

**DVANAEST GODINA DRUŠTVA ZA INTEGRITET I VEK KONSTRUKCIJA (DIVK)
DRUGI DEO – AKTIVNOSTI DIVK**

**TWELVE YEARS OF THE SOCIETY FOR STRUCTURAL INTEGRITY AND LIFE (DIVK)
PART TWO – DIVK ACTIVITIES**

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- Evropsko društvo za integritet konstrukcija (ESIS)

Keywords

- structural integrity and life
- fracture mechanics
- summer school
- European Structural Integrity Society (ESIS)

Izvod

Osnivanje Društva za integritet i vek konstrukcija (DIVK) je usledilo posle uvođenja mehanike loma i razvoja Međunarodne letnje škole mehanike loma (IFMASS). Prikazane su osnovne aktivnosti DIVK u proteklih 12 godina: konferencije, seminari, kursevi, časopis „Integritet i vek konstrukcija“, međunarodna saradnja, IFMASS.

AKTIVNOSTI DIVK

Raznovrsne su i obimne bile aktivnosti DIVK tokom proteklih dvanaest godina. Ovde će biti prikazane samo one najznačajnije, po izboru autora.

Uvod

Rezultati aktivnosti navedenih u prvom delu, ovde će biti prikazane i komentarisane. Biće razmotreni i nedostaci uočeni u toku rada, da bi se, po mogućnosti, eliminisali ubuduće.

Upravljanje i administracija obično pokazuju snagu i sposobnost da se organizuju različiti događaji. Tako se za letnju školu traži široko znanje zainteresovanih stručnjaka radi izbora cilja i naslova, imenovanja pravog rukovodioca i za prethodni predlog sadržaja, kao osnova za izbor učesnika, kao i predavača. Zatim sledi posao u vezi obezbeđenja podrške, posebno finansijske, izbor lokacije, komunikacija sa učesnicima i predavačima, radi oglašavanja. To znači da bi trebalo oformiti odgovarajući tim za organizaciju i uspešnu realizaciju letnje škole. Problem je za DIVK što većinu tima čine volonteri, sa kojima je teže upravljati. Sledеći korak je priprema materijala za predavanja, uz pripremu programa i rasporeda rada. Rezultat izvršenja ovog zadatka će pokazati kapacitet i snagu organizatora.

Aktivnosti se obavljaju i kroz posebne sekcije. Uspeh sekcija zavisi od aktivnosti rukovodioca i interesa članova, ali je administracija manja. Za organizaciju foruma je primenljiv pristup koji se koristi za rad sekcija.

Za seminare je organizacija slična letnjoj školi. Tu je najvažnije napraviti aranžman sa korisnikom ponuđenog seminara, kako bi se definisao raspoloživi budžet.

Isto tako, u mnogo čemu se organizacija konferencija može uporediti sa organizacijom sa letnje škole.

Abstract

Development of the International Fracture Mechanics Summer School (IFMASS) is described as the basis for foundation of the Society for Structural Integrity and Life (DIVK). Various DIVK activities in past 12 years are: conferences, seminars, courses, journal "Structural Integrity and Life," international cooperation, IFMASS.

DIVK ACTIVITIES

Various and extended have been DIVK activities during the past twelve years. Only the most important of them shall be presented here, according to choice of the authors.

Introduction

The results of activities, described in the first part, shall be presented and commented here. Noticed shortages shall be considered in order to eliminate them, if possible.

Management and administration usually demonstrate the strength and ability to organise different events. So, for a summer school, a broad knowledge of interested experts is required in order to select the aim and title, to nominate a proper executive, and to produce initial content as the base, to select participants, as well as lecturers. Then follows work on the support and the budget, location choice, communication with participants and lecturers, for the purpose of advertising. It means that appropriate team has to be established. The problem is that the majority of the team are volunteers, so managing is difficult. The next step is preparation of lecturing material, programme and schedule. The results of accomplishing these tasks will show the capacity and strength of the organiser.

The activities are to be done through separate sections. The success of a section depends on leader activity, members interest, but the administration is reduced. The approach to forum organisation is applicable to the work of sections as well.

For seminars, the situation is similar to summer school. But here it is most important to make an agreement with the user of the offered seminar in order to define the available budget.

Treba podsetiti da su osnivači DIVK u prvom redu regrutovani među učesnicima IFMASS, ali posle kratkog

vremena i drugi stručnjaci su se priključili DIVK. Iskustvo potrebno za rad DIVK članovi su skupili, prevashodno, kroz rad na IFMASS, uključeni kao organizatori, predavači ili učesnici. Za razvoj DIVK bila je neophodna finansijska pomoć. Dobijena je, sa jedne strane, od Ministarstva nauke, u skladu sa obimom predviđenim državnim budžetom Srbije za razvoj nauke. Sa druge strane, mnoga preduzeća su prepoznala pogodnosti koje je nudio DIVK i prihvatile su budu članovi – donatori, što je omogućilo da se više njihovih stručnjaka registruju kao individualni članovi DIVK. Korist je bila dvostruka, za obe strane.

MEĐUNARODNA LETNJA ŠKOLA MEHANIKE LOMA – IFMASS

Dobar prijem IFMASS u stručnoj javnosti bio je podsticaj da se ona obnovi posle osnivanja DIVK.

IFMASS 8

U Beogradu je 23-28. juna 2003. održana IFMASS 8 „Od mehanike loma do ocene integriteta konstrukcija“, uz prateću radionicu „Novi trendovi u primeni mehanike loma“, sa 108 učesnika, od kojih 27 stranaca. Održano je 25 predavanja (12 stranih i 13 domaćih predavača), neka od predavanja kao zajednički rad više autora. Troškovi IFMASS 8 su delom pokriveni kotizacijom, ali je bila i značajna finansijska podrška sponzora, tadašnjeg Ministarstva za nauku, tehnologiju i razvoj, Ministarstva urbanizma i građevina republike Srbije i grada Beograda.

Monografiju „From Fracture Mechanics to Structural Integrity“, su izdali DIVK i Tehnološko-metalurški fakultet (TMF), na engleskom, urednici Stojan Sedmak i Zoran Radaković, a promovisana je 24. juna 2004. Dostupna je na veb strani DIVK i privukla je više hiljada posetilaca iz čitavog sveta.

IFMASS 9

Pokušaj da se 2004. IFMASS 9 organizuje u Rumuniji je propao, jer su u, međuvremenu, uvedene vize za građane Srbije. Ipak je, u 25-toj godini od osnivanja, IFMASS 9 „Izazovi materijala i zavarenih spojeva – Ocena integriteta i veka“, održana u Zlatnim Pjascima, Bugarska, 19-23. septembra 2005, u saradnji sa prof. Domkom Angelovom i prof. Stefanom Vodeničarovim, uz podršku predsednika Bugarskog društva za zavarivanje, dr Martina Belojeva. Za 49 učesnika je održano je 18 predavanja, iz Srbije (10), Bugarske (2), Rumunije (2), Ukrajine (1), SAD (1), Nemačke (1) i Makedonije (1).

Nažalost, odziv učesnika iz Bugarske je bio neočekivano slab. Od 7 predavača koji su prihvatali predavanja, samo dva su održali predavanja, a bilo je samo 10 slušalaca.

Monografiju IFMASS 9 „Izazovi materijala i zavarivanja – Ocena integriteta i veka“ su uredili Stojan Sedmak, Zoran Radaković i Jasmina Lozanović, a izdali su MF, DIVK, TMF i Institut GOŠA 2008.

IFMASS 10

Na Zlatiboru je održana IFMASS 10 od 23-27. juna 2008. pod naslovom „Osnove mehanike loma i metode za

In many ways, conferences can be compared to summer schools regarding the organisation.

