

## Razgovor s prof. W.J. Bartzom (2)

U nastavku razgovora s prof. Bartzom zanimalo nas kako je u Austriji organiziran znanstveno istraživački rad, njegovo financiranje i sponzoriranje.

Prof. Bartz nam je pojasnio da je na Tehničkom fakultetu u Beču već oko 15 godina honorarni profesor gdje održava predavanja usmjerena praksi pod naslovom *Tribologija za strojarske inženjere* što uključuje osnovne tribologije, maziva i njihovu primjenu. Zanimljivo je da je broj slušatelja, studenata obično vrlo mali, između pet i osam. Međutim, posljednjih nekoliko godina pozivaju se gosti i slušatelji iz industrije na ta predavanja, tj. zainteresirani se prijave i sudjeluju u nastavi, pa se dogodilo da sada ima više prisutnih gostiju slušatelja iz industrije nego redovitih studenata.

Ono što mislim da je zanimljivo i o čemu bi bilo dobro dati više podataka jest razvoj i definicija takozvanih kompetencijskih centara ili nadležnih središta (u slobodnom prijevodu), tj. potpuno novog oblika suradnje između industrije i vlade, odnosno austrijske savezne vlade i zemaljskih ili pokrajinskih vlasti. Ovi kompetencijski centri uspostavljeni su i utemeljeni prije nekoliko godina za različita stručna područja, često kao odvojeni dijelovi fakultetskih laboratorija ili sveučilišnih ustanova u kojima su se okupili stručnjaci i dio potrebne opreme. U jednom je trenutku došlo do nadmetanja između različitih ideja o tome gdje i na kojem će se stručnom području uspostaviti jedan kompetencijski centar. Naravno da je bilo važno poštivati okolnosti u Austriji tako da se ne uspostave svi kompetencijski centri samo u jednoj saveznoj pokrajini, pa su različiti centri osnovani u pojedinim pokrajinama. Budući da se nije nigdje organizirao kompetencijski centar za tribologiju, pokazala se dobra prigoda da razradimo naš koncept uspostave jednog takvog centra. Prof. Franek, prof. Pauschitz i ja smo predložili uspostavu takvog kompetencijskog centra za tribologiju. Konceptcija je evaluirana i procijenjena od jedne državne ustanove čime smo dobili zeleno svjetlo za sastavljanje radne grupe za temeljitiju ocjenu. Ta je skupina obavila procjenu i dala suglasnost, kojom smo postali austrijski kompetencijski centar za tribologiju ACCT, što kraće nazivamo AC<sup>C</sup>T, te izgovaramo kao act research. Ideja koja stoji iza projekta jest poboljšanje suradnje između industrije i financijera koji osiguravaju potreban novac. Treba definirati projekte, pretežito od industrije, premda često imamo i sami ideje te tada tražimo poduzeća partnere ili suradnike kojima predložimo suradnju na razradi tih projekata. To mogu biti pojedina poduzeća, ali i više njih, i nadalje, imamo znanstvene partnere kao sveučilište u Beču ili Istraživački centar Seibersdorf. Od poduzeća partnera se očekuje podmirenje jedne trećine troškova a preostale dvije trećine će se dobiti od poticajnih sredstava koja daju savezna i pokrajinske vlade te lokalne vlasti. Visina ukupnih sredstava koja se mogu tako prikupiti je ograničena na 1 milijun eura godišnje, što znači da moramo od poduzeća partnera prikupiti 300000 eura. Prvi nam je cilj bio osigurati program u toj visini za četiri godine, što smo i ostvarili, a više nismo mogli niti preuzeti budući da nismo mogli dobiti za to više poticajnih sredstava. Tada smo počeli preuzimati dodatne istraživačke, razvojne i ispitne narudžbe izvan poticajnih sredstava. Projekte za koje smo osigurali poticajna

sredstva nazivamo K plus projektima, dok su oni za koje nisu osigurana poticajna sredstva nazvani non K plus projektima, koje ugovaramo direktno s industrijom. Pri tome smo se pokazali vrlo uspješnim, budući da smo u ovoj godini ugovorili iznimno mnogo non K plus projekata. To je dobro i zbog toga što nam iduće godine krajem listopada dolazi kraj četverogodišnjeg ugovorenog rada na dosadašnjim ugovorenim projektima poslije čega postoji mogućnost produljenja za još samo tri godine. Da bismo ostvarili to produljenje, opet moramo biti podvrgnuti procjeni naših rezultata, a ta evaluacija će uslijediti u prosincu ove godine. U tom cilju moramo postaviti zahtjev u kojem ćemo detaljno izložiti ciljeve i program nastavka rada. Uz to moramo osigurati i pisma namjere naših partnera iz industrije da su spremni kroz sljedeće tri godine financirati određeni projekt, s točno procijenjenim i utvrđenim iznosom, što svakako neće biti lak zadatak.

