERT COMMISSION FOR EVALUATION OF QUALITY
AND EFFICIENCY OF SCIENTIFIC AND PROFESSIONAL WORK OF THE
FACULTY OF MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE**
Zagreb, Croatia

REPUBLIKA HRVATSKA
**AGENCIJA ZA ZNANOST I
VISOKO OBRAZOVANJE**

NATIONAL COUNCIL FOR SCIENCE
REPUBLIC OF CROATIA

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Evaluation performed on the September 27, 2007.

The National Council for Science of the Republic of Croatia appointed the Expert Commission for evaluation of quality and efficiency of scientific and professional work of the Faculty of Mechanical Engineering and Naval Architecture, Zagreb, on February 27, 2007.

The Members of the Commission :

Prof. Josip Brnic, Ph.D., Faculty of Engineering, University of Rijeka, Croatia,
Prof. Giorgio Trincas, Ph.D., Department of Naval Architecture, University of Trieste, Italy,
Prof. Per Lundqvist, Ph.D., KTH School of Industrial Engineering and Management,
Stockholm, Sweden.

REPORT

The form is filled on the basis of analysis of the evaluation form filled by the scientific organization (SO), review of the documents asked by the commission and interviews that commission members conducted during their visit to the SO.

I. General information

Evaluation of SO compared to:	A	B	C	D
Mission and goals	x			
Strategy and implementation of the strategic goals		x		
Compatibility of organization with strategic goals		x		
Compatibility of projects/programs with mission and strategic goals		x		
Infrastructure and equipment		x		
Human potential and staff policy		x		
Income structure			x	
Academic prestige		x		
Social influence		x		
SWOT analysis		x		
Other similar institutions in Croatia	x			
Other similar institutions in the EU		x		
Cooperation with other similar institutions in Croatia		x		
International cooperation		x		
Participation in university teaching (only	-	-	-	-

for research institutes)				
Average duration of writing MA (specialist) theses		x		
Average duration of writing doctoral theses		x		
Measures implemented for emancipation of junior scientists		x		
Transfer and commercialization of knowledge		x		
Promotion of science in the public			x	
Total grade	2	15	2	0

II. Quality and innovativeness of research

Evaluation of quality compared to:	A	B	C	D
Quality of research projects/programs		x		
Significance of contribution to a scientific area		x		
Scientific prestige of project/program managers	x			
Innovativeness of research		x		
Strategy of publishing scientific results*			x	
Strategy of publishing professional results*			x	
Quality of published scientific works		x		
Quality of other relevant research results		x		
Total grade of quality of research	1	5	2	0

***Explanation:** is judged according to proportion of works published in most prominent scientific (professional) magazines, taking into account specific situation within each scientific discipline

III. SO efficiency

Evaluation of efficiency compared to:	A	B	C	D
Number of defended doctoral theses		x		
Number of defended MA (specialist) theses		x		
Number of published scientific works			x	
Division of the number of published work among constituent units		x		
Number of published professional works		x		
Number of published scientific books and chapters in scientific books			x	
Other results of the similar rank		x		
Number of recognized Croatian and international patents		x		
Total efficiency grade	0	8	2	0

*During evaluation of efficiency it is essential to take into account the number and structure of the scientific staff and financial means SO has at its disposal for scientific research.

*Grade explanation:

A: excellent

B: good

C: satisfactory

D: unsatisfactory

COMMENTS AND RECOMMENDATION:

General Introduction

Visiting of the Faculty of Mechanical Engineering and Naval Architecture in general, as well as visiting of each department, laboratory, etc., was organized very well. Presentation of the Faculty and introduction to scientists and their scientific achievements, presentation of scientific projects, published scientific works as well as other scientific results, was also done very well.

The appointed Expert Commission for evaluation of quality and efficiency of scientific and professional work hereby states that Faculty of Mechanical Engineering and Naval Architecture is an Organization of appropriate scientific achievement, significant scientific potential and enough quality of infrastructure and laboratories.

It was however found that the distribution of the number of published work among constituent units is not on the same level but this actuality does not make smaller scientific achievement of the Faculty.