It should be noted that DIVK founders are primarily recruited based on IFMASS participation, but in short time other experts also joined DIVK. DIVK members have been experienced being included in IFMASS, as organisers, lecturers or participants. DIVK development required financial support. On one side, DIVK received it from the Ministry of Science, within the scope provided by the Serbian budget for science development. On the other side, many companies have recognised the benefits offered by DIVK and accepted donors membership, which enabled to include several of their experts into individual membership of DIVK. The benefit was doubled, for both sides.

INTERNATIONAL FRACTURE MECHANICS SUMMER SCHOOL – IFMASS

Good reception of IFMASS in the professional community inspired DIVK after founding to re-establish it.

IFMASS 8

IFMASS 8 “From fracture mechanics to structural integrity assessment” with satellite workshop “New trends in fracture mechanics application,” was held in Belgrade, from 23 to 28 June 2003, with 108 participants, 27 from abroad. IFMASS 8 included 25 lectures (12 foreign, 13 domestic lecturers), some of them as joint work of several authors. IFMASS 8 expenditures were partly covered by registration fee and also by support of the Serbian Ministry of Science, Technology and Development and the Ministry of Urban Planning and Civil Engineering, and Belgrade City.

The monograph “From Fracture Mechanics to Structural Integrity” was published by DIVK and TMF in English, editors Stojan Sedmak and Zoran Radaković, and promoted on June 24, 2004. Download is available from DIVK website and it has attracted several thousand visitors world-wide.

IFMASS 9

The attempt to organise IFMASS 9 in 2004 in Romania failed because of imposed visas for Serbian citizens. Despite this, on its 25th anniversary, IFMASS 9 “The challenges of materials and welded joints - Integrity and life assessment” was held in Golden Sands, Bulgaria, 19-23 September 2005, in cooperation with Prof. Donka Angelova and Prof. Stefan Vodenitcharov, supported by Dr. Martin Belojev, president of the Bulgarian Welding Society. For 49 participants 18 lectures were presented, from Serbia (10), Bulgaria (2), Romania (2), Ukraine (1), USA (1), Germany (1) and Macedonia (1).

Unfortunately the response of participants from Bulgaria was low. Of 7 lecturers accepting to held lecture, only two were held , and only 10 participants from Bulgaria attended.

IFMASS 9 monograph “The challenges of materials and welded joints - Integrity and life assessment” is edited by Stojan Sedmak, Zoran Radaković, Jasmina Lozanović, and published by FME, DIVK, TMF and GOŠA Institute in 2008.

IFMASS 10

IFMASS 10 was held on Zlatibor mountain resort from 10-23 June 2008, titled “Fundamentals of Fracture Mecha

procenu veka konstrukcija“. Izloženo je 24 predavanja, koja su pripremili 26 autora, većinom članova DIVK, od kojih je 7 bilo pozvano prvi put da izlože predavanja.

Bilo je 50 slušalaca, pretežno iz proizvodnje i eksploatacije. Stranih učesnika je bilo među predavačima 7 i među polaznicima 9, iz Republike Srpske, Bosne i Hercegovine, Slovenije, Hrvatske, Alžira, SAD i Nemačke.

Monografiju „Osnove mehanike loma i metoda za ocenu integriteta konstrukcija“ uredio je Stojan Sedmak, a izdali su MF, TMF, DIVK i IMS, 2009.

IFMASS 10 su finansijski podržali Ministarstvo za nauku Srbije i HIP – Petrohemija a.d., Pančevo.

SEKCIJE I KOMISIJE

Upravni odbor DIVK je formirao sekcije za: (1) materijale; (2) mehaniku loma i mehaniku oštećenja; (3) zavarene i druge metalne konstrukcije; (4) betonske konstrukcije; (5) obezbeđenje kvaliteta konstrukcija u izradi i eksploataciji; (6) proračun čvrstoće i numeričke metode; (7) ponašanje konstrukcija u eksploataciji; (8) sigurnost i pouzdanost konstrukcija; i (9) procenu veka konstrukcija, i imenovao predsednike. Od početka rad sekcija se sveo na predavanja i prikaz rezultata sopstvenih istraživanja autora. Prvo predavanje za sekcije 1 i 2 „Mehaničke karakteristike i lom keramičkih materijala“ je novembra 2001. održala Katarina Gerić, predsednik 1. komisije. Drugo predavanje „Primeri otkaza delova konstrukcija i analiza uzroka“ je marta 2002. za sekcije 1, 2 i 9, uz sopstvene analize i procenu veka, održao Ivo Blačić, predsednik sekcije 9. Plenarno predavanje Zijaha Burzića „Mehaničke karakteristike, zamor i mehanika loma kompozita“ je održano na I godišnjoj skupštini DIVK.

Posle duže pauze je nekoliko plenarnih sastanaka održano 2005, za internu prezentaciju rada za ECF 16.

U proteklom periodu su radile 3 tematske komisije.

Predlog komisije za izradu Preporuka za prijem reparirane opreme pod pritiskom je maja 2003. izložio predsednik dr Miodrag Arsić.

Rad na razvoju terminologije i nomenklature integrateta i veka konstrukcija je započeo objavljinjem prevoda odgovarajućih ESIS preporuka u IVK 1-2/2002 i uvodnim izlaganjem predsednika komisije Vere Šijački-Žeravčić, marta 2003, ali su dalje značajnije aktivnosti izostale.

Komisiji je analizirana situacija sa mostom „Gazela“ u Beogradu, na više sastanaka eksperata (kao i na 4 seminara, koje je organizovao DIVK 2010.) radi doprinosa rešavanju problema opravke i sanacije mosta.

SEMINARI

Seminari predstavljaju važan i obiman oblik aktivnosti DIVK, što se može zaključiti iz spiska održanih seminara.

1. „Sanacija i integritet postrojenja Rafinerije nafte u Pančevo“, jun 2001, Beograd. (IVK 1/2001)
2. „Inženjerske metode procene integrateta i veka procesne opreme“, novembar 2002, Rafinerija nafte Pančevo.
3. Diskusija o visini probnog pritiska i njegovom uticaju u eksploataciji, deo seminara „Inženjerske metode procene integrateta i veka procesne opreme“, februar 2003.

nics and Structural Life Assessment Methods“. Presented were 24 lectures by 26 authors, mainly DIVK members, 7 of them invited for the first time to present a lecture.

There were 50 participants, mainly from production and exploitation. There were 7 foreign lecturers and 9 participants from Republika Srpska, Bosnia and Herzegovina, Slovenia, Croatia, Algeria, USA and Germany.

Monograph “Fundamentals of fracture mechanics and structural integrity assessment methods”, edited by Stojan Sedmak, is published by FME, TMF, DIVK and IMS in 2009.

IFMASS 10 was financially supported by the Serbian Ministry of Science and HIP – Petrohemija, Pančevo.

SECTIONS AND COMMITTEES

DIVK Board had formed the following sections for: (1) materials, (2) fracture mechanics and damage mechanics, (3) welded and other metal structures, (4) concrete structures; (5) quality assurance of structures in manufacturing and in service; (6) strength calculation and numerical methods; (7) behaviour of structures in service; (8) structural safety and reliability; and for (9) structural life assessment; also nominated presidents. From the start, sections were reduced to lectures and presentation of authors' research results. Katarina Gerić, president of Section 1 held the first lecture “Mechanical properties and fracture of ceramic materials” in November 2001 for Sections 1 and 2. The second lecture “Examples of structural component failures and case analysis,” with analysis and life prediction was presented by Ivo Blačić in March 2002 at Sections 1; 2 and 9. The Plenary lecture “Mechanical properties, fatigue and fracture mechanics, of composites” by Zijah Burzić was held at the First Annual Assembly.

After a long break, several plenary meetings were held in 2005 for internal presentations of ECF 16 papers.

In the past period, 3 thematic committees were active.

