

IN MEMORIAM:
Prof. Dr. Davorin Kovačić, grad. civ. eng.
(Mar. 29th, 1945 – Feb. 17th, 2019)

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Commemoration



Our distinguished professor, Davorin Kovačić, passed away on February 17th, 2019. He was a member of the Faculty of Mining, Geology and Petroleum Engineering from 1991 to 1996, and he participated in scientific and professional work with numerous colleagues at the Faculty of Mining, Geology and Petroleum Engineering in the fields of geotechnical engineering and environmental geotechnics.

Professor Davorin Kovačić was born in Zagreb on March 29th, 1945, where he finished elementary school and grammar school. He enrolled in the Faculty of Civil Engineering, at the University of Zagreb in 1964, graduated in 1969, and was awarded the title of a graduate engineer in civil engineering. He obtained his Master's degree in 1976 with the theme "The analysis of an excavation process using finite elements and critical state model" at The College, Swansea University, Wales, UK. He received his doctorate in 1989 at the Faculty of Civil Engineering, University of Zagreb with the topic "Numeričko rješavanje dvodimenzionalne konsolidacije tla" ("Numerical analyses of two-dimensional soil consolidation") and gained the academic title of Doctor of Technical Sciences, in the field of civil engineering.

In 1970, he was employed at the Department for Concrete Structures of the Faculty of Civil Engineering of the University of Zagreb as an expert associate. As early as 1972, he moved to the company Geotehnika - Institut Geoexpert, Zagreb as an associate designer. From 1974 to 1975, he resided in the United Kingdom as a postgraduate student at The College, Swansea University, Wales. After that, he returned to the Institut Geoexpert, first as a designer and later as a group manager. After gaining the academic degree of Doctor of Technical Sciences, from 1989 to 1991 he became the manager of the Department for Research and Development of Geotehnika, Zagreb. In that period, he had already started his academic career. From 1983 to 1990, he was a guest lecturer for the subject of Foundations at the Faculty of Civil Engineering, University of Mostar. In 1991, he was employed at the Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb, first as an assistant professor, and later as an associate professor of

technical sciences, in the field of civil engineering, branch of geotechnics. He was the lecturer for the subjects: Soil mechanics and foundation engineering, Geotechnical structures, Numerical methods in soil and rock mechanics and Geotechnical Principles of Landfills. He also taught the course Application of numerical methods in geotechnics in the postgraduate study of Faculty of Mining, Geology and Petroleum Engineering. After that, he returned to the economic sector where he was the general manager of the company BBR Conex, d.d., Zagreb from 1996 to 2003. In 2003, he continued his university career at the Geotechnical Faculty in Varaždin, University of Zagreb, first as an associate professor, and then as a full professor from 2009 onward. At the Geotechnical Faculty, he held the following courses: Introduction to Geotechnics, Soil Mechanics, Earth Dams, Introduction to Geoengineering and Waste Management. During that period, he also acted as the Vice Dean of education at the Geotechnical Faculty in Varaždin for two terms, from the academic year of 2006/2007 to the academic year of 2009/2010. There, he was the leader of a task force for the new Bologna study program of Geoengineering. With his great involvement in the Council of technical studies of the University of Zagreb, he initiated a proposal for amendments to the policies in scientific and artistic studies, fields and branches, which ultimately resulted in the introduction of Environmental Engineering as a new branch in the field of Interdisciplinary technical sciences. He retired from the Geotechnical Faculty on September 30th, 2010. He remained active, and was engaged in the company Geoekspert d.o.o. in Zagreb from 2010 almost until the day he passed away. In addition, it should be noted that during his academic career, in the academic year of 2004/2005 to the academic year of 2008/2009, he was the course director for the courses of Landfills at the University Interdisciplinary Postgraduate Study of Eco-engineering, as well as an active participant in the negotiations for the founding of a joint doctoral study Geoengineering and Water Management, which was later implemented by universities in Zagreb, Graz, Maribor and Budapest. He was also a mentor to numerous students in the preparation of their final and graduate theses, one candidate for her master's degree, two doctoral theses and several works were awarded with the Rector's Award.

Scientific research by Professor Kovačić began during his studies in the UK in the field of numerical modelling in geotechnics, which continued throughout his career. Later, his interest was focused on another new area, applying geotechnics in the protection of the environment. In this area, he certainly represents one of the founders of the develop-

ment of this subdiscipline in Croatia. He published about fifty scientific and professional papers. In 1996, he was co-author of a chapter published in the Construction Yearbook titled "Geotehnologija pri odlaganju komunalnog otpada" ("Geotechnology in Municipal Waste Disposal").