Our recommendation is to continue in the foreseen direction.

Detailed comments and recommendation

1. General Information

SO is generally well positioned in engineering with respect to present situation in European scientific standards and requirements from industry. Development in last five years shows that the character of SO is being slowly modified in order to adapt to changing situation. The way of changing follows an appropriate path.

Efforts are visible to improve scientific relations with Croatian industry and some European research institutions (common research for FP6 and competition for FP7).

Income structure reflects present position of Croatian industry and there is a notable trend of increasing participation of industry in financing and demand of scientific work by SO. Also there are a few examples of industry financing PhD students directly, which is a very desirable development.

The project/programs are proposed that will maximize utilization of present capacities and satisfy Croatian and European demands as much as possible. Although there is considerable improvement in instrumentation and research equipment, generally we can say that equipment is lagging behind requirements of modern industry. It may be remarked that several laboratories are up to the best standard in Europe today, while major part needs to be better equipped.

Average age of researchers and scientists is above average age of present European scientists. Very good impression was left by large number of junior researchers. Due to the present system of career advancement in Croatia, it results in a structure with too many professors at top position as compared to number of lectures and senior lectures.

Comparing SO with similar institutions in Croatia, up to our knowledge SO is the most advanced institution. As compared to similar EU institutions, the situation is variable. Some departments have reached very high level, but in some fields there is still considerable lag with respect to modern European institutions.

International cooperation in research and education may be improved but is subject to position of Croatia in European scientific area. This can be achieved through various programs such as ERASMUS.

The majority of junior researchers that participated in the meetings gave an impression of excellent scientific perspectives and ambitions; and probably they are the most valuable asset of SO.

Transfer of knowledge is restricted by the level of development of Croatian industry. Therefore more effort to transfer knowledge outside Croatia is advisable. It may be also suggested that promoting scientific work in the area of SO will provide better contact with industry in Croatia and abroad.

2. Quality and innovativeness

The evaluation procedure of research projects/programs demonstrates on average good quality of the proposals. Majority of projects and programs provide significant results especially when compared to the amount of financial support. Project/program managers are well known and active in the scientific community pertinent to respective discipline.

Due to the procedure of establishing innovativeness via applications for patent protection a relatively small number of patents are granted. According to our knowledge a number of high quality results is not protected as intellectual property. It is obvious that publication of scientific results is always restricted due to obligations to partners from industry. That is why strategy of publishing scientific and professional results leads to relatively low number of publications, especially on magazines because in many areas of mechanical and naval engineering number of high quality magazines is small.

The quality of scientific research results is good although number of publications might be higher.

It might be advisable to strive for a higher number of publication in international Journals, especially at some departments.

3. SO efficiency

The number of MA and PhD theses is mostly restricted to doctoral theses of junior researchers. Very rarely people from outside system of junior researchers, as defined by Croatian law, apply for PhD studies. There are indications and some initial results that the number of PhD students financed by industry is increasing. This trend should be encouraged as much as possible.

Constituent units that have the most developed cooperation with industry also demonstrate an increased number of publications. On the other hand, publication of scientific work is highly correlated to the system of career development and it is related to scientific projects financed by Ministry. Publications that stem from work on European projects, e.g. FP6, demonstrate very high quality.

Publication of books and chapters in scientific books are often restricted to publications in Croatian language and therefore with very limited number of readers. Very rarely the editions are above 300 copies and therefore of very restricted influence. In my opinion even lower number of books published in English circulation would produce more scientific and professional area.

As to patents we refer to aforementioned comments.

The Expert Commission for evaluation of quality and efficiency of scientific and professional work of the Faculty of Mechanical Engineering and Naval Architecture, Zagreb, emphasizes the judgment B (better than average) as grade of quality and efficiency.

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Rijeka, Trieste, Stockholm / October 5, 2007.

The Members of the Commission

Prof. Josip Brak, Ph.D.

Prof. Giorgio Trincas, Ph.D.

Prof. Per Lundqvist, Ph.D.

