



**IZVEŠTAJ UPRAVNOG ODBORA  
REPORT FROM THE GOVERNING BOARD**

**AKTIVNOSTI DRUŠTVA ZA INTEGRITET I VEK KONSTRUKCIJA U 2005. GODINI  
ACTIVITY OF SOCIETY FOR STRUCTURAL INTEGRITY AND LIFE IN THE YEAR 2005**

**ORGANIZACIJA DRUŠTVA ZA INTEGRITET I VEK KONSTRUKCIJA I SARADNJA SA EVROPSKIM DRUŠTVOM ZA INTEGRITET KONSTRUKCIJA**

Društvo za integritet i vek konstrukcija (DIVK) je osnovano 2001. godine. Tokom 5 godina aktivnosti DIVK se razvio u značajnu stručnu zajednicu, sa registrovanih 148 pojedinačnih članova i 18 donatora (kolektivnih članova). DIVK je registrovan kao stručno udruženje kod Ministarstva nauke i zaštite životne sredine Srbije. Organizacijom DIVK su obuhvaćeni najvažniji aspekti integriteta i veka konstrukcija, u skladu sa statutom. Sem unutrašnjeg života u DIVK, koji se sastoji od redovnih sastanaka, posebno organizovanih događaja i izdavanja časopisa "Integritet i vek konstrukcija", pažnja se posvećuje i razvoju međunarodnih veza. Sledeći takav pristup, DIVK učestvuje u radu Evropskog društva za integritet konstrukcija (ESIS), tako što je 81 individualni član ESIS registrovan preko DIVK. DIVK je aktivan i u organizaciji međunarodne regionalne saradnje u kontaktu sa društvima i pojedincima u Bugarskoj, Rumuniji, Makedoniji, Hrvatskoj, Sloveniji, Mađarskoj, Ukrajini, Grčkoj, Turskoj, Albaniji, Bosni i Hercegovini, izmenjujući posete sa predstavnicima tih, ali i drugih zemalja.

**ZVANIČNI ČASOPIS DIVK – "INTEGRITET I VEK KONSTRUKCIJA" I WEB STRANA**

Osnovan zajedno sa DIVK, časopis "Integritet i vek konstrukcija" (IVK) izlazi redovno, pošto su prebrodene teškoće u 2002. godini. Od 2001. do 2003. časopis je izlazio dva puta godišnje, od 2004. se izdaju tri broja, a od 2005. časopis se objavljuje na srpskom i na engleskom. Prilozi dolaze od članova DIVK i stručnjaka iz inostranstva, ali se u časopisu prikazuju radovi i predavanja izloženi na seminarima i konferencijama kada je to prikladno. Pojedinačni broj sadrži 50 do 70 strana formata A4, u skladu sa ponuđenim radovima. Časopis je dostupan kao PDF na web strani DIVK. Ministarstvo nauke i zaštite životne sredine Srbije finansijski podržava časopis.

Pre tri godine DIVK je otvorio web stranu sa adresom [divk.org.yu](http://divk.org.yu), koju učestano posećuju čitaoci iz celog sveta. Web strana je povezana sa ESIS web stranom. Uspeh se ogleda u više od 15 000 posetilaca u proteklih 12 meseci, sa otvaranjem oko 200 000 strana i preuzimanjem 8 GB elektronskog materijala.

**DEVETA MEĐUNARODNA ŠKOLA MEHANIKE LOMA – IFMASS 9**

U 25-toj godini od osnivanja (1980), Međunarodna letnja škola mehanike loma (IFMASS), koja predstavlja značajnu aktivnost stručnjaka i institucija u Srbiji, održana je po deveti put.

DIVK je prihvatio IFMASS i 2003. godine je održana osma Međunarodna letnja škola mehanike loma (IFMASS 8) u Beogradu, koja je privukla predavače iz mnogih država i 108 učesnika. Monografija IFMASS 8 "Od mehanike loma do ocene integriteta konstrukcija" je 2004. objavljena na engleskom i prikazana na DIVK web strani, što je privuklo više hiljada posetilaca iz čitavog sveta.

**THE ORGANISATION OF THE SOCIETY FOR STRUCTURAL INTEGRITY AND LIFE AND COOPERATION WITH EUROPEAN STRUCTURAL INTEGRITY SOCIETY**

The Society for Structural Integrity and Life (DIVK) is established in 2001. During the five-year activity, DIVK developed an important professional community, attracting 148 individuals and 18 donor companies (collective members). DIVK is registered as a professional society in the Ministry of Science and Environmental Protection of Serbia. According to the statute, the organisation of DIVK comprises the most significant aspects of structural integrity and life. In addition to inner DIVK activities consisting of regular meetings, specially organised events, and journal publications of "Structural Integrity and Life," much attention is paid to development of international relations. Following this approach, DIVK participates in the European Structural Integrity Society (ESIS), and 81 ESIS individual members are registered through DIVK. DIVK is also active in organising regional international cooperation by contacting societies and individuals in Bulgaria, Romania, Macedonia, Croatia, Slovenia, Hungary, Ukraine, Greece, Turkey, Albania, and Bosnia & Herzegovina, and exchanging visits with representatives of these, and other countries.

**DIVK OFFICIAL JOURNAL "STRUCTURAL INTEGRITY AND LIFE" AND WEB SITE**

Established together with DIVK, the journal "Structural Integrity and Life" (IVK) is regularly published, particularly after overcoming difficulties in 2002. From 2001 to 2003 we had two issues annually, and three annual issues from 2004. Since 2005 the journal is published both in Serbian and English language. The papers originate from DIVK members and foreign experts, but the journal also presents papers and lectures submitted at seminars and conferences, when appropriate. Individual issues contain 50 to 70 pages in A4 format, according to offered papers. The journal is available in PDF format for downloading from the DIVK website. The Ministry of Science and Environment Protection of Serbia financially supports our journal.

Three years ago DIVK has opened its website [divk.org.yu](http://divk.org.yu), and it has been frequently visited from all over the world, and is linked to the ESIS website. Success is confirmed by more than 15 000 visitors in the last 12 months that have viewed about 200 000 pages and downloaded 8 GB of electronic data.

**NINTH INTERNATIONAL FRACTURE MECHANICS SUMMER SCHOOL (IFMASS 9)**

In the 25<sup>th</sup> year since establishing, the International Fracture Mechanics Summer School (IFMASS), an important activity of experts and institutions in Serbia, was held for the ninth time.

DIVK accepted IFMASS and in 2003 organised IFMASS 8 in Belgrade, which attracted lecturers from many countries and 108 participants. The IFMASS 8 monograph "From Fracture Mechanics to Structural Integrity Assessment" was published in 2004 in English and is available for download from the DIVK website, attracting several thousand visitors from all over the world.

IFMASS 9 je organizovan u Zlatnim Pjascima, Bugarska, sa prof. Stefanom Vodeničarovim iz Instituta za nauku o metalima BAN i prof. Donkom Angelovom sa Univerziteta za hemijsku tehnologiju i metalurgiju iz Sofije, uz podršku predsednika Bugarskog društva za zavarivanje dr. Martina Beloeva. Osamnaest predavanja, koja su izložili predavači iz Srbije (10), Bugarske (2), Rumunije (2), Ukrajine (1), SAD (1), Nemačke (1) i Makedonije (1) privuklo je 49 učesnika. Prvi put od osnivanja su učesnici dobili sertifikat o učešću na školi. Očekuje se da će monografija IFMASS 9 "Izazovi materijala i zavarenih spojeva: ocena integriteta i veka" biti objavljena.

Tokom IFMASS 9 potpisan je značajan dokument o saradnji u regionu, kojim se podržava organizacija zajednice "Forum Jugoistočne Evrope za integritet konstrukcija", prikazan u IVK 2/2005.

#### GODIŠNJA KONFERENCIJA I SEMINAR "INTEGRITET GRAĐEVINSKIH KONSTRUKCIJA"

Godišnja konferencija DIVK je forum za razmenu iskustava i rezultata istraživanja članova DIVK, ali se pozivaju i stručnjaci iz inostranstva da učestvuju na konferenciji. Imajući u vidu broj priloga i učesnika, u okviru konferencije se organizuje i seminar posvećen odabranoj temi. Seminar pod naslovom "Integritet građevinskih konstrukcija" ove godine je obuhvatio 10 predavanja, a odabran je sa željom da se proširi aktivnost DIVK i na probleme u toj oblasti. Zbog toga su pozvani prof. Alberto Karpinteri, *Politecnico di Torino* (Italija), predsednik ESIS, i prof. Dan Konstantinesku, *University "Politehnica"*, Bukurešt (Rumunija) da održe predavanja na seminaru, kao što je prikazano u programu. Predavanja autora iz Srbije su objavljena u časopisu "Integritet i vek konstrukcija," broj 2/2005.



