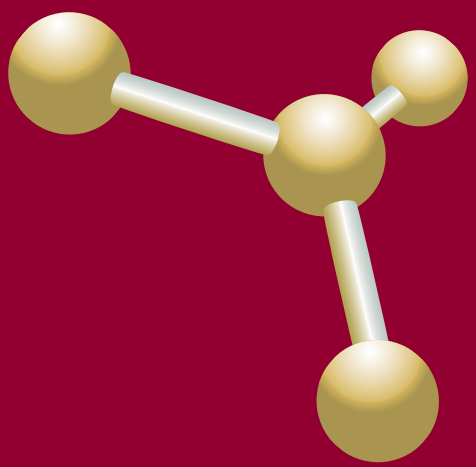
7. Trimove raziskovalne nagrade



7th Trimo research awards

2008

Trimo

KAZALO

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NAGOVOR GLAVNE DIREKTORICE

GENERAL MANAGER‘S ADDRESS

Z ZNANJEM DO ODLIČNOSTI

Zgodba gospodarske sedanjosti se odvija na mednarodnem trgu. Trgu velikih priložnosti in izzivov. Na njem zmagujejo le najboljši – tisti, ki svoje delo gradijo na inovativnosti. Inovativnosti, ki temelji na znanju.

Visokokonkurenčni mednarodni trg tako v ospredje postavlja moč znanja. Visoka tehnologija dandanes postaja temelj gospodarstva; ključne konkurenčne prednosti pa podjetja gradijo na ljudeh in predvsem njihovem znanju. Številne države zato veliko pozornosti usmerjajo v oblikovanje razvitega šolskega sistema, ki omogoča vzgojo izobraženih kadrov. Premalo pozornosti pa posvečajo povezovanju izobraževalnega sistema in gospodarstva, kar zmanjšuje kakovost in uporabno vrednost zaposlenih, predvsem na začetku njihove poklicne poti.

V družbi Trimo želimo brisati te meje. Trimove raziskovalne nagrade tako predstavljajo svojevrsten primer stapljanja teorije in prakse ter nudijo priložnost, da si gospodarstvo in znanost podata roke. Pomen te sinergije potrjuje število prijavljenih del na razpis. Trimovo raziskovalno nagrado je v sedmih letih prejelo več kot dvesto nagrajencev iz 37 fakultet iz devetih držav.

V Trimu razmišljamo, živimo in delujemo mednarodno. Na mednarodnem trgu ne želimo biti zgolj gospodarski subjekt. Želimo igrati aktivno vlogo pri razvoju družbene podobe jutrišnjega dne. Z razvojem novih izdelkov sooblikujemo področje, na katerem delujemo. Z izvajanjem Trimovih raziskovalnih nagrad pa želimo spodbujati razvoj znanja in inovativnosti na mednarodni ravni.

Znanje je tek na dolge proge, brez končnega cilja. To spoznanje v Trimu udejanjamo prek naše filozofije učečega se podjetja. Želimo, da Trimove raziskovalne nagrade ne predstavljajo končne točke v izobraževalnem procesu. Simbolizirajo naj nov začetek in spodbudo za nadaljnje, vseživljenjsko učenje. Gradite zato svojo odličnost na temelju znanja.

Tatjana Fink, MBA
Glavna direktorica

WITH KNOWLEDGE TO EXCELLENCE

The contemporary economic situation is taking place in the international market - a market of big opportunities and challenges. Only the best, those whose work is based on innovation, are winning in the market. This innovation rests on knowledge.

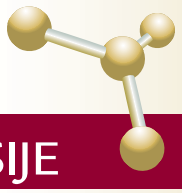
The highly competitive international market is in this way bringing the power of knowledge into the fore. Nowadays the state of the art technology is becoming the foundation of the economy; companies build their key competitive advantages on people and above all on their knowledge. This is the reason why many countries focus a lot of attention on building up a developed school system, which enables the education of well-trained personnel. But they do not pay enough attention to connecting our education system with the economy, which reduces the quality and the useful value of employees, especially at the beginning of their careers.

In Trimo we seek to erase these borders. Trimo research awards are representing a unique case of merging theory and practice while at the same time offering the opportunity to the economy and science to join hands. The importance of this synergy is confirmed by the number of applicants to the competition. Trimo research award has in the past seven years been given to more than 200 award awardees from 37 faculties in nine countries.

In Trimo we think, live and work internationally. We do not wish to be a mere trader in the international market. We wish to play an active part in developing the social image of tomorrow. By developing new products we are forming the field in which we operate. Organizing Trimo research awards we would like to encourage the development of knowledge and innovation on the international level.