The section proposal for *Recommendations for acceptance of repaired equipment* was presented in May 2003 by Dr. Miodrag Arsić, committee president.

Development of terminology and nomenclature in structural integrity and life was initiated by publishing a translation of corresponding ESIS recommendations in IVK 1-2/2002 and by an introduction presented by Vera Šijački-Žeravčić in March 2003, but with no further activities.

Situation with bridge “Gazela” in Belgrade, had been analysed by committee on meetings (and on 4 DIVK seminars organised in 2010. additionally) in order to contribute the solution of bridge repair and retrofit.

SEMINARS

Seminars present important and extensive form of DIVK activity, what is clear from the list of seminars held.

1. “Retrofit and integrity of equipment in Oil Refinery in Pančevo”, June 2001, Belgrade (IVK 1/2001)
2. “Engineering methods of integrity and life assessment of process equipment”, November 2002, Refinery Pančevo.
3. Discussion on proof pressure level and its effect in service, as part of the seminar “Engineering methods of integrity and life assessment of process equipment”, February 2003.

4. „Evropska direktiva za opremu pod pritiskom i integritet konstrukcija“, maj 2003, Mašinski fakultet, Beograd.
5. „Primena mehanike loma u projektovanju i proizvodnji opreme pod pritiskom“, decembar 2003, Minel Kotlogradnja, Beograd.
6. „Uloga ispitivanja bez razaranja u proceni integriteta konstrukcija“, oktobar 2004, IMS, Beograd.
7. „Izrada, eksploatacija i ispitivanje opreme pod pritiskom – novi pristup“, oktobar 2004, RPK Pančevo.
8. „Nova rešenja za osiguranje kvaliteta“, decembar 2004, IMS, Beograd.
9. „Značaj akreditacije i sertifikacije u primeni evropskih direktiva“, februar 2005, IMS, Beograd.
10. „Ispitivanje opreme pod pritiskom u eksploataciji i procena veka“ (zahtevi PED 97/23/EC i Zakona o energetici), mart 2005, JKP Beogradske elektrane, Beograd.
11. „Integritet građevinskih konstrukcija“, oktobar 2005, IMS, Beograd.
12. „Određivanje deformacija i napona ispitivanjem indirektnim metodama i modeliranjem“, mart 2006, JKP Beogradske elektrane, Beograd. (IVK 1-2/2006)
13. Seminar „Iskustva iz eksploatacije čelika P/T 91“ je održan u TENT, april 2006, na bazi kursa za obuku „Proizvodnja, zavarivanje, termička obrada, oksidacija, mehanizmi oštećenja i ocena integriteta i veka čelika P/T 91“ i seminara „Iskustva iz industrije i istraživanja o primeni čelika P/T 91 Generatori pare na visokoj temperaturi (HRSG) i konvencionalnim kotlovima“.
14. „Integritet konstrukcija ugroženih korozijom“ JKP Beogradske elektrane, april 2007, Beograd. (IVK 2/2007)
15. „Integritet konstrukcija ugroženih korozijom II“ decembar 2007, TE „Nikola Tesla“, Obrenovac.
16. „Integritet i vek mostova“, novembar 2007, IMS, Beograd (u okviru 4. Godišnje konferencije DIVK).
17. „Lomovi i vek vazduhoplova“, u svetu aktuelnu temu predavanja su održali dr Rasel Vanhil, dr Simon Barter i dr Strain Posavljak, i stručnjaci iz Vojnotehničkog instituta, 4. decembar 2008, u okviru 5. Godišnje konferencije DIVK, IMS, Beograd.
18. „Integritet i vek mostova: slučaj Gazela“ – Projekti sanacije i ocena integriteta čelične konstrukcije drumskog mosta preko reke Save u Beogradu, održan u četiri sesije od marta do maja 2010, IMS, Beograd.
19. „Integritet konstrukcija i novi propisi za posude pod pritiskom“, april 2012, DLHE Bajina Bašta.
20. „Izrada i održavanje cevovoda hidroelektrana“, jul 2012, DLHE Bajina Bašta.

Najveći broj predavača na seminarima je angažovan među članovima DIVK iz Srbije. Prema mogućnosti i potrebi angažovani su i predavači iz inostranstva.

Učesnici seminara su dobili diskove sa održanim predavanjima. Posebno interesantni seminari, br. 1, 12 i 13 su u celini štampani u časopisu Integritet i vek konstrukcija (IVK) brojevi 1/2001, 1-2/2006 i 2/2007.

Na jednonedeljnim seminarima od 40 časova, kao br. 10, gde su predavanja upotpunjena praktičnom obukom u Vojnotehničkom institutu (VTI) i na TMF u Beogradu i u firmama – sponzorima DIVK, CertLab iz Pančevo i Konmat iz Beograda, učesnici su dobili atest o završenom seminaru.

4. “European directives for pressure equipment and structural integrity”, May 2003, FME, Belgrade.
5. “The application of fracture mechanics in design and fabrication of pressure equipment”, December 2003, Minel Kotlogradnja, Belgrade.
6. “The role of non-destructive testing in structural integrity assessment”, October 2004, IMS, Belgrade.
7. “Manufacturing, exploitation and testing of pressure equipment – New approach”, October 2004, RPK Pančevo.
8. “New solutions for quality assurance”, December 2004, IMS, Belgrade.
9. “The role of accreditation and certification in application of European directives”, February 2005, IMS, Belgrade.
10. “Inspection of pressure equipment in service and life assessment” (requirement PED 97/23/EC and Energetic law), March 2005, JKP Beogradske elektrane, Belgrade.
11. “Integrity of civil engineering structures”, October 2005, IMS, Belgrade.
12. “Determination of strains and stresses by indirect methods testing and by modelling”, March 2006, JKP Beogradske elektrane, Belgrade. (IVK 1-2/2006)
13. Seminar “Experiences from service with steel P/T 91” was held at TENT April 18, 2006, based on training course “Manufacturing, welding, heat treatment, oxidation, damage mechanisms and structural integrity and life assessment of steel P/T 91”, and a seminar “Experiences from industry and research in the application of steel P/T 91 in HRSG and conventional boilers.”
14. “Integrity of structures endangered by corrosion”, JKP Beogradske elektrane, April 2007, Belgrade. (IVK 2/2007).
15. “Integrity of structures endangered by corrosion II” December 2007, TE “Nikola Tesla”, Obrenovac.
16. “Integrity and life of bridges”, November 2007, IMS, Belgrade (in the frame of 4th Annual DIVK Conference)
17. “Aircraft Failures and Life Assessment”, for in world attractive topic lectures were presented by Dr Russell Wanhill, Dr Simon Barter, Dr Strain Posavljak and scientists of the Military Technical Institute in Žarkovo, was held as part of the DIVK Fifth Annual Conference.
18. “Integrity and life of bridges–case Gazela – The project for retrofit and integrity of steel structure of bridge road over Sava river in Belgrade”. Four special seminars held in the period March–May 2010, IMS, Belgrade.
19. “Structural integrity and new regulations for pressure equipment”, April 2012, DLHE Bajina Bašta.
20. “Penstocks manufacturing and maintenance in hydro-electrical power plants”, July 2012, DLHE Bajina Bašta.

Most of the lecturers engaged in seminars were from Serbia, among DIVK members. According to possibilities and needs, lecturers have been invited from abroad.

The participants on seminar received discs with held lectures. Seminars of special interest, No. 1; 12, and 13 are printed completely in journal Structural integrity and life, IVK, issues 1/2001; 1-2/2006; and 2/2007.

At 40-hour one-week seminars, as No. 10; lectures were completed by training at Military Technical Institute and TMF from Belgrade, and in companies – DIVK donors, CertLab, Pančevo, and Konmat, Belgrade, the participants received certificates for completing the seminar.