In the period from 1996 to 1998, he was the principal investigator of an international project entitled "Applicability of materials from flysch coastal regions of Croatia for the construction of impervious barriers in sanitary landfills" within the U.S. - Croatian Science and Technology Program and in cooperation with the University of Colorado Boulder. He was also the principal investigator of two scientific projects funded by MZOS: "Geotehnologija za odlagališta otpada" ("Geotechnology for Landfills") and "Karakterizacija krutog komunalnog otpada" ("Characterization of Solid Municipal Waste"). He participated in seven other domestic and international scientific projects. He was actively involved in the organization of the first symposium on waste management in Croatia in the early 1990s. This conference has been continuously organized in Zagreb to this day under the name Međunarodni simpozij gospodarenja otpadom (the International Waste Management Symposium).

He was the principal investigator of the first TEMPUS and CEEPUS projects at Faculty of Mining, Geology and Petroleum Engineering, through which an intensive international exchange of teachers and students was realized. The TEMPUS project called "Advanced Computational Engineering Mechanics" took place during the war-torn years from 1991 to 1994, so the establishment of international co-operation at that time was more difficult and all the more significant for every participant since the exchange was conducted with universities from the UK, the Netherlands, Germany and other Western European countries. The CEEPUS project "Geotechnology of Environmental Protection" was a project established in the academic year of 1996/1997 between the University of Zagreb and Gdansk University of Technology, Poland. Through these projects, Professor Kovačić was a guest lecturer twice at the University of Colorado Boulder, Department of Civil, Environmental and Architectural Engineering in the United States and at the University of Technology in Gdansk, Faculty of Civil and Environmental Engineering in Poland.

Dr. Sc. Davorin Kovačić was very active in the geotechnical profession. He created several software packages at the very beginning of his career. He participated in a number of significant projects, as a designer or design reviewer. Here are just a few of them: HE Obrovac, HE Rama, projects of deep foundations in Baghdad and Moscow, protection of construction pits in Leningrad and Zagreb, a water supply project in Sudan, the Ploče harbour, the Mirna viaduct, Krčki most (Krki Bridge), Dubrovački most (Dubrovnik Bridge), Centar za zbrinjavanje otpada Marišćina (Center for waste management Marišćina), the Zalužje - Varaždin landslide, protection of the Urinj River - Rijeka, and Arena centar - Zagreb. He also published his professional experiences in works and handbooks, of which we single out the handbook entitled "Mlazno injektiranje – prikaz tehnologije i primjene mlaznog injektiranja" ("Jet Grouting – technology and practical applications"), published in 1997.

He was a member of several Technical Committees in the State Bureau of Standards and Metrology. He was also active in the Croatian Chamber of Civil Engineers. Several

times at the Days of Chartered Engineers, he was the head of the section. He also received an award for the meritorious members of the Society of Civil Engineers and Technicians of Croatia.

He held numerous invited lectures and was a member of professional associations in which he held important functions. From 1983 to 1986, he was secretary of the Društvo za mehaniku tla i temeljenje Hrvatske (Society of Soil Mechanics and Foundations of Croatia), and from 1986 to 1990 he was its president. Today's Croatian Geotechnical Society has emerged from that society, in which Professor Kovačić again made a significant contribution as a member of the board of directors, and he participated in the organization of numerous domestic and international symposia in an organizational or scientific board. In more recent years, Professor Kovačić was a member of Editorial Board of the Glasnik Hrvatskog geotehničkog društva (Newsletter of the Croatian Geotechnical Society). In that period, Glasnik acquired a new attractive look and richer content, and Professor Kovačić was very active and encouraging in the creation of articles for each publication. In 2018, he was appointed as a meritorious member of the Croatian Geotechnical Society for his outstanding contribution.

In 2005, Professor Kovačić was accepted as an associate member of the Croatian Academy of Engineering, in the Department of Civil Engineering and Geodesy. Professor Kovačić left a significant mark there as well. From 2013 to 2017, he was Secretary of the Department of Civil Engineering and Geodesy, and as of a few years ago, he was named Emeritus of the Academy. He was one of the initiators of a series of scientific and professional conferences on the topic of Waste Management and Environmental Protection Technology, the first of which was held in Varaždin in 2006 and the last in Zadar in 2009.

