

## Reflections on Education of Junior Researchers

In this issue of „*Strojarstvo-Mechanical Engineering*“ one cannot help but notice that the majority of authors' papers (scientists) are from Turkey. On the other hand, many papers from Turkish authors are received at the Editor's Office. The question could be asked how were these authors able to recognize the journal „*Strojarstvo-Mechanical Engineering*“? The answer to this stretches back to 1994 when a Commemorative Assembly „Fran Bošnjaković, - his Life and Work“ was held at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. Two professors from Turkey, Prof. Gurbuz Atagunduz Dr.Sc., and Prof. Ahmet Can, Dr.Sc., were present at that assembly. These two professors had been PhD students of Prof. Bošnjaković during his years-long stay in Germany, later becoming close associates. On that occasion, discussions were held on journals which covered the field of thermodynamics and they were shown a copy of the journal „*Strojarstv-Mechanical Engineering*“.

The professors in question very quickly published two of their papers and later other authors from Turkey followed suit; these were the authors who participated with their articles in the International Symposium „**Interclimate 2007**“. That same year, cooperation was established between the Dept. for Technical Thermodynamics FSB and several Depts. for Thermodynamics at some universities in Turkey (University of Edirne, Cumhuriyet University, Sivas) and this cooperation has continued up to the present day. Some colleagues from these universities „advertised“ the journal „*Strojarstvo-Mechanical Engineering*“ and induced other researchers to forward their papers for publishing precisely to „*Strojarstvo-Mechanical Engineering*“.

It should be pointed out that many young scientists work in prestigious research centres within faculties or institutes outside Turkey, either in Europe or in the USA, so that papers received have a high scientific standard in the reviewers' estimation. In other respects, in discussions with eminent professors from various Turkish universities it emerged that on completion of graduate studies, their young scientists mainly leave for renowned world universities in order to acquire a doctorate in science. Expenses for their stay abroad are borne by the state of Turkey in the form of a scholarship. On completion of their doctoral studies, they return to Turkey and are given positions at many newly-opened universities throughout Turkey. They stated that currently 4,000,000 students are studying in Turkey!

It is my opinion that such a model of acquiring a doctorate of science should be applied also in Croatia. This opinion is based on personal experience in work with my junior researcher, whose doctoral theme is based predominantly on experiment (the subject/theme encompassed researching desiccated grain in a fluidized layer!). Establishing a measuring line required painstaking effort and was time-consuming in order to obtain relevant results. Although some measuring components with a certificate were purchased, in installing them in the measuring line it was noted that the indicated measuring values were completely at variance from the physically anticipated results. Subsequently, much time was spent in pinpointing the causes of these measuring errors so that it was impossible within the first three years of research to publish even one paper from this research area. Following this, some results of our research were published at the 17th International Symposium on Desiccation in Magdeburg. As participants at that symposium, we had the opportunity of visiting one research centre which was engaged precisely in treating the process of desiccation in a fluidized layer: this was in the University „Otto von Guericke“ in Magdeberg. Observing state-of-the-art equipment and high level of that research centre confirms the point above-mentioned: i.e., it is desirable and opportune to provide both financial backing and time for our junior researchers to work on their doctorate at such centres, at least the experimental part, if not the entire doctorate. I was informed that this research centre accepts doctoral candidates not only from all over Germany but also from other foreign countries. Working in that research centre, I believe that the junior researcher will achieve far greater relevant results for the same amount of time spent on research, thereby giving a cutting edge to his doctoral dissertation.

It is also important to underline that junior researchers have sufficient obligations also in teaching, especially with the introduction of the Bologna process. These teaching commitments naturally depend in which Dept. the junior researchers work. It is known that certain Depts. have a great number of students and this means a lot of lecturing, exercises, preliminary exams as well as many students both at preliminary exams as well as final examinations, which certainly represents an additional burden for all, including junior researchers, in such an large-scale teaching process.

Therefore, on the basis of the above, a model of education for junior researchers, which to a great extent is applied at the Universities in Turkey, is considered by me to be acceptable for the education of our junior researchers. Naturally, the bottom line is that following complete or partial education they return to their own Dept. at the faculty, in line with those doctoral candidates who, under the terms of contract in Turkey, return to their Depts. at their own faculties.