Predavanje prof. Alberta Karpinterija, 28. oktobar 2005.  
Prof. Alberto Carpinteri lecturing, 28<sup>th</sup> October 2005.

#### KURS "INSPEKCIJA U TOKU EKSPLOATACIJE POSUDA POD PRITISKOM I OCENA VEKA"

Važna aktivnost za razvoj DIVK je organizacija kurseva za obuku i obrazovanje. Posle jednodnevnih seminara, koji su držani proteklih godina, na zahtev Javnog komunalnog preduzeća JKP "Beogradske elektrane" DIVK je prošle godine organizovao petodnevni kurs za obuku od 40 časova, "Inspekcija u toku eksploatacije posuda pod pritiskom i ocena veka" prema datom programu. Treba napomenuti da je ovo preduzeće zaduženo za grejanje oko 250 000 stanova u Beogradu. Predavanja su držali članovi DIVK, a praktična obuka je izvedena na Tehnološko-metalurškom fakultetu i Vojnotehničkom institutu, kao i u privatnim preduzećima CertLab i Konmat, specijalizovanim za ispitivanja bez razaranja. Deset učesnika su dobili sertifikate o učešću. Isti kurs za obuku je ponovljen i za 10 učesnika u Termoelektrani "Nikola Tesla", Obrenovac.

IFMASS 9 was organized in Golden Sands, Bulgaria with Prof. Stefan Vodenitcharov from the Institute for Metal Science of BAN and Prof. Donka Angelova from the University of Chemical Technology and Metallurgy from Sofia, supported by Dr. Martin Beloev, president of Bulgarian Welding Society. Eighteen lectures given by lecturers from Serbia (10), Bulgaria (2), Romania (2), Ukraine (1), USA (1), Germany (1), and Macedonia (1) attracted 49 participants. For the first time the participants received certificates for participating. It is expected that the monograph IFMASS 9 "The Challenge of Materials and Weldments: Structural Integrity and Life Assessment" will be published.

During IFMASS 9 one very important document for the cooperation in the region is signed, supporting to organise the Alliance "Southeast European Forum for Structural Integrity," presented in IVK 2/2005.

#### ANNUAL CONFERENCE AND SEMINAR "INTEGRITY OF CIVIL ENGINEERING STRUCTURES"

The Annual Conference of DIVK is the forum for exchanging experience and research results of DIVK members, but experts from abroad are also invited to take part. The number of contributions and participants dictated a seminar devoted to selected topics to be organised as a conference satellite programme. The seminar "Integrity of Civil Engineering Structures" this year included 10 lectures, selected with the wish to extend DIVK activity to connected problems. For that, Prof. Alberto Carpinteri, *Politecnico di Torino* (Italy), president of ESIS, and Prof. Dan Constantinescu, *University "Politehnica"* Bucharest (Romania) were invited for lectures, as presented in the programme. The lectures of Serbian authors are published in "Structural Integrity and Life" – 2/2005.



Prof. Karpinteri, prof. Sedmak i. prof. Konstantinesku  
Prof. Carpinteri, Prof. Sedmak and Prof. Constantinescu.

#### COURSE "IN-SERVICE INSPECTION OF PRESSURE VESSELS AND LIFE ASSESSMENT"

An important activity for DIVK development is the organisation of training and educational courses. After daily seminars, held in the previous years, on the request of Public Utility Company "Beogradske Elektrane" DIVK organised a five-day training course of 40 hours "In-Service Inspection of Pressure Vessels and Life Assessment" in the last year, according to the given programme. Just to mention, the company is responsible for heating about 250 000 homes in Belgrade. The lectures were held by DIVK members and the training was performed at the Faculty of Technology and Metallurgy and the Military Technical Institute, and also by private companies CertLab and Konmat, specialized in non-destructive testing. Ten participants received certificates for participating. The same training course was repeated for 10 participants at "Nikola Tesla" Thermal Power Plants, Obrenovac.

## POSETE POZVANIH STRANIH STRUČNJAKA

Tokom protekle godine DIVK je organizovao i posete pozvanih gostiju. Neki od njih su učestvovali u zajedničkim akcijama, kao prof. Karpinteri i prof. Konstantinesku, a neki su tokom sastanka sa članovima DIVK održali predavanja iz područja njihovog interesovanja. Takva su predavanja "Nova dostignuća u mehanici oštećenja", prof. Dušana Krajčinovića, *Arizona State University*, Teksas, SAD, održano 18. maja; "Prikaz Centralnog metalurškog naučnoistraživačkog instituta (CMRDI) – Obrazovanje i obuka u oblasti zavarivanja u Egiptu" 21. juna; i "Današnje stanje tehnologije zavarivanja u Egiptu" 22. juna, prof. Abdel-Monem El-Batahgy, (CMRDI), Kairo (Egipat) (ova poseta je organizovana u saradnji sa Društvom za unapređivanje zavarivanja u Srbiji–DUZS); "Samoobrazovanje: primer mehanike loma" 17. oktobra, prof. Guy Pluvinaige, *University of Metz*, Francuska; i "Eksperimentalna ispitivanja mehanike loma kompozita sa staklenim vlaknima", prof. Dan Konstantinesku, 28. oktobra na Godišnjoj konferenciji DIVK.

## UČEŠĆE NA MEĐUNARODNIM KONFERENCIJAMA

Učešće članova DIVK na 11. Međunarodnoj konferenciji o lomu (ICF 11) u Torinu su pomogli Italijanska grupa za lom (IGF) i ESIS, što je omogućilo izlaganje 6 radova članova DIVK. Od značaja je i rad DIVK, izložen na Konferenciji Weld 05, održanoj u Hamburgu. Dodatno učešće na drugim konferencijama je omogućilo da članovi DIVK pripreme 25 radova za Evropsku konferenciju o lomu (ECF 16) u julu 2006 u Aleksandropolisu (Grčka), koju organizuje prof. Emmanuel Gdoutos. To će biti potvrda aktivnosti članova DIVK u okviru ESIS i spremnost DIVK da ponudi organizaciju ECF 18 u Beogradu 2010. godine.

## REDOVNI SASTANCI ČLANOVA

Brojni sastanci DIVK u 2005. godini su organizovani, uglavnom za internu prezentaciju radova za ECF 16.

## ZAKLJUČAK

Prikazane aktivnosti pokazuju uspešnu 2005. godinu DIVK i značajna ostvarenja u mnogim akcijama.

## VISITS OF INVITED FOREIGN EXPERTS

During the previous year visits of invited guests to DIVK were also organised. Some of them took part in general events, like Prof. Carpinteri and Prof. Constantinescu, and some while meeting with DIVK members had presented lectures of their special concern. Such lectures are "New achievements in damage mechanics," given by Prof. Dušan Krajcinovic, Arizona State University, Texas, USA, on 18<sup>th</sup> May; "Introduction of Central Metallurgical R & D Institute (CMRDI) - Education and Training in Welding Field in Egypt" on 21<sup>st</sup> June; and "Actual Situation of Welding Technology in Egypt" on 22<sup>nd</sup> June by Prof. Abdel-Monem El-Batahgy, (CMRDI), Cairo, Egypt (this visit was organised in cooperation with the Society for the Advancement of Welding in Serbia–DUZS); "Autoformation: un exemple en mécanique de rupture" on 17<sup>th</sup> October by Prof. Guy Pluvinaige, University of Metz, France; and "Experimental fracture mechanics tests in glass fibre composites" by Prof. Dan Constantinescu on 28<sup>th</sup> October, presented at the DIVK Annual Conference.

## PARTICIPATION AT INTERNATIONAL CONFERENCES

Participation of DIVK members at 11<sup>th</sup> International Conference of Fracture (ICF 11) in Turin was supported by Italian Group of Fracture (IGF) and ESIS, where 6 papers of DIVK members were presented. Also of importance, DIVK members had submitted papers to the Weld 05 Conference in Hamburg. Participation at other conferences allowed preparing 25 papers of DIVK members for ECF 16 in July 2006 in Alexandroupolis, Greece, organised by Prof. Emmanuel Gdoutos. This proves the activity of DIVK members in ESIS and expresses the readiness of DIVK to offer organisation of ECF 18 in Belgrade in 2010.