He was a member of international associations: ISSMGE - International Society for Soil Mechanics and Geotechnical Engineering and ISRM - International Society for Rock Mechanics.

Many of his collaborators in any of the numerous institutions where he worked or with whom he collaborated could certainly say a lot about Professor Kovačić's substantial career, his style and work habits. Professor Kovačić was a thorough, disciplined, accurate, excellent lecturer and pedagogue, an inspirational mentor, theorist and practitioner, always ready for challenges, and the initiator of numerous activities. Although Professor Kovačić worked at the Faculty of Mining, Geology and Petroleum Engineering for only five years, he continued to cooperate with all his close associates throughout the years that followed. This was a very productive and intensive period of scientific-educational work in our geotechnical group, but so much more than that. It was not difficult to achieve good results in the stimulating and comfortable atmosphere created by Professor Kovačić. It is hard to believe that Professor Kovačić has left us, and we are aware of the great loss for all those involved, including the employees of the Faculty of Mining, Geology and Petroleum Engineering. His contribution to the Faculty of Mining, Geology and Petroleum Engineering and all the other institutions where he worked was exceptional and for this, we are extremely grateful to him.



IN MEMORIAM: prof. dr. sc. Davorin Kovačić, dipl. ing. građ. (29. III. 1945. – 17. II. 2019.)

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Sjećanje



Cijenjeni profesor Davorin Kovačić preminuo je 17. veljače 2019. godine. Bio je djelatnik Rudarsko-geološko-naftnoga fakulteta od 1991. do 1996. godine, a surađivao je i nakon toga u znanstveno-nastavnome i stručnome radu s brojnim kolegama Rudarsko-geološko-naftnoga fakulteta u području geotehnike i geotehničkoga inženjerstva okoliša.

Profesor Davorin Kovačić rođen je u Zagrebu 29. ožujka 1945. godine, gdje je završio osnovnu školu i gimnaziju. Studij na Građevinskome fakultetu Sveučilišta u Zagrebu upisuje 1964., a završava 1969. godine i stječe zvanje diplomiranoga inženjera građevinarstva. Magistrirao je 1976. godine s temom *The analysis of an excavation process using finite elements and critical state model* na sveučilištu University College of Swansea, Wales, UK. Doktorirao je 1989. godine na Građevinskome fakultetu Sveučilišta u Zagrebu s temom *Numeričko rješavanje dvodimenzionalne konsolidacije tla* te stekao akademski naziv doktora tehničkih znanosti, polje građevinarstvo.

U Zavodu za betonske konstrukcije Građevinskoga fakulteta Sveučilišta u Zagrebu zapošljava se 1970. godine kao stručni suradnik. Već 1972. godine prelazi u poduzeće Geotehnika - Institut Geoexpert, Zagreb, kao projektant suradnik. Od 1974. do 1975. godine boravi u Velikoj Britaniji kao student poslijediplomskoga studija na sveučilištu University College of Swansea, Wales. Nakon toga vraća se ponovo u Institut Geoexpert najprije kao projektant, a poslije kao voditelj grupe. Nakon stjecanja akademskoga stupnja doktora tehničkih znanosti od 1989. do 1991. godine postaje rukovoditelj Sektora za razvoj tvrtke Geotehnika, Zagreb. U tome je razdoblju već započeo i svoju akademsku karijeru. Od 1983. do 1990. godine bio je gostujući nastavnik za predmet Fundiranje na Građevinskome fakultetu Sveučilišta u Mostaru. 1991. godine zapošljava se na Rudarsko-geološko-naftnome fakultetu Sveučilišta u Zagrebu najprije kao docent, a poslije kao izvanredni profesor iz područja tehničkih znanosti,