KONFERENCIJE DIVK

Prva godišnja konferencija DIVK je trajala tri dana (13-15. oktobra 2004.) i privukla je 82 učesnika iz Srbije (od kojih su 71 članovi DIVK) i 11 stranih učesnika (po 2 iz Francuske, Rumunije i Slovenije, 4 iz Bosne i Hercegovine, i 1 iz Slovačke). Konferencija se sastojala iz tri dela: prezentacije radova; seminara i plenarne diskusije.

U prvom delu je podneto 24 rada. Na seminaru „Uloga ispitivanja bez razaranja u proceni integriteta i veka konstrukcija“ održana su 4 predavanja. U trećem delu je diskutovan dokument „Preporuke DIVK za ispitivanje probnim vodenim pritiskom opreme pod pritiskom u eksploataciji“, sa uvodnim izlaganjem Miodraga Arsića, predsednika komisije.

Druga konferencija DIVK, održana je 27 i 28. oktobra 2005. u Beogradu. Glavni događaj je bio „Integritet građevinskih konstrukcija“, sa idejom da se što je moguće detaljnije izloži stanje u ovom segmentu proizvodnje i eksploatacije konstrukcija, a prikazano je i nekoliko radova u uobičajenoj formi konferencije.

Na Trećoj konferenciji DIVK, 23.11.2006, izloženo je pet radova. Dva predavanja su prikazali gosti iz Irana, prof. Ahmadabadi „Izražena plastična deformacija ultračvrstog čelika radi dobijanja nano zrna“ i prof. Nurbakš „Projekt i izrada dvofazne zavojne pumpe“.

Četvrta godišnja konferencija DIVK, održana u IMS, se sastojala od dva dela. Prvi deo, seminar „Integritet i vek mostova“, održan je 15 i 16.11.2007, sa 42 učesnika, da bi se upotpunilo razmatranje započeto na Drugoj konferenciji. Izloženo je 10 predavanja, koje su izložili članova DIVK i stručnjaci „Mostogradnje“ i JP „Putevi Srbije“, kao i Građevinskog fakulteta, Inovacionog centra MF i VTI. Semoga je izloženo 16 radova koje je pratilo 33 učesnika.

Peta godišnja konferencija DIVK je održana 5.12.2008. Prisustvovalo je 42 učesnika. Predstavljeno je 13 radova sa skupa NATO WORKSHOP, Portorož, sa Konferencije NT2F8, Ankaran, saradnika Inovacionog centra MF, Mašinskog fakulteta Univerziteta u Kragujevcu i IMS.

Održan je seminar sa naslovom „Lomovi i vek vazduhoplova“ na kome je izloženo 7 predavanja. Uvodna predavanja su držali gosti DIVK, R. Vanhil i S. Barter, a ostala predavanja su održali članovi DIVK, saradnici VTI.

SIMPOZIJUMI

Primena mehanike loma u oceni integriteta konstrukcija

Minisimpozijum „Primena mehanike loma u oceni integriteta konstrukcija“ je održan u okviru Prvog međunarodnog kongresa i Srpskog društva za mehaniku, od aprila 2007. na Kopaoniku. Na plenarnim sekcijama oko 250 autora iznalo je 160 radova. Kongres je radio u sekcijama: opšta mehanika, mehanika fluida, mehanika deformabilnog tela i multidisciplinarni problemi u mehanici.

Minisimpozijum „Primena mehanike loma u oceni integriteta konstrukcija“ je pripremio DIVK. Izloženo je 19 radova, koje su pripremili 42 autora, većinom članova DIVK, ali su i drugi autori priložili radove na ovu temu.

Kongres je posebnu pažnju posvetio velikaru srpske nauke Milutinu Milankoviću.

DIVK CONFERENCES

The First annual DIVK conference lasted three days (October 13-15, 2004), attracting 82 participants from Serbia (71 being DIVK members) and 11 foreigners as well (2 from each France, Romania, Slovenia, 4 from Bosnia and Herzegovina and 1 from Slovakia). The conference had 3 parts: paper presentation; seminar and plenary discussion.

In the first stage, 24 papers were submitted. Four lectures were held at seminar “The role of non-destructive testing in structure integrity and life assessment”. In the third stage, the document “DIVK recommendations for hydro testing of pressure vessels during exploitation” was discussed, after presentation of M. Arsic, commission chairman.

The second DIVK conference was held on October 27 and 28, 2005. in Belgrade. The main event was “Civil engineering structure integrity”, with the idea to present the state of this segment of production and exploitation of structure in as much details as possible. In addition, several papers were presented in the conference’s usual form.

At the third DIVK conference, 23.11.2006, five papers were presented. Iranian guests held two. Prof. Ahmadabadi, “Considerable plastic strain of extra high strength steel for the purpose of obtaining nano-grains” and Prof. Nurbaksh, “Project and development of a two-phase coil pump”.

The fourth DIVK conference, held at the IMS, consisted of two parts. First part, seminar “Bridge life and integrity” was held on 15-16.11.2007, with 42 participants with the aim to complete the considerations from second conference. Ten lectures were exposed by DIVK members, experts from Mostogradnja company, PC Putevi Srbije, Faculty of Civil Engineering, FME Innovation Centre and VTI. In addition 16 papers were presented, 33 participants.

The fifth annual DIVK conference was held on 5.12. 2008. Forty-two participants attended, with 13 papers from NATO WORKSHOP held in Portorož, NT2F8 conference, Ankaran, from Innovation Centre FME, Belgrade, Faculty of Mechanical Engineering, Kragujevac and IMS.

A seminar was held as part of the conference where 7 papers were presented on the topic of “New trends in fatigue and fracture” (NT2F), and selected papers were published in IVK journal.

SIMPOSIA

Use of fracture mechanics in structural integrity assessment

Minisymposium “Use of fracture mechanics in structural integrity assessment” had been held in framework of First International Congress organised by Serbian Society for Mechanics, 10-13 April 2007, on Kopaonik. On plenary sections, about 250 authors presented 160 papers. Congress worked in sections: general mechanics, fluid mechanics, mechanics of deformable body, and multidisciplinary problems. For the first time minisymposia were organised.

Minisymposium “Use of fracture mechanics in structural integrity assessment” was prepared by DIVK. It had been exposed 19 papers, prepared by 42 authors, mostly DIVK members, but also other authors followed the topic.

Special attention had been devoted to the giant of Serbian science Milutin Milanković.

Ocena integriteta konstrukcija u teoriji i praksi

Specijalni simpozijum „Ocena integriteta konstrukcija u teoriji i praksi“ je DIVK pripremio na osnovu poziva organizatora 16. Evropske konferencije o lomu (ECF 16) „Analiza otkaza nano i inženjerskih materijala i konstrukcija“, jula 2006, Aleksandropolis, Grčka, koja je privukla gotovo 1000 učesnika. Iz Bugarske je izložen 1 rad, autori iz Japana 2 rada, a članovi DIVK 21 rad.

Finansijske pogodnosti za registraciju uz pomoć ESIS, organizovan prevoz i smeštaj omogućili su da 26 članova DIVK prisustvuje ECF 16. Treba napomenuti da je 2006. preko DIVK registrovan 81 član ESIS.

Naučni razvojni vorkšop „NATO – Sigurnost i pouzdanost oštećenih konstrukcija i materijala sa greškama“

Na raspisani konkurs NATO za organizaciju vorkšopa u okviru programa Nauka za mir i sigurnost, koji je bio otvoren i za Srbiju, prijavio se Inovacioni centar Mašinskog fakulteta Univerziteta u Beogradu u saradnji sa DIVK, sa temom „Sigurnost i pouzdanost oštećenih konstrukcija i materijala sa greškama“. Tema je prihvaćena, a Beograd odabran kao mesto održavanja.