## REGULAR MEETINGS OF MEMBERS

Numerous DIVK meetings were organised during 2005, mainly for internal presentation of ECF 16 papers.

## CONCLUSION

Presented activities in 2005 show a successful year of DIVK, with significant achievement in many actions.

## 1. DIVK Donors

1. Factory of Equipment and Machines (FOM), Smederevska Palanka	2. Thermal Power Plants "Nikola Tesla" (TENT), Obrenovac	3. Public Utility Company (JKP) of Belgrade "Beogradske Elektrane," Beograd
4. Oil Industry of Serbia, Oil Refinery, Pančevo	5. Electrical Industry of Serbia, Beograd	6. Institute for Material Testing, Beograd
7. Welding Institute, Beograd	8. Faculty of Mechanical Engineering, Kragujevac	9. Metalinspekt, Beograd
10. Certlab, Pančevo	11. KONMAT Beograd	12. PCM Engineering, Beograd
13. MT Comex, Beograd	14. Minel Boiler Factory, Beograd	15. REFIT, Beograd
16. Mostogradnja, Beograd	17. Oil Industry of Serbia, Refinery, Beograd	18. GOŠA Institute, Smederevska Palanka

## 2. DIVK members

	Surname	First name	Affiliation		Surname	First name	Affiliation
1.	Abramović	Nenad	AD Metalac – Nikšić	75	Mićunović	Milan	Faculty of Mechanical Engineering-
2.	Adžiev	Gorgi	Faculty of Mechanical Engineering-Skopje	76	Mijuca	Dubravka	Faculty of Mathematics - Beograd
3.	Adžiev	Todor	Faculty of Mechanical Engineering-Skopje	77	Milidrag	Milinko	R & TE - Gacko
4.	Aleksić	Boško	DP "HIP - Azotara"-Pančevo	78	Milikić	Nenad	DELTA Assurance Co - Beograd
5.	Aleksić	Radoslav	Faculty of Technology&Metallurgy-Beograd	79	Milovanović	Andreja	Retired
6.	Aleksić	Vujadin	Institute for Material Testing-Beograd	80	Milović	Ljubica	Faculty of Technology&Metallurgy-Beograd
7.	Andjelković	Zoran	Institute Gosa d.o.o. - Beograd	81	Milutinović	Zlatan	Institute Gosa d.o.o. - Beograd.
8.	Antunović	Ranko	R & TE - Gacko	82	Mišković	Dragan	REFIT, Beograd
9.	Arsić	Miodrag	Institute for Material Testing-Beograd	83	Mladenović	Mladen	Institute for Material Testing-Beograd
10.	Assoul	Jasmina	Universitat Saad Dahleb	84	Momčilović	Dejan	Institute for Material Testing - Beograd
11.	Bakić	Gordana	Faculty of Mechanical Engineering-Beograd	85	Mulić	Veselin	Technical High School - Zrenjanin

	<b>Surname</b>	<b>First name</b>	<b>Affiliation</b>		<b>Surname</b>	<b>First name</b>	<b>Affiliation</b>
12.	Behmen	Mehmed	Faculty of Mechanical Engineering - Mostar	86	Nedeljković	Ivan	Minel Boiler Factory ad-Beograd
13.	Blačić	Ivo	Military Technical Institute-Beograd	87	Nektarijević	Radoslav	Oil refinery - Beograd
14.	Bredjan	Aleksandar	Oil Refinery- Pancevo	88	Nešković	Slobodan	PUC "Beogradske Elektrane" -Beograd
15.	Burzić	Zijah	Military Technical Institute-Beograd	89	Nikolić	Ruzica	Faculty of Mechanical Engineering-
16.	Burzić	Meri	Military Technical Institute-Beograd	90	Nikolić	Mile	CIP - Beograd
17.	Čamagić	Ivica	Student	91	Nikov	Tanja	Kirka Suri - Beograd
18.	Čanii	Erni	Oil Industry of Serbia - Naftagas, Novi Sad	92	Obradović	Novica	Institute for Material Testing-Beograd
19.	Cincović	Dragan	DIP-HIP, Pančevo	93	Ognjanović	Milosav	Faculty of Mechanical Engineering-Beograd
20.	Čubrilović	Slobodan	PUC "Beogradske Elektrane" -Beograd	94	Paitaš	Jan	
21.	Čulafić	Vuk	Faculty of Mechanical Engineering -	95	Pavišić	Miodrag	PM Lucas-Beograd Federal Standardization
22.	Čurčić	Radoica	IMR Foundary, Beograd	96	Petrović	Zoran	Faculty of Mechanical Engineering-Podgorica
23.	Cvetković	Dragoljub	PMC Engineering - Beograd	97	Petrašković	Zoran	System DC92-Beograd
24.	Cvetković	Dragomir	Retired	98	Petrović	Ljubomir	Oil refinery - Pančevo
25.	Cvetkovski	Sveto	Faculty of Technology - Skopje	99	Plešinac	Dušan	Termoelektro - Beograd
26.	Cvijović	Zorica	Faculty of Technology&Metallurgy-Beograd	100	Popović	Olivera	Faculty of Mechanical Engineering-Beograd
27.	Danilovac	Veselin	DELTA Assurance Co - Beograd	101	Popovski	Slobodan	Electrotechnical Faculty- Skopje
28.	Dejanović	Biserka	Institute for Material Testing - Beograd	102	Prokić	Radica	Faculty of Mechanical Engineering-Beograd
29.	Dević	Snežana	Institute for Material Testing - Beograd	103.	Rackov	Milan	Faculty of Technical Sciences - Novi Sad
30.	Đekić	Slobodan	EPS Development Department-Beograd	104.	Radaković	Zoran	Faculty of Mechanical Engineering-Beograd
31.	Đukić	Miloš	Faculty of Mechanical Engineering-Beograd	105.	Radivojević	Božidar	Independent consultant - Beograd
32.	Drča	Siniša	Oil Refinery - Beograd	106.	Radomirović	Slavomir	GALEB - Cerovac
33.	Đurđević	Goran	Federal Institution for Standardization,	107.	Radosavljević	Nevena	Institute for Material Testing-Beograd
34.	Đurić	Velibor	Oil Industry of Serbia - Naftagas, Novi Sad	108.	Radovanović	Radovan	Police academy - Beograd
35.	Eswihli	Saadoun	Lybia	109.	Radović	Nenad	Faculty of Technology&Metallurgy-Beograd
36.	Fertilio	Antun	Retired	110.	Rajičić	Bratislav	Faculty of Mechanical Engineering-Beograd
37.	Filipović	Nadežda	Welding Institute - Beograd	111.	Rakić	Pavle	HIP Petrochemistry - Pančevo
38.	Gerić	Katarina	Faculty of Technical Sciences - Novi Sad	112.	Rakin	Marko	Faculty of Technology&Metallurgy-Beograd
39.	Gočev	Jovan	Faculty of Mechanical Engineering-Skopje	113.	Ristanović	Milorad	IMR Foundary - Beograd
40.	Grabulov	Vencislav	Military Technical Institute-Beograd	114.	Romhanji	Endre	Faculty of Technology&Metallurgy-Beograd
41.	Grujić	Biljana	LOLA POM-Beograd	115.	Rosić	Božidar	Faculty of Mechanical Engineering-Beograd
42.	Gubeljak	Nenad	Faculty of Mechanical Engineering - Maribor	116.	Šarkochević	Živče	ETS "Jovan Cvijic"-Strbce
43.	Ivanović	Veljko	Welding Institute-Beograd	117.	Sedmak	Stojan	Society for Structural Integrity and Life-Beograd
44.	Jagodanović	Andrej	Cement Factory, Beočin	118.	Sedmak	Aleksandar	Faculty of Mechanical Engineering-Beograd
45.	Jakovic	Dragan	Institute for Material Testing-Beograd	119.	Šijački	Vera	Faculty of Mechanical Engineering-Beograd
46.	Jakovljević	Aleksandar	EPS Development Department-Beograd	120.	Simović	Zeljko	Minel Boiler Factory ad-Beograd
47.	Janković	Ksenija	Institute for Material Testing - Beograd	121.	Smiljanić	Mirjana	PUC "Beogradske Elektrane" -Beograd
48.	Janković	Svetlana	Institute for Material Testing - Beograd	122.	Stanojević	Branislav	DIP-HIP - Pančevo
49.	Jarić	Jovo	Faculty of Sciences-Beograd	123.	Štašević	Milenko	Oil Industry of Serbia - Naftagas, Novi Sad
50.	Jonaš	Zoltan	Naftagas-Zrenjanin	124.	Stevanović	Jovica	Thermoelectrical Power Plant "Nikola Tesla"
51.	Jovanović	Darko	PUC "Beogradske Elektrane" -Beograd	125.	Stojanović	Dragan	Kolubara Meta - Vreoci
52.	Jovanović	Dragan	Retired	126.	Stojanović	Nebojša	GOSA - FOM DOO-Smederevska Palanka
53.	Karišić	Dragan	Institute for Material Testing-Beograd	127.	Štrbački	Svetlana	KONMAT-Beograd
54.	Kidžin	Dejan	Oil Refinery- Pancevo	128.	Štrbački	Zivko	KONMAT-Beograd
55.	Kirić	Miodrag	Institute for Material Testing-Beograd	129.	Struharik	Stanislav	Federal Standardization Institution - Beograd
56.	Kojić	Miloš	Faculty of Mechanical Engineering-	130.	Šumarac	Dragoslav	Faculty of Civil Engineering-Beograd
57.	Kojić	Đorđe	Hydro - X, Beograd	131.	Svetel	Igor	Institute for Material Testing-Beograd
58.	Kojovic	Aleksandar	Faculty of Technology&Metallurgy-Beograd	132.	Tamburović	Slavko	DIP-HIP - Pančevo
59.	Kordić	Nina	Institute for Material Testing-Beograd	133.	Tarlać	Zoran	HIP Petrochemistry - Pančevo
60.	Kostić	Miloš	MT Comex-Beograd	134.	Trajković	Marina	Faculty for Architecture and Civil
61.	Kovačević	Branislav	Oil Refinery- Pancevo	135.	Ugrčić	Marinko	Military Technical Institute-Beograd
62.	Kovačević	Tomislav	Retired	136.	Veljković	Saša	Oil refinery - Pančevo
63.	Krivošić	Ilija	Faculty of Mechanical Engineering-Beograd	137.	Vidojković	Sonja	Thermoelectrical Power Plant "Nikola Tesla"
64.	Kurai	Jano	CertLab doo -Pancevo	138.	Vratnica	Maja	Faculty of Metallurgy&Technology-Podgorica
65.	Kutin	Marina	Institute Goša – Smederevska Palanka	139.	Vučković	Marko	Institute for Material Testing-Beograd
66.	Kuzmanović	Dragoslav	Faculty of Traffic Engineering - Beograd	140.	Vukelić	Mihailo	Oil refinery - Beograd
67.	Ljevar	Aleksandar	Technical Faculty M. Pupin - Zrenjanin	141.	Vukojević	Nedeljko	Faculty of Mechanical Engineering-Zenica
68.	Ljiljak	Milena	Institute for Material Testing-Beograd	142.	Vukosavljević	Aleksandar	FEP - Plužine
69.	Maksimović	Stevan	Military Technical Institute-Beograd	143.	Živković	Aleksandar	GOSA - FOM -Smederevska Palanka
70.	Mandić	Gordan	PUC "Beogradske Elektrane" -Beograd	144.	Živković	Irena	Safety Institute-Beograd
70.	Maneski	Taško	Faculty of Mechanical Engineering-Beograd	145.	Živković	Miroslav	Faculty of Mechanical Engineering -
71.	Manjgo	Mersida	Faculty of Mechanical Engineering- Mostar	146.	Živković	Milutin	AM Hidraulik - Trstenik
72.	Manojlović	Miloš	UC Serbian Railways – Beograd	147.	Zrilić	Milorad	Faculty of Technology&Metallurgy - Beograd
73.	Marinac	Sava	Oil Industry of Serbia, GAS - Elemir				
74.	Marković	Zoran	PUC "Beogradske Elektrane" -Beograd				