Do sad smo bili uspješni te smo postigli da nam se količina poticajnih sredstava povećala na 1,3 milijuna eura godišnje ili gotovo 4 milijuna za slijedeće tri godine. Dobili smo toliko pisama namjere da smo čak i nadvisili spomenutih 1,3 milijuna, što više nismo mogli ni prihvatiti, budući da za te projekte više ne bismo mogli dobiti poticajna sredstva. To nam dokazuje da postoji interes industrije i da su naručitelji zadovoljni našim radom. Od nas se očekuje i objavljivanje publikacija o tim istraživanjima. To nam ponekad stvara probleme s industrijom koja nije sklona objavljivanju rezultata koje namjerava sama primijeniti.

Ovog časa imamo već između 40 i 50 suradnika u našim laboratorijima. Više od polovice ih ima akademsko obrazovanje od čega je većina i promovirala, što znači da imamo vrlo visoku razinu stručne spreme. Na nižoj razini često radimo s onima koji rade diplomske radove ili doktorske disertacije na drugim institucijama, i konačno, imamo i zaposlenike koji rade sa skraćenim radnim vremenom u laboratorijima ili ispitnim stanicama.

Već smo i danas osigurali takav status da možemo opstati i bez poticajnih sredstava, ali ne i sa svih 50 suradnika. Ovog časa bismo mogli s dvadesetak najvažnijih suradnika nastaviti rad na non K plus projektima. Već smo danas tako organizirani da su sve aktivnosti uključene u društvo s ograničenim jamstvom s tri vlasnika od kojih je jedan tribološko društvo, drugi sveučilište u Beču, a treći je jedna banka, a svi zajedno posjeduju 75%, dok je preostalih 25% podijeljeno na pojedince koji su se vrlo snažno uključili te vode mnoge znanstveno istraživačke poslove. Sve vrlo dobro funkcionira te postoji uprava društva ispod koje su voditelji pojedinih projekata. Postoje *senior researcheri* ili iskusni istraživači koji su uključeni u nekoliko projekata, dok ispod te razine imamo mlađe istraživače koji rade djelomično i samostalno a djelomično pod vodstvom starijih. Stvorili smo još jednu razinu tzv. ključnih istraživača ili *key researchera* od kojih se očekuje da usmjeravaju istraživanja, dakle, svojim znanjem i iskustvom doprinose rezultatima i surađuju s iskusnim istraživačima.

Sveučilište u Austriji je dobilo novi statut temeljem kojeg će postati poduzeće pa će se mnoge stvari značajno promijeniti. Tako npr. više neće biti honorarnih profesora. Međutim, za naš rad je vrlo važno da sam ja angažiran i na sveučilištu pa sam stoga

pratio ili kao mentor vodio brojne doktorske radove čime se postigla određena međusobna povezanost sveučilišnih i poslova koje obavlja kompetencijski centar. Jasno je da ipak postoje problemi i poteškoće, ali su oni zato tu da se i rješavaju. Sjećam se vremena iz mojih ranijih dana na Institutu za istraživanje nafte u Hanoveru kada je naš rukovoditelj uvijek govorio da ga ne zanima da li će se ovo ili ono moći obaviti, već samo kako će se to napraviti. Polazimo od toga da ćemo to obaviti, a raspravljajmo o tome kako da to najbolje izvedemo.

*(završetak razgovora s prof. Bartzom donosimo u sljedećem broju)*

Razgovor vodio i pripremio Ivo Legiša /

### **Interview with Prof. Bartz (2)**

Continuing our conversation with Prof. Bartz, we wanted to know how the scientific research work is organized in Austria, and how is it financed and sponsored.

Prof. Bartz explained that for the past about 15 years now he has been an associate professor at the Faculty of Technology in Vienna. His lectures are very much oriented towards the actual practice, entitled *Tribology for Mechanical Engineers*, including basic tribology, lubricants, and their application. It is interesting that the number of attendants – students – is usually quite low: between five and eight. However, over the past few years they have started inviting guests and industrial experts to attend the lectures: those who are interested apply and take part in the lectures, which is why now there are more guest-attendants already employed in the industry than regular students.