Knowledge is like running long distances without a final destination. Trimo implements this recognition through its philosophy of a learning company. We would not like the Trimo research awards to represent the final point in the training process. They should be a symbol for a new beginning and an encouragement for further life-long learning. Therefore build your excellence on the basis of knowledge.

Tatjana Fink, MBA
General manager



NAGOVOR PREDSEDNIKA KOMISIJE

PRESIDENT OF THE RESEARCH BOARDS' ADDRESS

Še posebej v času gospodarske nestabilnosti se zavemo, da sta družbeno blagostanje in napredek bolj kot od virtualnih kapitalskih in finančnih čarovnij odvisna od znanja ter sodelovanja, s ciljem doseganja konkretnih rezultatov na vseh področjih znanosti. To je edina stabilna in dolgoročna pot ne samo slovenskega, ampak tudi širšega evropskega uspeha. Pojem na znanju in sodelovanju temelječa družba se marsikomu mogoče zdi samo floskula predvsem zato, ker jo vse prevečkrat slišimo in vse premalokrat uresničimo. Tisti, ki smo danes tukaj, se že vrsto let trudimo, da bi »te besede meso postale«, in če se ozremo na rezultate, smo lahko ponosni.

Trimove raziskovalne nagrade so tudi po sedmih letih obstoja nagrade presežnikov: to leto smo prebili magično mejo 200 nagrajencev, ki smo jim od leta 2001 do danes podelili priznanja za najboljša diplomska, magistrska in doktorska dela; v tem času je z nami sodelovalo več kot 150 mentorjev s 37 fakultet iz devetih držav. Samo to leto smo podelili 51 nagrad kandidatom iz 19 fakultet iz sedmih držav. Zadnji podatek je še toliko pomembnejši, saj še nikoli nismo dobili prijav iz tolikšnega števila držav, kar je še en dokaz, da znanje danes res nima meja.

Vse te številke ne kažejo samo na to, da se Trimo širi in postaja prepoznaven tudi na mednarodnem področju, ampak tudi na to, da v Sloveniji in v Evropi vsi skupaj želimo in potrebujemo sodelovanje med znanostjo ter gospodarstvom in da tudi akademskim institucijam za razliko od ustaljenega mišljenja sodelovanje na konkretnih projektih za gospodarstvo ali z njim pomeni izziv. Vedno znova sem vesel, ko od recenzentov slišim, da je naloga, ki so jo prebrali in ocenili, nekaj posebnega, da so veseli, da so jo lahko prebrali, in predvsem, da je izjemno uporabna. Prav tako sem še bolj vesel, ko se z našimi nagrajenci ponovno kje srečam in mi povedo, da jim je Trimova raziskovalna nagrada pomagala kot pomembna referenca in potrditev, da so prav oni mladi strokovnjaki z znanjem in predvsem z željo narediti in doseči nekaj več ter da so na pravi poti. S približno četrtino vseh nagrajencev smo tudi po podelitvi nagrade tako ali drugače neposredno sodelovali in iz tega sodelovanja se je rodilo že veliko konkretnih rezultatov, na katere smo lahko vsi ponosni, saj, kot rečeno, nagrade ne podeljujemo samo zato, da formalno nagradimo najboljše, ampak tudi zato, da odpremo možnosti čim večjemu številu diplomantov, magistrov in doktorjev znanosti ter nenazadnje tudi mentorjem, da svoje znanje in svoje ugotovitve uresničijo ali preizkusijo v praksi, pa naj bo to v sodelovanju s Trimom ali s kakšnim drugim gospodarskim subjektom. To je tisti odprti model sodelovanja, o katerem danes vsi govorijo in ki ga mi skupaj z vami razvijamo že vrsto let.

Zato hvala vsem nagrajencem, njihovim mentorjem, recenzentom, komisiji za Trimove raziskovalne nagrade in vsem drugim, ki ste omogočili letošnje nagrade, s katerimi smo tudi to leto prepoznali najboljše in jim dali priložnost, da se izkažejo tam, kjer to najbolj šteje – v življenju! Ne dvomim, da bodo v tem uspešni.

Čestitam!