polje građevinarstvo, grana geotehnika. Bio je nositelj predmeta Mehanika tla i temeljenje, Geotehnički objekti, Primjena računala u mehanici tla i mehanici stijena i Geotehnički principi odlagališta otpada. Također, u sunositeljstvu predaje i kolegij Primjena numeričkih metoda u geotehnici na poslijediplomskome studiju RGNF-a. Nakon toga vraća se u gospodarski sektor, gdje je od 1996. do 2003. godine bio direktor trgovačkoga društva BBR Conex, d.d., Zagreb. 2003. godine nastavlja sveučilišnu karijeru na Geotehničkome fakultetu u Varaždinu Sveučilišta u Zagrebu najprije kao izvanredni profesor, a zatim od 2009. godine kao redoviti profesor. Na Geotehničkome fakultetu bio je nositelj sljedećih kolegija: Uvod u geotehniku, Mehanika tla, Nasute brane, Uvod u geoinženjerstvo i Gospodarenje otpadom. Tijekom toga razdoblja obnašao je i dužnost prodekana za nastavu na Geotehničkome fakultetu u Varaždinu u dvama mandatima, tj. od ak. godine 2006./2007. do ak. god. 2009./2010. Ondje je bio voditelj radne skupine za novi bolonjski studijski program Geoinženjerstvo. Svojim velikim angažmanom u Vijeću tehničkog područja Sveučilišta u Zagrebu pokrenuo je prijedlog izmjena Pravilnika o znanstvenim i umjetničkim područjima, poljima i granama, što je u konačnici rezultiralo uvođenjem inženjerstva okoliša kao nove grane u polju interdisciplinarnog tehničke znanosti. S Geotehničkoga fakulteta odlazi u mirovinu 30. rujna 2010. godine. I dalje aktivan, od 2010. godine pa gotovo do posljednjega dana svojega života bio je angažiran u tvrtki Geoexpert d.o.o. iz Zagreba. Osim toga, valja spomenuti da je tijekom svoje akademske karijere bio od ak. godine 2004./2005. do ak. godine 2008./2009. nositelj kolegija Odlagališta otpada na sveučilišnome interdisciplinarnome poslijediplomskom studiju Ekoinženjerstvo te aktivni sudionik pregovora prilikom osnivanja združenoga doktorskoga studija Geoengineering and Water management koji su poslije izvodila sveučilišta u Zagrebu, Grazu, Mariboru i Budimpešti. Također, bio je mentor brojnim studentima pri izradi završnih i diplomskih radova, jednoj kandidatkinji za magistarski rad, dva doktorska rada i nekoliko radova nagrađenih Rektorovom nagradom.

Znanstvena istraživanja profesora Kovačića započeta na studiju u Velikoj Britaniji u području numeričkoga modeliranja u geotehnici nastavila su se tijekom čitave njegove karijere. Kasnije je njegov interes bio usmjeren na još jedno novo područje, primjene geotehnike u zaštiti

okoliša. U tome području sigurno predstavlja jednoga od začetnika razvoja te subdiscipline u Hrvatskoj. Objavio je pedesetak znanstvenih i stručnih radova. U suautorstvu je 1996. godine objavio jedno poglavlje u *Građevnome godišnjaku* pod nazivom *Geotehnologija pri odlaganju komunalnog otpada*.

U razdoblju od 1996. do 1998. godine bio je voditelj međunarodnoga projekta pod nazivom *Applicability of the materials from flysch coastal regions of Croatia for the construction of impervious barriers in sanitary landfills* u okviru U.S. – Croatian Science and Technology Program te u suradnji sa sveučilištem University of Colorado at Boulder. Bio je također voditelj dvaju znanstvenih projekata koje je financirao MZOS: *Geotehnologija za odlagališta otpada* i *Karakterizacija krutog komunalnog otpada*. Sudjelovao je na još sedam domaćih i međunarodnih znanstvenih projekata. Vrlo se aktivno uključio u organizaciju prvih simpozija na temu gospodarenja otpadom u Hrvatskoj početkom devedesetih godina. Ta se konferencija do danas kontinuirano odvija u Zagrebu pod nazivom Međunarodni simpozij gospodarenja otpadom.

Bio je voditelj prvih TEMPUS i CEEPUS projekata na RGNF-u putem kojih je ostvarena intenzivna međunarodna razmjena nastavnika i studenata. TEMPUS projekt pod nazivom *Advanced Computational Engineering Mechanics* odvijao se tijekom ratnih godina od 1991. do 1994., pa je uspostavljanje međunarodne suradnje u tim vremenima bilo tim teže, a za sve sudionike tim važnije s obzirom na to da se razmjena odvijala s fakultetima iz Velike Britanije, Nizozemske, Njemačke i drugih zapadnoeuropskih država. CEEPUS projekt *Geotechnology of Environmental Protection* bio je projekt uspostavljen u akademskoj godini 1996./1997. između Sveučilišta u Zagrebu i Gdansk University od Technology, Poljska. Putem tih projekata profesor Kovačić bio je dva puta gostujući nastavnik na sveučilištima University of Colorado at Boulder, Department of Civil, Environmental and Architectural Engineering u Sjedinjenim Američkim Državama i na University of Technology, Gdansk, Faculty of Civil and Environmental Engineering u Poljskoj.