## 3. ESIS members registered through DIVK

	Surname	First name	Affiliation		Surname	First name	Affiliation
1.	Adziev	Gorgi	Faculty of Mechanical Engineering-Skopje	41.	Maneski	Tasko	Faculty of Mechanical Engineering-Beograd
2.	Adziev	Todor	Faculty of Mechanical Engineering-Skopje	42.	Manjgo	Mersida	Faculty of Mechanical Engineering- Mostar
3.	Aleksic	Bosko	DP "HIP - Azotara"-Pančevo	43.	Markovic	Zoran	JKP "Beogradske Elektrane"-Beograd
4.	Aleksic	Radoslav	Faculty of Technology&Metallurgy-Beograd	44.	Micunovic	Milan	Faculty of Mechanical Engineering-Kragujevac
5.	Aleksic	Vujadin	Institute for Material Testing-Beograd	45.	Milovic	Ljubica	Faculty of Technology&Metallurgy-Beograd
6.	Andjelkovic	Zoran	Institute Gosa d.o.o.-Beograd	46.	Mladenovic	Mladen	Institute for Material Testing-Beograd
7.	Arsic	Miodrag	Institute for Material Testing-Beograd	47.	Momcilovic	Dejan	Institute for Material Testing-Beograd
8.	Assoul	Jasmina	Universitat Saad Dahleb	48.	Nikolic	Ruzica	Faculty of Mechanical Engineering-Kragujevac
9.	Bakic	Gordana	Faculty of Mechanical Engineering-Beograd	49.	Ognjanovic	Milosav	Faculty of Mechanical Engineering-Beograd
10.	Blacic	Ivo	Military Technical Institute-Beograd	50.	Pavise	Miodrag	PM Lucas-Beograd
11.	Bredjan	Aleksandar	Oil Refinery- Pancevo	51.	Perovic	Zoran	Faculty of Mechanical Engineering-Podgorica
12.	Burzic	Zijah	Military Technical Institute-Beograd	52.	Petraskovic	Zoran	System DC92-Beograd
13.	Burzic	Meri	Military Technical Institute-Beograd	53.	Popovic	Olivera	Faculty of Mechanical Engineering-Beograd
14.	Cvetkovic	Dragoljub	PMC inzenjering-Beograd	54.	Popovski	Slobodan	Electrotechnical Faculty- Skopje
15.	Cvetkovski	Sveto	Faculty of Technology-Skopje	55.	Prokic	Radica	Faculty of Mechanical Engineering-Beograd
16.	Cvijovic	Zorica	Faculty of Technology&Metallurgy-Beograd	56.	Radakovic	Zoran	Faculty of Mechanical Engineering-Beograd
17.	Cubrilovic	Slobodan	JKP "Beogradske Elektrane"-Beograd	57.	Radovic	Nenad	Faculty of Technology&Metallurgy-Beograd
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19.	Djukic	Milos	Faculty of Mechanical Engineering-Beograd	59.	Rakin	Marko	Faculty of Technology&Metallurgy-Beograd
20.	Filipovic	Nadezda	Welding Institute-Beograd	60.	Romhanji	Endre	Faculty of Technology&Metallurgy-Beograd
21.	Geric	Katarina	Faculty of Technical Sciences-Novi Sad	61.	Rosic	Bozidar	Faculty of Mechanical Engineering-Beograd
22.	Gocev	Jovan	Faculty of Mechanical Engineering-Skopje	62.	Sarkocecic	Zivce	ETS "Jovan Cvijic"-Strbce
23.	Grabulov	Vencislav	Military Technical Institute-Beograd	63.	Sedmak	Stojan	Society for Structural Integrity and Life-Beograd
24.	Grujic	Biljana	LOLA POM-Beograd	64.	Sedmak	Aleksandar	Faculty of Mechanical Engineering-Beograd
25.	Gubeljak	Nenad	Faculty of Mechanical Engineering-Maribor	65.	Sijacki	Vera	Faculty of Mechanical Engineering-Beograd
26.	Ivanovic	Veljko	Welding Institute-Beograd	66.	Simovic	Zeljko	Minel Boiler Factory ad-Beograd
27.	Jakovic	Dragan	Institute for Material Testing-Beograd	67.	Stevanovic	Jovica	Thermoelectrical Power Plant "Nikola Tesla"
28.	Jakovljevic	Aleksandar	EPS Development Department-Beograd	68.	Strbacki	Svetlana	KONMAT-Beograd
29.	Jaric	Jovo	Faculty of Sciences-Beograd	69.	Strbacki	Zivko	KONMAT-Beograd
30.	Jonas	Zoltan	Naftagas-Zrenjanin	70.	Sumarac	Dragoslav	Faculty of Civil Engineering-Beograd
31.	Jovanovic	Darko	JKP "Beogradske Elektrane"-Beograd	71.	Svetel	Igor	Institute for Material Testing-Beograd
32.	Karasic	Dragan	Institute for Material Testing-Beograd	72.	Trajkovic	Marina	Faculty for Architecture and Civil Engineering-
33.	Kiric	Miodrag	Institute for Material Testing-Beograd	73.	Ugrcic	Marinko	Military Technical Institute-Beograd
34.	Kojic	Milos	Faculty of Mechanical Engineering-Kragujevac	74.	Vidojkovic	Sonja	Thermoelectrical Power Plant "Nikola Tesla"
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36.	Kostic	Milos	MT Comex-Beograd	76.	Vuckovic	Marko	Institute for Material Testing-Beograd
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38.	Kurai	Jano	CertLab doo--Pancevo	78.	Zivkovic	Aleksandar	GOSA - FOM DOO-Smederevska Palanka
39.	Maksimovic	Stevan	Military Technical Institute-Beograd	79.	Zivkovic	Irena	Safety Institute-Beograd
40.	Mandic	Gordan	JKP "Beogradske Elektrane" Beograd	80.	Zivkovic	Miroslav	Faculty of Mechanical Engineering-Kragujevac
				81.	Zrilic	Milorad	Faculty of Technology&Metallurgy-Beograd