What I feel to be interesting and worthy of more information is the development and definition of the so called competence centers – an entirely new form of co-operation between industry and government i.e. the Austrian Federal Government and the regional authorities. These competence centers have been established several years ago for various expert areas, often as separated parts of faculty laboratories or university institutions gathering experts and some of the necessary equipment. At one point there was a competition between various ideas on where (in which area of

expertise) to establish a competence center. Of course, it was highly important to respect the circumstances in Austria, so that all competence centres could not be established within a single federal province, but rather various centres were established in different individual provinces. Since a competence center for tribology was not organized yet, it seemed like a good opportunity to develop our concept of establishing such a center. Prof. Franek, Prof. Pauschitz and myself have suggested the establishment of such a competence centre for tribology. The concept was evaluated by a federal institution, giving us permission to appoint a task force for a more thorough evaluation. The task force gave us its clearance after evaluation, owing to which the Austrian Competence Center for Tribology ACCT, or AC<sup>C</sup>T, pronounced as "act research", was established. The idea beyond the project is improved co-operation between the industry and the investors ensuring the necessary funds. Projects need to be defined, mostly on the part of the industry, although often we have ideas ourselves, in which case we search for companies as partners or associates to help us develop the projects in question. They may be individual companies, or several of them. We also have scientific partners, such as the Vienna University or the Seibersdorf Research Centre. The companies-partners are expected to cover one third of the costs, while the remaining two thirds shall be covered by stimulating funds provided by the federal government and the regional as well as local authorities. The total amount of funds that may be collected in this way is limited to Euro 1 million per year, which means that our partner companies need to provide Euro 300,000. Our first goal was to ensure the program in that amount for four years, which we have managed to accomplish. We would not be able to take over any more projects in any case, since no more stimulating funds for them were available. That is why we started to take over additional research, development and testing orders outside the stimulating funds. The projects for which stimulating funds were ensured are called the K plus projects, while those for which they were not ensured are called the non-K-plus projects, negotiated directly with the industry. We have been most successful in this, having arranged for a very high number of non-K-plus projects this year. This is good also because next year towards the end of October runs out our four-year agreement for the so far projects, with the possible extension for only three years more. In order to obtain the extension, our results need to be evaluated, and the evaluation is due for December this year. We must submit a request stating in detail the purposes and program of our continued operation. We must also ensure Letters of Intent of our industrial partners stating their preparedness to finance a given project over the next three years, specifically stating the amount involved, which is by no means an easy task.

So far we have been successful, owing to which the amount of our stimulating funds went up to Euro 1.3 million or nearly 4 million for the next three years. We have received so many Letters of Intent that we have even topped the said 1.3 million, which we were no longer able to accept, since in that case we would no longer be able to receive any stimulating funds. This proves that there is an interest on the part of the industry and that the commissioners are satisfied with our work. We are also

expected to issue publications on the said research. This sometimes causes problems with the industry which is not too happy about publishing results it intends to apply on its own.

At the moment, we already have between 40 and 50 associates in our laboratories. More than a half are academically trained, which means that we have a high level of professional qualifications. At a lower level, we often work with those finishing their graduations or doctor's dissertations at other institutions, and finally, there are employees working part time at our laboratories and testing rig equipment.

We already enjoy the status owing to which we may survive even without stimulating funds, but not with the present 50 associates. For the time being, we could continue the work on the non-K-plus projects with our 20 most important associates. We are already organized in the manner that all the activities are included into a company with three owners: a tribological society, the Vienna University, and a bank, owning the total of 75 %, while the remaining 25 % are highly involved individuals, conducting many scientific research projects themselves. Everything functions very well, and there is company management above individual project managers. There are *senior researchers* involved in several projects, with junior researchers underneath them, working partly independently and partly under the guidance of the senior ones. We have created another level of the so called *key researchers* expected to direct the research i.e. contribute through their knowledge and experience to the results and co-operate with senior researchers.

The University in Austria has new Statutes under which it is to become a company, owing to which many things will change considerably. Thus, for instance, there shall be no more associate professors. However, it is highly important for our work that I am also personally engaged at the University, having supervised or acted as mentor of numerous doctor's dissertations and thus having achieved connection between the tasks accomplished by the university and those of the competence center. Of course, there are still problems and difficulties, but they are here only to be resolved. I remember my early days at the Petroleum Research Institute in Hanover when our manager always said that he was not interested in whether something could be done, but only in how it shall be done. We work on the assumption that we shall do it, and than discuss how it may be done in the best way possible.

*(the end of our interview with Prof. Bartz will appear in the next issue)*

Interviewed and prepared by Ivo Legiša