Miloš Ebner, MBA
Predsednik komisije za raziskovalno delo

It is at times of economic instability especially that we become aware that our social welfare and progress depend more on knowledge and cooperation with the aim of achieving concrete results in all areas of science than on virtual capital and financial wizardry. This is the only stable and long-term path, not only towards Slovenian but also to wider European success. Many may see a society based on knowledge and cooperation as only a flowery phrase – primarily because we keep hearing it over and over again without actually trying to put it into practice. The people gathered here today have been striving for years for »these words to gain substance« and, if we look at the results of our endeavours, we can feel proud.

The Trimo research awards are still awards for superlatives, even after seven years of existence: this year we have broken the "magical" barrier of 200 awardees who received the award since 2001 for their diploma papers, dissertations and doctoral theses. During this time, the award saw the participation of more than 150 mentors from 37 faculties in a total of nine countries. This year alone, we bestowed 51 awards on candidates from 19 faculties in seven countries. This data is even more significant if we consider that we have never before received applications from so many countries, which is another proof that knowledge today is truly without borders.

All these numbers, however, don't just indicate that Trimo is expanding and becoming recognisable on the international stage, but they also point to the fact that people in Slovenia and Europe desire and require cooperation between the scientific sector and the economy and that academic institutions, as opposed to the established mode of thinking, are seeing cooperation in concrete projects for or with the economy as a challenge. I am always happy when I hear from reviewers that a paper they have read and graded was something special – that they are glad to have read it and, most of all, that it is highly useful. I am even happier to meet with our former awardees and hear them tell me that the Trimo research award has helped them as an important reference and confirmation that they are young experts possessing knowledge and the desire to do and achieve something more, and that they are on the right path to achieving this. We have directly cooperated with approximately a quarter of the awardees in one way or another and this cooperation has yielded many concrete results that we can be proud of as the awards are not just bestowed to formally award the best but also in order to open up possibilities to as many BSc, MSc and PhD degree holders and the mentors to realise their knowledge and findings and try them out in practice – whether through cooperation with Trimo or any other economic entity. This is the »open cooperation model« that is being talked about today by everyone and that we have been developing with you for years.

I would therefore like to thank the awardees, their mentors, reviewers, the Trimo research award committee and all those who have made this year's Trimo research awards possible, with which we recognised the best scientists of the year and gave them the opportunity to show their abilities where it matters the most – namely in real life! I have no doubts in my mind that we will be successful in our endeavours.

Congratulations!

Miloš Ebner, MBA
Chairman of the Research Board

KOMISIJA ZA RAZISKOVALNO DELO

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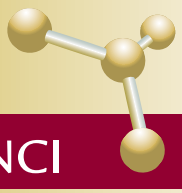

NAGRAJENCI

AWARDEES

DIPLOMSKA DELA

Diploma papers

1. Nataša ALEKSIĆ, *Slovenija / Slovenia*
2. Boštjan BARTOLJ, *Slovenija / Slovenia*
3. Marko BERNIK, *Slovenija / Slovenia*
4. Dušan BORAK, *Slovenija / Slovenia*
5. Tadeja BOŽIČNIK, *Slovenija / Slovenia*
6. Gregor CERINŠEK, *Slovenija / Slovenia*
7. Vladimir DIVIĆ, *Hrvaška / Croatia*
8. Gregor GOSLAR, *Slovenija / Slovenia*
9. Stanislav HOSTA, *Slovenija / Slovenia*
10. Tinkara KODELJA, *Slovenija / Slovenia*
11. Tina KOZIC, *Slovenija / Slovenia*
12. Balazs KÖVESDI, *Madžarska / Hungary*
13. Primož KOZLEVČAR, *Slovenija / Slovenia*
14. Franci KRALJ, *Slovenija / Slovenia*
15. Aleš KROFLIČ, *Slovenija / Slovenia*
16. Grega LJUBEJ, *Slovenija / Slovenia*
17. Eva LOVRENČIČ, *Slovenija / Slovenia*
18. Ivana MARIĆ, *Hrvaška / Croatia*
19. Petra MARINKO, *Slovenija / Slovenia*
20. Jelena MITROVIĆ, *Srbija / Serbia*
21. Miha MOŽINA, *Slovenija / Slovenia*
22. Jelena PEROVIĆ, *Srbija / Serbia*
23. Klemen POLANEC, *Slovenija / Slovenia*
24. Uroš RUS, *Slovenija / Slovenia*
25. Jože SENICA, *Slovenija / Slovenia*
26. Blaž SKUBIC, *Slovenija / Slovenia*
27. Marko SLADIČ, *Slovenija / Slovenia*
28. Tomaž STANONIK, *Slovenija / Slovenia*
29. Nataša STEFANOVIĆ, *Slovenija / Slovenia*
30. Aleksandra ŠOBOTA, *Slovenija / Slovenia*
31. Urška TORI, *Slovenija / Slovenia*
32. Janez TROŠT, *Slovenija / Slovenia*
33. Mitja ZORKO, *Slovenija / Slovenia*