## 4. IFMASS 9 Programme

Lecture	Lecturer	Country
<b>A. Fundamentals</b>		
1	Crack problems in structures	S. Sedmak
2	Dynamical characteristics and structural damage detection	D. Sumarac, M. Trajković
3	Mathematical modeling of time-dependent fracture in advanced aerospace materials	M. Wnuk
4	Advanced structural steels	N. Radović
5	Micromechanical analysis in structural integrity assessment	M. Rakin, A. Sedmak
6	Energy analysis of $\Delta K$ and $\Delta J$ : fatigue - data presentations	D. Angelova
7	Fracture mechanics safety analysis in nuclear industry: from material properties to structural integrity	S. Vodeničarov
8	Failure criteria based on the equivalent stress gradient	K. Hadjov
<b>B. Experiments and testing</b>		
9	Residual stresses induced by welding	M. Zrilić
10	Crack problems in welded joints	K. Gerić
11	Significance of mechanical testing for structural integrity	V. Grabulov, Z. Burzić
12	Testing for detection and evaluation of cracks	M. Kirić
13	Materials characterization and testing of soldered joints	B. Michel, H. Walter
<b>C. Service problems</b>		
14	Failure at elevated temperature	V. Šijački
15	Investigations on composite materials-reinforcement of steel-concrete structures	D. Dontchev, K. Hadjov
16	Stress intensity factors and integrity assessment by strain gauges and photo elasticity	D. M. Constantinescu
<b>D. Structural integrity assessment</b>		
17	Numerical analysis of welded structures for structural integrity assessment	A. Sedmak, T. Maneski
18	Thermo elastic methodology for structural integrity assessment	L. Maršavina
19	Limit load calculation model of ductile failure of defective pipe and pressure vessel	I. Ornyak
20	Structural integrity assessment procedures and their application	G. Adžiev

### 5. Program of the Seminar "Integrity of Civil Engineering Structures"

A. Carpinteri	Non-linear fracture mechanics models for concrete and reinforced concrete	A. Carpinteri	Fractal models for size-scale effects in concrete structures: applications to the European standard
D. Constantinescu	Hardening response mechanisms at failure in sandwich composites	Lj. Kudrjavceva, D. Šumarac, M. Mićunović	Thermoelasticity of damaged elastomers - effective material properties
Z. Petrašković, D. Šumarac, M. Anđelković, S. Miladinović, M. Trajković	Retrofitting of damage masonry structures by technology DC 90	I. Svetel	Application of information technology in architectural – civil engineering design for object integrity realization
M. Pavišić	Open problems in modeling fracture process of concrete	M. Trajković, D. Šumarac, M. Mijalković, D. Krajčinović	Damage detection via dynamic characteristics determination
S. Sedmak, A. Sedmak	Integrity of penstock of hydroelectric power plant	D. Momčilović	Reinforcement steels

### 6. Program of the Course "In-Service Inspection of Pressure Vessels and Life Assessment"

#### 1. Materials for pressurized equipment manufacturing (3 lectures) - Nenad Radović

- Materials for power equipment (carbon and low alloyed steels)
- High alloyed steels
- Development of new materials for pressurized equipment – European requirements for materials
- Steel designation system

#### 2. Destructive testing of materials for boiler equipment (4 lectures, 4 training hours) - Dejan Momčilović, Zijah Burzić, Vencislav Grabulov

- Tensile testing with diagram analysis and tensile properties definition
- Charpy impact testing: typical diagrams and the application of test results
- Special testing of welded joints

#### 3. Metallography (4 lectures, 3 training hours) - Živko Štrbački

- Metallographic investigation of steel samples
- Inspection of cracks on pressure vessels
- Demonstration in Konmat company laboratory

#### 4. Non-destructive testing (NDT) of equipment in service (5 lectures, 3 training hours) - Jano Kurai

- Basic techniques for non-destructive testing (visual inspection, dry penetrant testing, X-ray testing, ultrasonic testing, magnetic testing)
- Special NDT techniques for materials and welded joints
- Definition of testing programme according to JUS EN 12 062 standard
- Testing results analysis
- Training by equipment demonstration and typical examples in practice

#### 5. Pressurized equipment corrosion in service (3 lectures) - Vera Šijački

- Types of corrosion damage
- Typical examples from service
- Protection measures of corrosion

#### 6. In-service damages (4 lectures, 4 training hours) - Stojan Sedmak, Milorad Zrilić, Zijah Burzić

- Crack occurrence and fracture mechanics parameters (stress crack opening displacement, J integral)
- Damage due to crack growth (at constant load, fatigue, creep)
- Training in Military Technical Institute

#### 7. Residual life assessment principles (3 lectures) - Aleksandar Sedmak, Marko Rakin

- SINTAP (Structural Integrity Assessment)
- The application of J integral for structural integrity assessment



Novi seminar: ODREĐIVANJE DEFORMACIJA I NAPONA ISPITIVANJEM INDIRECTNIM METODAMA I MODELIRANJEM

New seminar: DETERMINATION OF STRAINS AND STRESSES BY INDIRECT TESTING METHODS AND MODELLING

Dalje unapređenje integriteta konstrukcija i produženje njihovog veka u JKP "Beogradske elektrane" zahteva uvođenje novih pos-tupaka ispitivanja materijala i konstrukcija i nabavku pogodne opreme. Da bi se postigli što je moguće bolji efekti pri uvođenju novih postupaka potrebno je sagledati aktuelno stanje u pogledu razvoja i mogućnosti njihove praktične primene. Nakon razgovora sa članovima Društva za integritet i vek konstrukcija (DIVK) zaključeno je da je pogodan način ako se dostignuća u merenju deformacija prikažu na seminaru, koji bi organizovao DIVK za slušaoce iz JKP "Beogradske elektrane". Seminar će se održati 17. marta 2006. godine.

#### Program seminara (Seminar Programme)

1. Potreba i značaj praćenja stanja cevovoda i opreme indirektnim metoda-ma i modeliranjem (Need and significance of pipeline and equipment state monitoring by indirect testing methods and modelling) – V. Sarić
2. Osnove indirektnih metoda ispitivanja deformacija (Fundamentals of indirect methods for deformation testing) – M. Zrilić
3. Holografija (Holography) – S. Ristić
4. Termovizija na savremenom nivou (Thermovision at modern level) – G. Mandić
5. Primena termovizije - primeri iz prakse (The application of thermovision - examples from practice) – J. Kurai
6. Akustična emisija (Acoustic emission) – Z. Burzić

Further improvement of structural integrity and life extension in PUC „Beogradske elektrane“ requires introduction of new testing methods of materials and structures and supplying of convenient equipment. In order to achieve the best effects by introduction new procedures it is necessary to review state-of-the-art regarding the development and practical application. After the talks with the members of the Society for Structural Integrity and Life (DIVK) it has been concluded that convenient way is to present the achievements in strain measurements at the seminar, organized by DIVK for participants from PUC „Beogradske elektrane“. Seminar will take place on 17th March 2006.