Dr. sc. Davorin Kovačić bio je vrlo aktivan u geotehničkoj struci. Izradio je nekoliko programskih paketa već na početku svoje karijere. Sudjelovao je u nizu važnih projekata, kao projektant ili revident. Ovdje su nabrojani samo neki od njih: HE Obrovac, HE Rama, projekti dubokoga temeljenja u Bagdadu i Moskvi, zaštita građevnih jama u Lenjingradu i Zagrebu, projekt opskrbe vodom u Sudanu, luka Ploče, vijadukt Mirna, Krčki most, dubrovački most, Centar za zbrinjavanje otpada Marišćina, klizište Zalužje – Varaždin, zaštita pokosa Urinj – Rijeka, Arena centar – Zagreb. Stručna iskustva također je objavljivao u radovima te priručnicima od kojih izdvajamo priručnik pod nazivom *Mlazno injektiranje – prikaz tehnologije i primjene mlaznog injektiranja* objavljen 1997. godine.

Bio je član nekoliko tehničkih odbora pri Državnome zavodu za normizaciju i mjeriteljstvo. Bio je aktivan i u Hrvatskoj komori inženjera građevinarstva. Na Danima ovlaštenih inženjera građevinarstva nekoliko je puta bio voditelj sekcija. Dobitnik je priznanja za zaslužne članove Saveza građevinskih inženjera i tehničara Hrvatske.

Održao je brojna stručna predavanja te bio član stručnih udruga u kojima je obnašao važne funkcije. Od 1983. do 1986. bio je tajnik Društva za mehaniku tla i temeljenje Hrvatske, a od 1986. do 1990. njegov predsjednik. Iz toga društva proizišlo je današnje Hrvatsko geotehničko društvo u kojemu je opet profesor Kovačić dao znatan doprinos kao član Upravnoga odbora te sudjelujući u organizaciji brojnih domaćih i međunarodnih simpozija u organizacijskome ili znanstvenome odboru. U posljednjih nekoliko godina profesor Kovačić bio je član Uredničkoga odbora Glasnika Hrvatskog geotehničkog društva. U tome razdoblju Glasnik poprima novi atraktivan izgled i bogatiji sadržaj, a profesor Kovačić bio je vrlo aktivan i poticajan u kreiranju priloga za svaki broj. Zbog svojega iznimnog doprinosa imenovan je 2018. godine zaslužnim članom Hrvatskoga geotehničkog društva.

U Akademiju tehničkih znanosti Hrvatske Odjel građevinarstva i geodezije primljen je za člana suradnika 2005. godine. I tamo je profesor Kovačić ostavio znatan trag. Od 2013. do 2017. bio je tajnik Odjela građevinarstva i geodezije, a od prije nekoliko godina emeritus Akademije. Jedan je od pokretača serije znanstveno-stručnih skupova na temu Tehnologija zbrinjavanja otpada i zaštite tla, od kojih je prvi održan 2006. u Varaždinu, a zadnji 2009. godine u Zadru.

Bio je član međunarodnih udruga: ISSMGE – International Society for Soil Mechanics and Geotechnical Engineering i ISRM – International Society for Rock Mechanics.

O bogatoj karijeri profesora Kovačića, o njegovu stilu i radnim navikama sigurno bi mogli puno reći mnogi od njegovih suradnika u brojnim institucijama u kojima je radio ili s kojima je surađivao. Profesor Kovačić bio je temeljit, discipliniran, točan, izvrstan predavač i pedagog, poticajan mentor, teoretičar i praktičar, spreman na izazove, inicijator u mnogim aktivnostima. Iako je profesor Kovačić radio na RGN fakultetu samo pet godina, nastavio je surađivati sa svim svojim bliskim suradnicima i u godinama koje su uslijedile. To je bilo vrlo produktivno i intenzivno razdoblje znanstveno-nastavnoga rada u našoj geotehničkoj skupini, ali i mnogo više od toga. Dobre rezultate nije bilo teško ostvariti u poticajnoj i ugodnoj atmosferi koju je profesor stvarao oko sebe. Teško je povjerovati da nas je profesor Kovačić napustio, svjesni smo koliko je to velik gubitak za sve one koji su bili povezani s njim uključujući djelatnike Rudarsko-geološko-naftnoga fakulteta. Njegov je doprinos na RGN fakultetu i svim drugim institucijama gdje je radio bio izniman i zato smo mu neizmjerljivo zahvalni.