Kako u međuvremenu Beograd kao mesto održavanja nije bio više prihvatljiv, vorkšop je održan od 19-22. oktobra 2008. u Portorožu (Slovenija), u zajedničkoj organizaciji Srbije, Francuske (Univerzitet u Mecu) i Slovenije (Univerzitet u Mariboru). Organizatori su bili: Direktor: prof. Gi Plivinaž – Mec, ENIM – Laboratorija za mehaniku; ko-direktor: prof. Aleksandar Sedmak – Inovacioni centar Mašinskog fakulteta, Beograd; Organizator: dr. Filip Žoden – Mec, ENIM – Laboratorija za mehaniku; Lokalni organizator: prof. Nenad Gubeljak - Mašinski fakultet, Maribor.

Izloženo je 20 predavanja, a posle svakog predavanja su slušaoći bili u prilici da diskutuju. Iz Srbije je učestvovalo 4 autora + 7 koautora, iz Francuske 4 + 5, iz Ukrajine 2 + 2, iz Nemačke 2 + 2, iz Rumunije 2 + 2, iz Mađarske 1 + 1, iz SAD 2 autora i iz Slovenije 1 autor.

Održan je i Okrugli sto „Ocena integriteta konstrukcija i značaja prslina na različitim nivoima (makro, mikro, nano). Knjigu pod naslovom vorkšopa je 2009. izdao Springer Verlag.

PREDAVANJA PO POZIVU

Mnogo je predavača iz inostranstva učestvovalo po pozivu na IFMASS i na seminarima tokom proteklih 12 godina. Još veći broj autora iz većeg broja zemalja održao pojedinačna predavanja po pozivu. Ovde će biti navedene zemlje i autori, a drugi detalji se mogu naći u časopisu IVK.

- SAD (dr Siniša Mesarović, vanredni profesor, *Washington State University, Pullman*; prof. Suria Kalidindi, *Drexel University, Philadelphia*; prof. Duško Krajčinović, *Arizona State University*)
- Libija (mr. Saadun Ešvili)
- Francuska (prof. Gi Plivinaž i dr Filip Žoden, *University Metz*)
- Nemačka (Berndt Mišel, Fraunhofer centar za mikro materijale, Berlin (MMCB));
- Egipat (prof. Abdel-Monem El-Batagi, Cairo),

Structural Integrity Assessment in Theory and Practice

Special symposium “Structural Integrity Assessment in Theory and Practice” prepared by DIVK after invitation of 16th European Conference of Fracture (ECF16) “Failure Analysis of Nano and Engineering Materials and Structures”, July 2006, Alexandroupolis, Greece, attracting about 1000 participants. One paper was presented from Bulgaria, 2 from Japan, along with 21 papers by DIVK members.

Financial benefits for registration fee thanks to ESIS, organised transportation and accommodation, enabled participation of 26 DIVK members at ECF 16. In 2006, through DIVK, 81 ESIS members were registered.

Advanced Research Workshop „NATO – Security and Reliability of Damaged Structures and Defective Materials“

For the announced NATO competition for the workshop organisation in the scope of program Science for Peace and Security, open also for Serbia, Innovation Centre of the Faculty of Mechanical Engineering, Belgrade, applied jointly with DIVK, with the topic “Security and Reliability of Damaged Structures and Defective Materials”. The topic was accepted, and Belgrade was selected as the location.

Meanwhile, Belgrade was no longer acceptable as a location, so it was organised from 19-22 October 2008 in Portorož (Slovenia), jointly organised by Serbia, France (University of Metz) and Slovenia (University of Maribor). The organisers were: director Prof. Guy Pluvignage, Metz, ENIM-Laboratoire de Fiabilité Mécanique, co-director Prof. Aleksandar Sedmak, Innovation Centre of FME, Belgrade, organisers Dr. Philippe Jodin, Metz, ENIM-Laboratoire de Fiabilité Mécanique, and Prof. Nenad Gubeljak, Mechanical Engineering Faculty, Maribor.

Twenty lectures were presented, and after each a discussion was open. From Serbia 4 authors + 7 co-authors participated, from France 4 + 5, from Ukraine 2 + 2, from Germany 2 + 2, from Romania 2 + 2, from Hungary 1 + 1, from USA 2 authors, and from Slovenia 1 author.

Round table titled “The structural integrity and crack significance assessment of different scale levels (macro, micro, nano)” took place. The book, titled as the workshop had been published by Springer Verlag in 2009.

INVITED LECTURES

During the previous 12 years numerous foreign experts held invited lectures at IFMASS and in seminars. Even more authors from various countries held individual lectures by invitation. Countries and authors are listed here, while additional details can be found in IVK journal.

- USA (Dr. Siniša Mesarovic, associate professor, Washington State University, Pullman; Prof. Suria Kalidindi, Drexel University, Philadelphia; Prof. Duško Krajčinović, Arizona State University)
- Libya (Mr. Saadun Eshvili)
- France (Prof. Guy Pluvignage and Dr Fillip Jodin, University of Metz)
- Germany (Prof. Berndt Michel, Fraunhofer Micro Materials Centre, Berlin (MMCB));
- Egypt (Prof. Abdel-Monem El-Batagy, Cairo)

- Iran (prof. Mahmud Nili Amadabadi i prof. Sejed Ahmad Nurbakš, Univerzitet u Teheranu)
- Slovenija (prof. Nenad Gubeljak, Mašinski fakultet Univerziteta u Mariboru)
- Holandija (dr Rasel Vanhil, Nacionalna aerokosmička laboratorijska NLR)
- Australija (dr Simon Barter, Organizacija vazduhoplova za nauku i tehnologiju odbrane - DSTO, Melburn)
- Bosna i Hercegovina (dr Strain Posavljak, Orao, Bijeljina).

Navedenim gostima treba dodati i predavače IFMASS.

FORUM DIVK

Upravni odbor DIVK je na sednici 17.12.2008. odlučio da se od februara 2009. uvede u rad Forum DIVK. Forum je mesto za razmenu iskustava vezanih za integritet konstrukcija i njihov vek, diskusiju o nedoumicama koje se sreću u teoriji, praksi, eksperimentalnom istraživanju i numeričkom pristupu, u standardima i direktivama i njihovom tumačenju. Forum će raditi na sastancima, na kojima pozvani predavač izlaže osnove teme koju je sam odabrao i definisao u skladu sa svojim iskustvom. U okviru teme će akcent biti stavljen na osnovni problem, ali će se posebno ukazati i na nedoumice i razlike u tumačenju razmatranih problema, koje se mogu pojaviti u primeni izložene materije na ocenu integriteta konstrukcija. Sadržaj foruma se šalje članovima DIVK u pozivu, a objavljuju se i na veb strani DIVK.

Prvi sastanak Forum-a je održan na Mašinskom fakultetu u Beogradu, 11.2.2009. Moderator prvog foruma bio je prof. Stojan Sedmak, a tema *Parametri plastičnosti, duktilnosti i žilavosti materijala u oceni integriteta konstrukcija*. Drugi sastanak je održan 11. marta, u IMS, moderator prof. Milorad Zrilić, tema *Nedoumice u proceni veka sa stanovišta zamora*. Treći, četvrti i peti sastanak su održani na Mašinskom fakultetu, i to redom 8. aprila, moderator dr Miodrag Arsić, tema *Zamor pri cikličnom opterećenju sa promenljivim amplitudama*, 13. maja *Nedoumice u analizi inicijacije rasta prsline*, moderator prof. Zoran Radaković, 10. juna, moderator Zoran Petrašković, tema *Neki aspekti histerezisnog ponašanja konstrukcije čeličnih dampera u polju zamora zemljotresnim malocikličnim opterećenjem*, 9. septembra moderator doc. Ljubica Milović je vodila temu *Zamor čelika na visokim temperaturama*.