7. Modeliranje stanja napona i deformacija realnih konstrukcija (Modelling stress and strain state of real constructions) – T. Maneski
8. Modeliranje elastično-plastičnog ponašanja materijala (Modelling of elastic-plastic behaviour of materials) – M. Rakin
9. Eureka projekt: praćenje deformacija digitalnom kamerom i obrada rezultata (Monitoring of strains by digital camera and results processing) – N. Gubeljak
10. Iskustva iz ispitivanja termoelektrana i C-skan sistem za praćenje rada cevovoda (Experience from thermoenergetic plants inspection and C-scan system for pipeline operation monitoring) – P. Dukić
11. Komentar i zaključci (Comments and conclusions) – S. Sedmak

## PREGLED STRANIH IZDAVAČA – REVIEW OF FOREIGN PUBLISHERS



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### Expert Systems

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**Editor: L. Rapanotti** (The Open University, UK)

Expert Systems: The Journal of Knowledge Engineering publishes papers dealing with all aspects of knowledge engineering, including individual methods and techniques in knowledge acquisition and representation, their application and evaluation, and the construction of systems – including expert systems – based thereon. As well as traditional application areas, such as Software and Requirements Engineering, Human-Computer Interaction, and Artificial Intelligence, aims at the new and growing markets for these technologies, such as Business, Economy, Market Research, and Medical and Health Care. The shift towards this new focus will be marked by a series of special issues covering hot and emergent topics.

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Focus on UML, Systems and Grids

### Advanced Systems Design with Java, UML and MDA

**K. Lano** (Department of Computer Science, Kings College, London, UK)

Model Driven Architecture defines an approach where the specification of the functionality of a system can be separated from its implementation on a particular technology platform. The idea being that the architecture will be able to easily be adapted for different situations, whether they be legacy systems, different languages or yet to be invented platforms.

MDA is a significant evolution of the object-oriented approach to system development. Advanced System Design with Java, UML and MDA describes the factors involved in designing and constructing large systems, illustrating the design process through a series of examples, including a Scrabble player, a jukebox using web streaming, a security system, and others. The book first considers the challenges of software design, before introducing the Unified Modelling Language and Object Constraint Language. The book then moves on to discuss systems design as a whole, covering internet systems design, web services, Flash, XML, XSLT, SOAP, Servlets, Javascrript and JSP.

Concepts and terminology of the Model Driven Architecture are discussed in the final section. Readers will need introductory



knowledge of software engineering, programming in Java and basic knowledge of HTML.

Contents: Preface; The Challenges of Software Design; UML and OCL; System Design; Internet System Design; Web Services; Model-Driven Architecture; Bibliography; Index.

Readership: Intermediate/advanced undergraduate and post-graduate students on information systems and computer science courses.

ISBN: 0-7506-6496-7 Book/Paperback

Pages: 416

Imprint: Butterworth-Heinemann

Publication Date: 21 April 2006

Price: £27.99

Elsevier Engineering

### Pressure Vessel Design Manual, 3<sup>rd</sup> Edition

**D.R. Moss** (Fluor, California, USA)

This book is an accumulation of design procedures, methods, techniques, formulations, and data for use in the design of pressure vessels, their respective parts and equipment. Written specifically for designers and engineers involved in designing and specifying or manufacturing of pressure vessels. It also has broader applications to chemical, civil and petroleum engineers who construct, install or operate process facilities, and would be a valuable aid to those who inspect the manufacturing of pressure vessels or review designs.

There are many handy visual aids throughout the text. It is not just a reference book, but a practical guideline, that aids designers and engineers to solve practically every design problem that an engineer might encounter with pressure vessels. As an easy-to-use reference, the book provides the user with a logical step by step approach to the design of ASME (American Society of Mechanical Engineers) Code vessels, such as the method for determining the Minimum Design Metal Temperature (an ASME requirement for all pressure vessels).

Contents: Stresses in Pressure Vessels; General Design; Design of Vessel Supports; Special Designs; Local Loads; Related Equipment; Transportation and Erection of Pressure Vessels; Appendix A Guide to ASME Section VIII, Division 1; Appendix B Design Data Sheet for Vessels; Appendix C Joint Efficiencies (ASME Code); Appendix D Properties of Heads; Appendix E Volumes and Surface Areas of Vessel Sections; Appendix F Vessel Nomenclature; Appendix G Useful Formulas for Vessels; Appendix H Material Selection Guide; Appendix I Summary of Requirements for 100% X-Ray and PWHT; Appendix J Material Properties; Appendix K Metric Conversions; Appendix L Allowable compressure stress for columns; Appendix M Flat plate formulas; Appendix N External Insulation for Vertical Vessels; Appendix O Flow over Weirs; Appendix P Time Required to drain vessels; Appendix Q Vessel Surge capacities and hold up times; Appendix R Minor Defects evaluation procedure.

Readership: Mechanical Engineers with following titles: Reliability Engineer, Fixed Equipment Engineer, Maintenance Engineer, Piping Engineer, Plant Engineer, Commissioning Engineer.

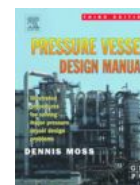
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Pages: 499

Imprint: Gulf Professional Publishing

Publication Date: 24 January 2004

Price: £80.00



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### Random Vibrations

Analysis of Structural and Mechanical Systems

**L.D. Lutes, S. Sarkani**

The topic of Introduction to Random Vibrations is the behaviour of structural and mechanical systems when they are subjected to unpredictable, or random, vibrations. These vibrations may arise from natural phenomena such as earthquakes or wind, or from human-controlled causes such as stresses placed on aircraft at takeoff and landing. Study and mastery of this topic enables engineers to design and maintain structures capable of withstanding random vibrations, thereby protecting human life.

Introduction to Random Vibrations will lead readers in a user-friendly fashion to a thorough understanding of vibrations of linear and nonlinear systems that undergo stochastic-random-excitation.

Contents: Introduction; Fundamentals of Probability and Random Variables; Expected Values of Random Variables; Analysis of Stochastic Processes; Time Domain Linear Vibration Analysis; Frequency Domain Analysis; Frequency, bandwidth, and Amplitude; Matrix Analysis of Linear Systems; Direct Stochastic Analysis of Linear Systems; Introduction to Nonlinear Stochastic Vibration; Failure Analysis; Effect of Parameter Uncertainty; Appendices A and B.

Readership: Students in graduate courses in random vibrations or probabilistic structural dynamics. As well as agencies (in Industry and governmental) that apply probabilistic dynamics methods.

ISBN: 0-7506-7765-1 Book/Hardback

Pages: 512

Imprint: Butterworth-Heinemann

Publication Date: 24 January 2004

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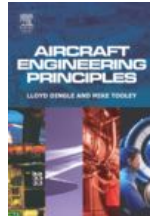
### Aircraft Engineering Principles

**L. Dingle** (Farnborough College of Technology, UK), **M. Tooley** (Former Director of Learning Technology, Brooklands College, Surrey, UK)

Aircraft Engineering Principles is essential for anyone studying for licensed A&P or Aircraft Maintenance Engineer status. The book is written to meet the requirements of JAR-66/ECAR-66, the Joint Aviation Requirement (to be replaced by European Civil Aviation Regulation) for all aircraft engineers within Europe, which is also being continuously harmonised with Federal Aviation Administration requirements in USA.

The book covers modules 1, 2, 3, 4 and 8 of JAR-66/ECAR-66 in full and to a depth appropriate for Aircraft Maintenance Certifying Technicians, and will also be a valuable reference for those taking *ab initio* programmes in JAR-147/ECAR-147 and FAR-147. In addition, the necessary mathematics, aerodynamics and electrical principles have been included to meet the requirements of introductory Aerospace Engineering courses. Numerous written and multiple choice questions are provided at the end of each chapter, to aid learning. Solutions are available for adopting instructors.

Contents: Part I: Introduction; The aircraft engineering industry; Differing job roles for aircraft maintenance certifying staff; Opportunities for training, education and career progression; CAA licence - structure, qualifications, examinations and levels; Overview of airworthiness regulation, aircraft maintenance and its safety culture; Part II: Scientific Fundamentals; Mathematics; Introduction; Arithmetic; Algebra; Geometry and trigonometry; Multiple choice questions; Further mathematics; Further algebra; Further trigonometry; Statistical methods; Calculus; Physics; Summary; Units of measurement; Fundamentals; Matter; The states of matter; Mechanics; Statics; Dynamics; Fluids; Thermodynamics; Light, waves, and sound; Multiple choice questions; Part III: Electrical and Electronic Fundamentals; Electrical fundamentals; Introduction; Electron theory; Static electricity and conduction; Electrical terminology; Generation of electricity; DC sources of electricity; DC circuits; Resistance and resistors; Power; Capacitance and capacitors; Magnetism; Inductance and inductors; DC motors/generator theory; AC theory; Resistive, capacitive and inductive circuits; Transformers; Filters; AC generators; AC motors; Multiple choice questions; Electronic fundamentals; Introduction; Semiconductors; Printed circuit boards; Servomechanisms; Multiple choice questions; Part IV: Fundamentals of Aerodynamics; Basic aerodynamics; Introduction; A review of atmospheric physics; Elementary aerodynamics; Flight forces and aircraft loading; Flight stability and dynamics; Control and controllability; Multiple choice questions; Appendices; Index.



Readership: Aircraft Maintenance Engineers including Airframe and Propulsion Mechanics, Certifying Mechanics, Technicians and Engineers and those following JAR-66/ECAR-66 and related training programmes in UK, Europe and US.

ISBN: 0-7506-5015-X Book/Paperback

Pages: 640

Imprint: Butterworth-Heinemann

Publication Date: 23 November 2004

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### Bio-Based Polymers and Composites

First book describing utilization of crops to make high performance plastics, adhesives, and composites

**R. Wool** (ACRES Program Director, Center for Composite Materials, University of Delaware), **X.S. Sun** (Professor, Grain Science and Industry, Kansas State University)

The first book systematically describing the green engineering, chemistry and manufacture of biobased polymers and composites derived from plants. A thorough introduction to biobased material resources, availability, sustainability, biobased polymer formation, extraction and refining technologies, and the need for integrated research and multi-disciplinary working teams. It provides an in-depth description of adhesives, resins, plastics, and composites derived from plant oils, proteins, starches, and natural fibers in terms of structures, properties, manufacturing, and product performance. This is an excellent book for scientists, engineers, graduate students and industrial researchers in the field of bio-based materials.

Contents: Overview of Plant Polymers: Resources, Demands, and Sustainability; Plant Materials Formation and Growth; Isolation and Processing of Plant Materials; Polymers and Composite Resins from Plant Oils; Composites and Foams from Plant Oil-Based Resins; Fundamentals of Fracture in Bio-Based Polymers; Properties of Triglyceride-Based Thermosets; Pressure-Sensitive Adhesives, Elastomers, and Coatings from Plant Oil; Thermal and Mechanical Properties of Soy Proteins; Soy Protein Adhesives; Plastics Derived from Starch and Poly (Lactic Acids); Bio-Based Composites from Soybean Oil and Chicken Feathers; Hurricane-Resistant Houses from Soybean Oil and Natural Fibers; Carbon Nanotube Composites with Soybean Oil Resins; Nanoclay Bio-composites; Lignin Polymers and Composites; Index.

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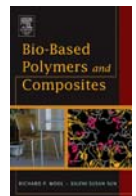
ISBN: 0-12-763952-7 Book/Hardback

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Imprint: Academic Press

Publication Date: 22 August 2005

Price: £59.99

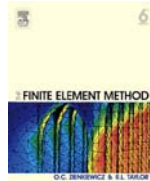




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Readership: Senior students, researchers and practicing engineers in mechanical, automotive, aeronautical and civil engineering. Key topic for applied mathematicians and engineering software developers.

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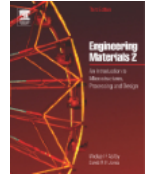
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### Engineering Materials 2

An Introduction to Microstructures, Processing and Design, 3<sup>rd</sup> Edition

**M. Ashby** (Royal Society Research Prof. at Cambridge University and Visiting Prof. of Design at Royal College of Art, London, UK), **D.R.H. Jones** (Prof. in the Engineering Department, Cambridge University, UK)



Engineering Materials 2 is a best-selling stand-alone text in its own right for more advanced students of materials science and mechanical engineering, and is the follow-up to its renowned companion text, Engineering Materials 1: An Introduction to Properties, Applications & Design. This book develops a detailed understanding of fundamental properties of engineering materials, how they are controlled by processing, formed, joined and finished, and how all of these factors influence the selection and design of materials in real-world engineering applications.

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Readership: Senior level and postgraduate study in departments of mechanical engineering; materials sciences; manufacturing; engineering design; materials design; product design; aeronautical engineering; engineering sciences.

ISBN: 0-7506-6381-2 Book/Paperback

Pages: 352

Imprint: Butterworth-Heinemann

Publication Date: 21 November 2005

Price: £24.99

Elsevier Engineering

### ISO 9000 Quality Systems Handbook

5<sup>th</sup> Edition

**D. Hoyle** (International Management Consultant; has held senior positions in quality management with British Aerospace and Ferranti International and worked with General Motors, the UK Civil Aviation Authority and Bell Atlantic on their quality improvement programmes)



Since publication of the fourth edition in 2000, David Hoyle has collected the experiences of organizations, quality managers and auditors who have actually worked with the 2000 version of the ISO 9000 family of standards, and these are now presented in this new edition of the leading quality management systems guide.

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ISO 9000; Why was ISO 9000 created?; What does ISO 9000 apply to?; Why would we need to use these standards?; Origin of ISO 9000; Using the ISO 9000 family of standards; Exclusions; Certification to ISO 9001:2000; ISO 9000 derivatives; Comparisons with other models; Summary; Role, origins and application - Food for thought; Chapter 4: Quality management system; Summary of requirements; Establishing a quality management system; Identifying processes; Sequence and interaction of processes; Criteria and methods for effective operation and control; Documenting a quality management system; Documented procedures; Documents that ensure effective planning, operation and control of processes; Implementing a quality management system; Managing processes; Ensuring information availability; Ensuring the availability of resources; Measuring, monitoring and analysing processes; Maintaining a quality management system; Continual improvement in the quality management system and its processes; Outsourcing; Preparing the quality manual; Control of documents; Control of records; Summary; Quality Management System Requirements Checklist; Quality Management System - Food for Thought; Chapter 5: Management responsibility; Summary of requirements; Management commitment; Customer focus; Quality Policy; Quality objectives; Quality management system planning; Responsibility and authority; Management Representative; Internal communication Management Review; Summary; Management Responsibility Requirement Checklist; Management Responsibility - Food for thought; Chapter 6: Resource management; Summary of requirements; Determining resources; Providing resources; Competence of personnel; Training awareness and competence; Infrastructure; Work environment; Summary; Resource management requirements summary; Resource management - Food for thought; Chapter 7: Product realization; Summary of requirements; Planning product realization processes; Customer-related processes; Design and development; Purchasing; Production and service provision; Control of measuring and monitoring devices; Summary; Product realization requirements checklist; Product realization - Food for thought; Chapter 8: Measurement, analysis and improvement; Summary of requirements; Monitoring, measurement, analysis and improvement processes; Customer satisfaction; Internal audit; Measurement and monitoring of processes; Measurement and monitoring of product; Control of nonconforming product; Analysis of data Improvement; Summary; Measurement, analysis and improvement requirements checklist; Measurement, analysis and improvement - food for thought; Appendix A ~ Glossary; Appendix B ~ Related web sites; Appendix C ~ Bibliography.

Readership: Quality Managers; Business Managers; Quality Auditors; Quality and Business Consultants for both manufacturing and service organisations; Training and education sectors

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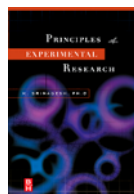
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### **The Principles of Experimental Research**

**K. Srinagesh** (Prof. Mechanical Engineering, University of Massachusetts, Dartmouth)

Covers essential fundamentals as “definitions,” “quantification,” and standardization of test materials. Shows students and professionals alike how to plan an experiment—from how to frame a proper Hypothesis to designing an experiment to accurately reflect the nature of the problem to “designing with factors.” Includes a separate section on the use of Statistics in Experimental Research, including overview of probability and statistics, as well as Randomization, Replication and Sampling, as well as proper ways to draw statistical inferences from experimental data.



Many schools offer courses in this fundamental skill and this book is meant to offer an easily accessible introduction to the essential tools needed, including an understanding of logical processes, how to use measurement, the do's and don'ts of designing experiments so as to achieve reproducible results and the basic mathematical underpinnings of how data should be analyzed and interpreted. The subject is also taught as part of courses on Engineering statistics, Quality Control in Manufacturing, and Senior Design Project, in which conducting experimental research is usually integral to the project in question.