Forum je po odluci UO DIVK 2011. nastavio sa radom.

Prof. Nenad Radović vodio je forum *Mikrolegirani čelici danas*, 17.11.2011. Forum je obeležila diskusija o ponašanju ovih čelika u eksploataciji i degradaciji osobina, tako da je trajao 90 minuta.

Moderator dr Aleksandar Grbović je vodio forum *Istraživanje zamornog veka nosećih konstrukcijskih elemenata primenom metode konačnih elemenata (MKE) i proširene metode konačnih elemenata (PMKE)* 11.10. i 19.11.2012. Temu *Uticaj režima opterećenja i radne sredine na zamor delova turbinske i hidromehaničke opreme hidroelektrana* je 13.12.2012. vodio dr Miodrag Arsić, a potom, na forumu održanom 30.5.2013. na temu *Očuvanje integriteta i produženje veka bagera na površinskom kopu*.

Dr Milorad Pantelić je na forumu 31.10.2013. izlagao na temu *Održavanje tehničkih sistema: Sigurnost i pouzdanost*

- Iran (Prof. Mahmud Nili Amadabadi and Prof. Sayed Ahmad Nurbaksh, University of Teheran)
- Slovenia (Prof. Nenad Gubeljak, Faculty of Mechanical Engineering, University of Maribor)
- Netherlands (Dr Rasel Vanhil, National Aerospace Laboratory NLR)
- Australia (Dr Simon Barter, Defence Science and Technology Organisation, DSTO, Melburn)
- Bosnia and Herzegovina (Dr Strain Posavljak, Orao, Bjeljina).

IFMASS lecturers should also be added.

DIVK FORUM

During the meeting 17.12.2008, DIVK Board decided to start a DIVK Forum in February 2009. The Forum is a place to exchange experiences connected to structural integrity and life, discussions of ambiguities met in theory, practice, experimental research and numerical approach, and in standards and directives and their interpretation. The Forum is based on meetings, where invited lecturer present a selected topic, defined according to personal experience. The basic problem of the theme will be accentuated, but special attention will be paid to ambiguities and differences in the interpretation of the considered problem that might occur applying presented matter in structural integrity assessment. The content of meeting will be sent to DIVK members, and also published on DIVK website.

The first Forum was held on February 11, 2009, at the Faculty of Mechanical Engineering, Belgrade. It was devoted to *Parameters of plasticity, ductility and material toughness in structural integrity assessment* and moderated by Prof. Stojan Sedmak. The second Forum meeting was on March 11, at IMS, moderated by Dr. Milorad Zrilić about *The ambiguities in life assessment based on fatigue*. Next meetings were held at the Faculty of Mechanical Engineering, on April 8, Dr. Miodrag Arsić presented *Fatigue at cyclic load with variable amplitudes*, on May 13, Prof. Zoran Radaković, presented *Ambiguities in the analysis of crack initiation and growth*, and on June 10, Zoran Petrašković presented *Some aspects of hysteresis behaviour of steel damper structures in the field of earthquake low cycle fatigue loads*, on September 9, *Fatigue of steel at high temperatures*, by Doc. Ljubica Milović.

DIVK Board decided in 2011 to continue the Forum.

Prof. Nenad Radović moderated the forum *Microalloyed steels today* on 17.11.2011. at FME, Belgrade. Forum had attracted discussion about material behaviour in-service and properties degradation, and lasted 90 minutes.

Moderator Dr Aleksandar Grbović headed *Research of fatigue life of supporting structural elements using Finite Element Method (FEM) and the extended Finite Element Method (XFEM)* on 11.10. and 19.11.2012. The *Influence of load modes and working environment on fatigue of turbine and hydro-mechanical parts of hydropower plant equipment* was held on 13.12. by Dr Miodrag Arsic, and on 05.30.2013, the *Preserving the integrity and extend the life of the excavator in the open pit*.

Dr. Milorad Pantelic's 31.10.2013. exhibited on *Maintenance of technical systems: Safety and reliability excavator*

bagerskih jedinica sa posebnim osvrtom na uticaj personala, a dr Blagoj Petrovski, na forumu 12.12.2013. na temu *Eksperimentalna ocena ponašanja materijala termoenergetskih komponenti pri povišenim temperaturama*.

S obzirom na izraženi interes članova, DIVK forum je uvršćen u redovne sastanke, koji po pravilu treba da se održavaju jednom mesečno. Interes članova i rezultati rada su učinili forum značajnom aktivnosti DIVK.

KONFERENCIJA „NOVI TRENDovi U ZAMORU I LOMU“ (NT2F)

Osnivač konferencije NT2F je profesor Guy Pluvineage sa Univerziteta u Mecu, iz Laboratorije za mehaničku pouzdanost (*Laboratoire de Fiabilité Mécanique (LFM) de l'Ecole Nationale d'Ingénieur de Metz*). Konferencija je prvi put održana 2000. god. u Mecu, kao godišnji sastanak „Evropskog instituta za zamor i lom bez granica“ (WWIFF).

Do sada je sa uspehom održano 13 konferencija:

NT2F1 Mec (Francuska) april 2001.

NT2F2 Hamamet (Tunis) maj 2003.

NT2F3 Ningbo (Kina) novembar 2003.

NT2F4 Alepo (Sirija) maj 2004.

NT2F5 Bari (Italija) maj 2005.

NT2F6 Kranj (Slovenija) maj 2006.

NT2F7 Miškole (Mađarska) maj 2007.

NT2F8 Ankaran (Slovenija) oktobar 2008.

NT2F9 Beograd (Srbija) oktobar 2009.

NT2F10 Mec, (Francuska) avgust 2010

NT2F11 Polinjano a Mare, Bari (Italija) juli 2011.

NT2F12 Brašov (Rumunija), maj 2012

NT2F13 Moskva (Rusija), maj 2013.

Prvo učešće članova DIVK na NT2F bilo je 2006, kada je održana NT2F6 konferencija u Sloveniji, u Kranju. Izložena su 2 rada, od kojih je jedan bio predavanje po pozivu prof. Stojana Sedmaka „Eksperimentalna provera numeričkih modela pri lomu i zamoru zavarenih konstrukcija“.

Na NT2F8 konferenciji, koja je održana 2008. godine u Ankaranu, u Sloveniji učestvovalo je samo 13 naučnika od kojih je 5 bilo iz Srbije i tada je odlučeno da se sledeća konferencija održi u Beogradu i da se radovi, posle recenzije, objave u časopisu DIVK „Integritet i vek konstrukcija“ (IVK).

Konferencija NT2F9 „Otkazi materijala i konstrukcija zbog zamora materijala i loma“ je održana po prvi put u Srbiji, od 12-14. oktobra 2009, u Beogradu. Organizatori konferencije su bili Univerzitet u Beogradu – TMF i MF, DIVK i Laboratorija za mehaničku pouzdanost i sigurnost Nacionalnog tehničkog univerziteta iz Meca. Pokrovitelj je bilo Ministarstvo za nauku i tehnološki razvoj Republike Srbije. Rad konferencije se odvijao kroz 4 simpozijuma („A“ - Prsline i greške, „B“ - Napon i deformacija, „C“ - Materijal i „D“ - Konstrukcija). Usmeno je izloženo 59 radova, a organizovana je i poster sekcija. U radu NT2F9 učestvovalo je 72 naučnika iz 16 zemalja. Štampan je CD-ROM sa prezentacijama, a odabrani radovi su objavljeni u časopisu IVK.

Deseta, jubilarna konferencija, NT2F10 je održana od 30.8. do 1.9.2010. godine u Mecu, što se poklopilo i sa svečanim ispraćajem u penziju osnivača konferencije prof.

units with special emphasis on the impact of the staff, and Dr. Blagoj Petrovski, 12.12.2013. Experimental evaluation of thermal behaviour of the material components at elevated temperatures.