Contents: Experimental Research in Science: Its Name and Nature; Defining Science; Science: Play or Profession; Science and Research; Varieties of Experimental Research; Conventional Researchers; Bibliography; The Importance of Definitions; Toward Definition; Defining “Definition”; Common Terms Used in Definitions; Varieties of, Direct and Indirect, Informal and Formal Definitions; Lexical and Stipulated, Nominal and Real Definitions; Definitions by Denotation; Ostensive Definitions; Definitions by Genus and Difference; Need for Definitions; What Definitions Should and Should Not Do; References; Bibliography; Aspects of Quantification; Quantity and Quality; The Uses of Numbers; An Intellectual Close-up of Counting; The Process of Measurement; Quantities and Measurements; Derived Quantities; Units for Measurement; Fundamental Quantities and Dimensions; Dimensional Analysis; Accuracy versus Approximation; Bibliography; The Purpose and Principles Involved in Experimenting; The Purpose of Experimenting; Cause and Effect; Pertinence and Forms of Cause; Mill's Methods of Experimental Inquiry; Method of Agreement; Method of Difference; Joint Methods of Agreement and Difference; Method of Residue; Method of Concomitant Variation; Planning for the Experiment; Standardization of Test Material(s); Reproducibility; Number of “Experiments”; References; Bibliography; Part II: Planning the Experiments; Defining the Problem for Experimental Research; To Define a Problem; Relation of the Problem to Resources; Relevance of the Problem; Extent of the Problem; Problem: Qualitative or Quantitative?; Can the Problem Be Reshaped?; Proverbs on Problems; At the beginning; In Progress; At the End; References; Bibliography; Stating the Problem as a Hypothesis; The Place of Hypothesis in Research; Desirable Qualities of Hypotheses; Bibliography; Designing Experiments to Suit Problems; Several Problems, Several Causes; Treatment Structures; Placebo; Standard Treatment; “Subject-and-Control” Group Treatment; Paired Comparison Treatment; Varying the Amount of One of the Two Factors; Many Factors at Many Levels, but One Factor at a Time; Factorial Design, the Right Way; Too Many Factors on Hand?; “Subjects-and-Controls” Experiments; Varieties within Subjects and Controls: Paired Comparison; Design; Experiments with Humans; Combined Effect of Many Causes; Unavoidable (“Nuisance”) Factors; Bibliography; Dealing with Factors; Designing Factors; Experiments with Designed Factors; Matrix of Factors; More Than Three Factors; Remarks on Experiments with Two-Level Factors; Response of Multifactor Experiments; Experiments with More Factors, Each at Two Levels; Fractional Factorials; Varieties of Factors; Quantitative versus Qualitative Factors; Random versus Fixed Factors; Constant and Phantom Factors; Treatment and Trial Factor; Blocking and Group Factors; Unit Factor; Levels of Factors; Levels of Quantitative Factors; Levels of Qualitative Factors; Bibliography; Factors at More Than Two Levels; Limitations of Experiments with Factors at Two Levels; Four-Level Factorial Experiments; Main Effects and Interactions; Interactions; Main Effects; More on Interactions; More Factors at More Than Two Levels; Fractional Factorial with Three-Level Factors; Bibliography; Part III: The Craft Part of Experimental Research; Searching through Published Literature; Researcher and Scholar; Literature in Print; Overdoing?; After the Climb; Bibliography; Building the Experimental Setup; Diversity to Match the Need; Designing the Apparatus; Seeking Advice; Simplicity, Compactness, and Elegance; Measuring Instruments; Calibration; Researcher as Handyman; Cost Considerations; Bibliography;

Part IV: The Art of Reasoning in Scientific Research; Logic and Scientific Research; The Subject, Logic; Some Terms in Logic; Induction versus Deduction; References; Bibliography; Inferential Logic for Experimental Research; Inferential Logic and Experimental Research; Logical Fallacies; Fallacies of Ambiguity; Fallacies of Irrelevance; Argument; Categorical Propositions; Forms of Categorical Propositions; Conventions, Symbolism, and Relations among Categorical; Propositions; Diagrammatic Representation of [AQ: Categorical?] Propositions; Categorical Syllogisms; Structures of Syllogisms; Validity of Syllogisms; Venn Diagrams for Testing Syllogisms; Ordinary Language and Arguments; References; Bibliography; Use of Symbolic Logic; The Need for Symbolic Logic; Symbols in Place of Words; Conjunction; Truth Tables; Disjunction; Negation; Conditional Statements; Material Implication; Punctuation in Symbolic Logic; Equivalence: "Material" and "Logical"; Logical Equivalence; Application of Symbolic Logic; Ordinary Language to Symbolic Language; Validity of Arguments; Reference; Bibliography; Part V: Probability and Statistics for Experimental Research; Introduction to Probability and Statistics; Relevance of Probability and Statistics in Experimental Research; Defining the Terms: Probability and Statistics; Probability; Statistics; Relation between Probability and Statistics; Philosophy of Probability; Logic of Probability and Statistics; Quantitative Probability; Relative Frequency Theory; Nature of Statistics; Measures of Central Tendency (Average); Arithmetic Average (Sample Mean); Weighted Mean; Median; Mode; Measures of Dispersion; Range; Mean Deviation; Coefficient of Dispersion; Standard Deviation; Tabular Presentations of Statistical Data; Grouping the Data; Graphical Presentations of Data; Histogram; Frequency Polygon; Cumulative Frequency Distribution; Normal Distribution Curve; Frequency Distributions That Are Not Normal; References; Bibliography; Randomization, Replication, and Sampling; Need for Randomization; Applications of Randomization; Methods of Randomization; Meaning of Randomization; Replication; Samples and Sampling; Notions of Set; Permutations and Combinations; Permutations; Combinations; Quantitative Statement of Randomization; Sampling Methods; Simple Random Sampling; Cluster Sampling; Stratified Sampling; Systematic Sampling; Multistage Sampling; Bibliography; Further Significance of Samples; Inference from Samples; Theoretical Sampling Distribution of X; Central Limit Theorem; Standard Normal Distribution; Frequency Distribution and Probability Function; Standard Normal Curve; Questions/Answers Using the APSND Table; Bibliography; Planning the Experiments in Statistical Terms; Guiding Principles; Some Preliminaries for Planned Experiments; Sample Size; Minimum Acceptable Improvement; Null and Alternate Hypotheses; Null Hypothesis in an Experiment; Alternate Hypothesis; Risks Involved:  $\alpha$  and  $\beta$  Errors; Sample Mean X: Its Role in Design; Hypotheses Based on Other Parameters; Accepting (or Rejecting) Hypotheses: Objective Criteria; Procedures for Planning Experiments; Criterion Values; Other Situation Sets; Operating Characteristic Curve; Sequential Experimenting; Concluding Remarks on Procedures; Bibliography; Statistical Inference from Experimental Data; The Way to Inference; Estimation (From Sample Mean to Population Mean); Interval Estimation; Variations in Confidence Interval; Interval Estimation of Other Parameters; Testing of Hypothesis; Regression and Correlation; Regression Analysis; Measuring the Goodness of Regression; Correlation Coefficient; Multiple Regression; Bibliography.

Readership: Undergraduate and first-year graduate students in most engineering disciplines taking required or optional course in "Design of Experiments," "Senior Design Project," "Capstone Design Project," "Engineering Statistics," and other course related to experimental research, data analysis and statistical inference.

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**Turnaround, Shutdown and Outage Management** – Effective Planning and Step-by-Step Execution of Planned Maintenance Operations  
**T. Lenahan** (Consultant and trainer, Ltd, UK)

Covers all aspects of major maintenance project planning, minimizing downtime and improving maintenance schedules. Covers projects ranging from weekend overhauls through to complete plant rebuilds. With detailed checklists and a new step-by-step project guide.

Shutdown management is project management of a special kind: managing repair, replacement or maintenance of critical systems. Manufacturing and process plants, computer systems, airliners, and many other systems must be regularly closed down or taken out of service for planned maintenance operations. This is a complete shutdown project planning guide along with a new, detailed model of excellence and step-by-step project guide. In a critical field, this book shows the maintenance manager or project leader how to get the job done correctly.

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Readership: Maintenance engineers, plant engineers, engineering managers. Key sectors include process and manufacturing sectors (petrochemical and food processing especially); aircraft maintenance; power generation and other utilities; large-scale assembly plants. Performance management specialists, Six Sigma readership, continuous improvement specialists, TPM.

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