Considering the interest shown by the members, DIVK forum became a regular meeting, which should be held once a month. Member interest and work results made the forum a significant activity of DIVK.

CONFERENCE „NEW TRENDS IN FATIGUE AND FRACTURE“ (NT2F)

Guy Pluvineage, the founder of NT2F conferences, from the University of Metz, Laboratory for Mechanical Reliability (*Laboratoire de Fiabilité Mécanique (LFM) de l'Ecole Nationale d'Ingénieur de Metz*). The First conference was held in 2000 in Metz as annual meeting of the “Without Walls European Institute on Fatigue and Fracture” (WWIFF).

Till now, 13 successful conferences were held:

NT2F1 Metz (France) April 2001.

NT2F2 Hammamet (Tunisia) May 2002.

NT2F3 Ningbo (China) November 2003.

NT2F4 Aleppo (Syria) May 2004.

NT2F5 Bari (Italy) May 2005.

NT2F6 Kranj (Slovenia) May 2006.

NT2F7 Miskolc (Hungary) May 2007.

NT2F8 Ankaran (Slovenia) October 2008.

NT2F9 Belgrade (Serbia) October 2009.

NT2F10 Metz (France) August 2010.

NT2F11 Polignano a Mare, Bari (Italy) July 2011.

NT2F12 Brasov (Romania) May 2012.

NT2F13 Moscow (Russia) May 2013.

The first participation of DIVK members at NT2F was in 2006, at the NT2F6 conference in Slovenia, in Kranj. Two papers were presented, one of which was invited lecture by prof. Stojan Sedmak, “Experimental verification of numerical models for fracture and fatigue in welded structures”.

During the NT2F8 conference that was held in 2008 in Ankaran, Slovenia, only 13 participants were present, five of which were from Serbia, and it was then decided that the next conference will be held in Belgrade and that, after reviewing, papers will be published in DIVK Journal, *Structural Integrity and Life* (IVK).

Conference NT2F9 “Failures of materials and structures by material fatigue and fracture” was organised for the first time in Serbia, on 12-14 October, 2009, in Belgrade. It was organised by the University of Belgrade, Faculty of Technology and Metallurgy (TMF) and Faculty of Mechanical Engineering (FME), DIVK and Laboratory for Mechanical Reliability of National University of Metz. General sponsor was the Ministry of Science and Technological Development of the Republic of Serbia. Conference worked in four symposia (“A” - Cracks and defects, “B” - Stress and strain, “C” - Material and “D” - Structures). In the oral section, 59 papers were presented, along with a poster section. At NT2F9 were 72 scientists from 16 countries. CD-ROM is issued with presentations, and selected papers are published in IVK.

The milestone 10th Conference, NT2F10 was held from 30 August to 1 September, 2010, in Metz, which coincided with the Honorary Farewell Ceremony for the conference

Pluvinaža. DIVK su predstavljala 3 člana sa 4 rada. Na sastanku predstavnika zemalja učesnika NT2F konferencija (*Committee Meeting*), koji je održan 31.8. 2010. odlučeno je da se nastavi sa novim ciklusom konferencija, a svake godine i naizmenično u Evropi i Africi. Osnivač NT2F, prof. Guy Pluvinaž, je penzionisan, a za svog naslednika kao predsedavajućeg odredio je prof. Moussa Nair-Abdelazziz sa Univerziteta u Lili (Francuska). Srbiju će umesto prof. Stojana Sedmaka, predstavljati Ljubica Milović.

Nažalost, već u decembru 2010. godine počeo je talas demonstracija na severu Afrike poznat kao Arapsko proleće, a u martu 2011. je izbio građanski rat u Siriji, pa je NT2F11 održana u Italiji, u blizini Barija, u mestu Polignano a Mare. DIVK je delegirao samo 2 učesnika, a poslato je i prihvaćeno 6 radova iz Srbije.

NT2F12 je održana u Rumuniji, u Brašovu, od 27-30. maja 2012. godine, članovi DIVK su izložili 4 rada od kojih je predavanje prof. Stojana Sedmaka izuzetno dobro prihvачeno, ali je i pored toga organizaciju sledeće konferencije dobio prof. Juri Matvienko koji je učesnike pozvao učesnike u Moskvi, što je i prihvaćeno.

NT2F13 je održana 13-16.5.2013. u Moskvi uz neuobičajeno veliki, za konferenciju ovog tipa, iznos kotizacije od 450 EUR. Srbija ovog puta nije imala radove na konferenciji, već samo jednog delegata, člana DIVK. M. Milošević istakao kandidaturu za Beograd kao domaćina sledeće konferencije, što je prihvaćeno, a konferencija je zakazana za septembar 2014. Više informacija i prvo obaveštenje nalaze se na adresi <http://irc.inovacionicentar.rs/nt2f14>.

„INTEGRITET I VEK KONSTRUKCIJA“ (IVK)

Izdavanje časopisa je potpuno profesionalan posao. U slučaju časopisa Integritet i vek konstrukcija (IVK) posao se u velikom obimu obavlja volonterski, učešćem stručnjaka članova DIVK. To isto važi i za DIVK veb stranicu www.divk.org.rs

Osnovan 2001 kada i DIVK, časopis „Integritet i vek konstrukcija“ (IVK) tokom 12 godina izlazi redovno. Prvi broj IVK izlazi juna 2001. sa radovima sa seminara „Sanacija i integritet postrojenja Rafinerije nafte u Pančevu“. Od 2001. do 2003. časopis je izlazio u dva broja godišnje kao zajedničko izdanje DIVK i Instituta GOŠA. Sa malim zastojem dvobroj 1-2/2002 je izašao krajem 2002. Od broja 1/2003 se radovi objavljaju na srpskom i na engleskom, a neki brojevi se u celini štampaju na engleskom jeziku.

Od IVK 1/2004. časopis izlazi tri puta godišnje kao zajedničko izdanje DIVK i IMS.

Prilozi dolaze od članova DIVK i autora iz zemlje i inozemstva. Takođe se prikazuju odabrana predavanja i radovi sa seminara i konferencija DIVK. Časopis je u celini dostupan u formatu PDF na internetu, na veb strani časopisa <http://divk.org.rs/ivk> i sa pregledom apstrakta. Pojedinačni broj sadrži 50 do 90 strana dvostubačnog formata A4. Ministarstvo za nauku Srbije finansijski podržava časopis. Ostvarena je saradnja sa klasifikacijom koju sprovodi Narodna biblioteka Srbije. Časopis se razmenjuje sa 6 stranim i 2 domaćim časopisima.

Od 2009. časopis izlazi redovno 3 puta godišnje, u povećanom broju strana. Časopis IVK je tokom 2011. dostigao

fondator, Prof. Pluvinaž. From DIVK were 3 members with 4 papers. At the Committee meeting of representatives of countries that participated in NT2F conferences, on 31 August, it was decided to continue with a new round of conferences every year, in Europe and Africa, alternately. NT2F founder prof. Guy Pluvinaž retired and chosen prof. Moussa Nair-Abdelazziz from University of Lille (France) as his successor for NT2F chairman. Instead of Prof. Stojan Sedmak, Serbia shall be presented by Doc. Ljubica Milovic.

Unfortunately, as soon as December 2010, a wave of protests in northern Africa known as the *Arabian spring* began, and in March 2011, civil war broke out in Syria, so the NT2F11 was held in Italy, near Bari, in Polignano a Mare. DIVK delegated only 2 participants, while 6 papers were sent and accepted from Serbia.

NT2F12 was held in Brasov, Romania from 27-30 May, 2012. DIVK members presented 4 papers, of which Prof. Stojan Sedmak's lecture was especially well received, but not even that helped us to win the organisation of the next NT2F, since Prof. Yury Matvienko invited participants to meet at Moscow next year, what was accepted.

NT2F13 was held in Moscow from 13-16 May 2013, with an unusually high registration fee for this type of conference, of 450 EUR. Serbia did not have any papers for this conference. Their only delegate, DIVK member, M. Milošević suggested Belgrade as the next conference host that was accepted and NT2F14 is settled for September 2014. More information and the first announcement can be found at: <http://irc.inovacionicentar.rs/nt2f14>.

“STRUCTURAL INTEGRITY AND LIFE” (IVK)

Publishing the journal is a fully professional job. In the case of journal Structural Integrity and Life (IVK) the work is in great extent performed voluntary by experts, DIVK members. The same can be said for DIVK website www.divk.org.rs

Founded in 2001 when DIVK is founded, the journal “Structural Integrity and Life” (IVK) has been published regularly in the past 12 years. The first issue appeared in June 2001 with papers from the seminar “Repair and integrity of facilities in the Pančevu Oil Refinery”. The journal was published twice a year from 2001 to 2003 jointly by DIVK and GOŠA Institute. With some delay, the issue 1-2/2002 was published by the end of 2002. From 1/2003 papers are published in both Serbian and in English, and some issues are published only in English.

From issue IVK 1/2004 the journal is published 3 times a year as a joint publication of DIVK and IMS.

Contributions arrive from DIVK members and domestic and foreign authors. Lectures and papers from DIVK seminars and conferences are also published. The journal is completely available in PDF format with an overview of abstracts at <http://divk.org.rs/ivk>. Individual issues contain 50 to 90 pages of two-columns A4 format. The journal is financially supported by the Serbian Ministry of Science. It is classified in the Serbian National Library. The journal is exchanged with 6 foreign and 2 domestic journals.

From 2009, IVK is regularly published 3 times a year in increased number of pages. IVK has reached the rank of a

rang vodećeg časopisa od međunarodnog značaja (M24) i ponovo je sufinansiran od strane Ministarstva za prosvetu i nauku. Preduzete su i aktivnosti da se održi i poboljša kvalitet časopisa, a i citiranost.

O radu časopisa svake godine se podnosi poseban izveštaj na godišnjoj skupštini DIVK.

Tehnički urednik, redaktor i administrator veb strane IVK www.divk.org.rs/ivk je prof. Zoran Radaković. Glavni i odgovorni urednik IVK je prof. Aleksandar Sedmak.

OSTALA IZDANJA DIVK

U izdanju DIVK, je 2011 iz štampe izašla monografija: *Pressure equipment integrity assessment by elastic-plastic fracture mechanics method*, autora Aleksandra Sedmaka, Stojana Sedmaka i Ljubice Milović. Prva promocija ovog izdanja bila je na 56. međunarodnom beogradskom sajmu knjiga (29.10.2011). Za članove DIVK i sve druge zainteresovane, održana je i promocija ovog izdanja DIVK na Tehnološko-metalurškom fakultetu u Beogradu (9. novembra 2011). Sva DIVK izdanja sufinansiralo je Ministarstvo prosvete i nauke ili pomažući članovi DIVK.

SARADNJA SA ESIS

Iako je u prvom delu ovog preglednog rada bilo reči o učešću DIVK u aktivnostima ESIS, čiji je DIVK član od samog osnivanja, potrebno je dodati da je DIVK i danas jedna od najbrojnijih asocijacija u ESIS. Srbija, sa 65 članova ESIS, preko DIVK je na 3. mestu po brojnosti članova u ovom evropskom udruženju, pored teškoća u vezi izmirenja članarine, jer je od 2012. godine izostalo sufinansiranje članstva u međunarodnim asocijacijama od strane Ministarstva prosvete, nauke i tehnološkog razvoja, zbog nedovoljnih sredstava budžeta za te namene.

U nastojanju da se DIVK još više međunarodno afirmiše, A. Sedmak, predsednik DIVK je na sastanku predsedništva ESIS u Kazanju, Rusija 2012. prezentirao kandidaturu DIVK za organizaciju ECF21. Naša ponuda za konferenciju ECF21 je ocenjena kao kvalitetna i ušla je u najuži izbor zajedno sa ponudom Italijanske grupe za lom, koja je u drugom krugu glasanja pobedila sa 14:12 (u prvom krugu glasanja bilo je 13:13). Naša ponuda je dobila brojne komplimente i preporuku da se kandidujemo za ECF 22, tokom konferencije ECF 20 u Trondhajmu 2014, što DIVK i planira. A. Sedmak je član radne grupe ESIS za organizaciju Letnjih škola korišćenjem sredstava COST Akcije.

ZAKLJUČAK

Brojnim i obimnim aktivnostima od organizovanja naučnih i stručnih konferencijskih seminarima, simpozijuma foruma, predavanja itd., do učešća na sličnim skupovima u zemlji i inostranstvu, preko izdavačke delatnosti, posebno izdavanjem „Integrleta i veka konstrukcija“ i članstva u ESIS, DIVK je od osnivanja, tokom 12 godina rada na stručan i odgovoran način profesionalno doprinosio afirmaciji teorije mehanike loma i njene praktične primene i van granica naše zemlje.

DIVK okuplja i dalje veliki broj zainteresovanih stručnjaka za ovu oblast i unapređuje svoje aktivnosti uprkos nedostatku finansijskih sredstava za podršku i volonterskom radu uprave i članova.

leading journal of international importance (class M24) in 2011 and is financially supported by the Ministry of Education and Science. Activities were undertaken to improve the current rating, and to extend citations.

The journal report is prepared every year and presented at the Annual DIVK meeting.

IVK technical editor, redactor and website administrator of www.divk.org.rs/ivk is Prof. Zoran Radaković. IVK editor-in-chief is Prof. Aleksandar Sedmak.

OTHER DIVK EDITIONS

Published by DIVK in 2011: the monograph: *Pressure equipment integrity assessment by elastic-plastic fracture mechanics method* by Aleksandar Sedmak, Stojan Sedmak and Ljubica Milović. The first promotion of this edition was at the 56th International Belgrade Book Fair (October 29, 2011). For DIVK members and others interested, there was a promotion of this DIVK issue at the Faculty of Technology and Metallurgy in Belgrade (November 9, 2011). All DIVK editions are co-financed by the Ministry of Education and Science or supporting members.

COLLABORATION WITH ESIS

Although the first part of this paper discusses participation in ESIS activities, as DIVK is ESIS member from its foundation, still DIVK is one of the largest associations in ESIS. Serbia, with 65 members in ESIS through DIVK is rated 3rd, considering the number of members, despite the difficulties related to the settlement of membership fees, as the lack of support on membership in international associations from the Ministry of Education, Science and Technological Development, because of low budget funds for these purposes since 2012.

In the efforts for internationally affirming DIVK, A. Sedmak, DIVK president, at a meeting of ESIS Committee in Kazan, Russia in 2012 presented DIVK candidacy for ECF21 organisation. Our offer for ECF21 conference was evaluated as good and entered the shortlist along with the Italian Group of Fracture which won in the second round with 14:12 (in the first vote it was 13:13). Our offer received a number of compliments and recommendation to apply for ECF22 during ECF20 conference in Trondheim in 2014, which DIVK plans. A. Sedmak is a member of the ESIS working group to organise the Summer schools using COST Actions funds.

CONCLUSION

Numerous and extensive activities of the organisation of scientific conferences, seminars, symposiums, forums, lectures, etc., and participations at similar events at home and abroad, through publishing and membership in ESIS, DIVK has for over 12 years been working in a professional and responsible manner and has contributed to the affirmation of the theory of fracture mechanics and its practical application even outside the borders of our country.

DIVK still gathers a large number of interested experts in this field and promotes their activities despite the lack of financial resources to support the volunteer work of the administration and members.