SPECIALISTIČNO DELO

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1. Mojca CVIRN, *Slovenija / Slovenia*

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1. Jasmina FERK, *Slovenija / Slovenia*
2. Andraž KREBS, *Slovenija / Slovenia*
3. Andreja LAVRENČIČ, *Združeno kraljestvo / United Kingdom*
4. Ivan USHINSKI, *Bolgarija / Bulgaria*

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2. Robert KAŠE, *Slovenija / Slovenia*
3. Davorin KOFJAČ, *Slovenija / Slovenia*
4. Tadeja KOSEC, *Slovenija / Slovenia*
5. Aleš MAGDIČ, *Slovenija / Slovenia*
6. Karmen POLJANŠEK, *Slovenija / Slovenia*
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8. Simon SCHNABL, *Slovenija / Slovenia*
9. Lara SLIVNIK, *Slovenija / Slovenia*
10. Miha ŠKERLAVAJ, *Slovenija / Slovenia*
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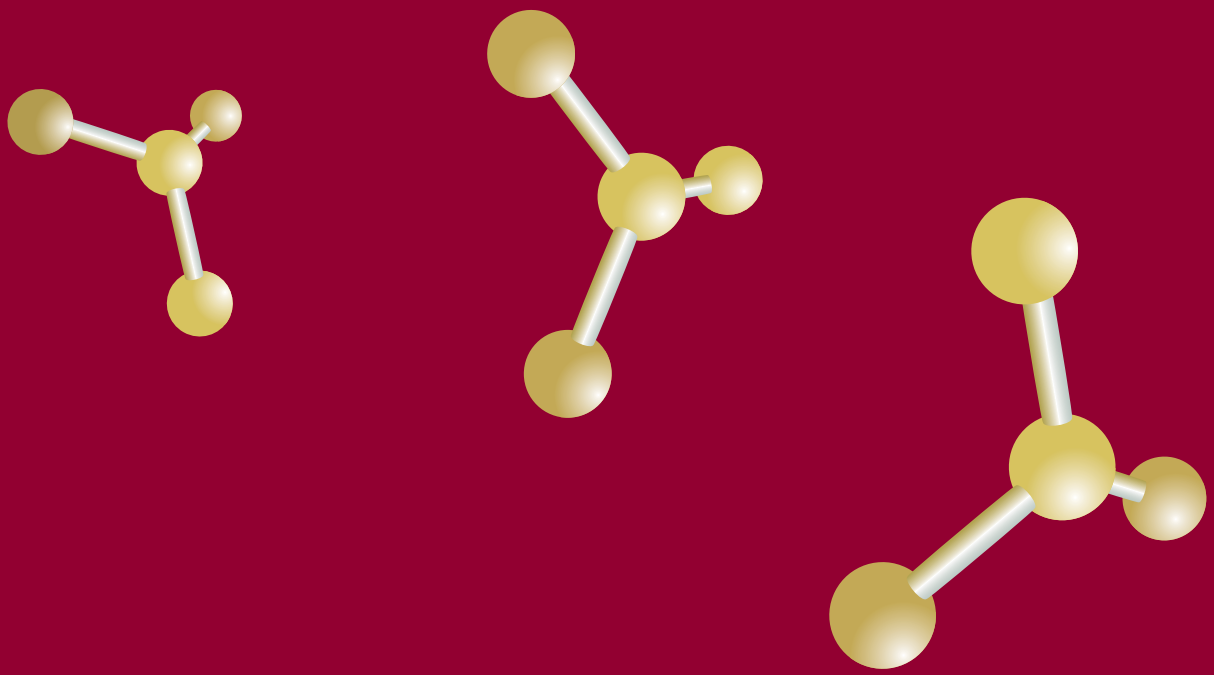
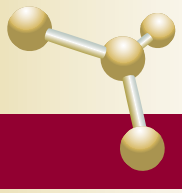


ZBORNIK POVZETKOV NAGRAJENIH DEL

ABSTRACTS OF THE PROJECTS AWARDED

DIPLOMSKA DELA

DIPLOMA PAPERS



Nataša ALEKSIĆ

Diplomsko delo

TLAČNA IN UPOGIBNA NOSILNOST POLNOSTENSKIH NOSILCEV, OJAČANIH Z VZDOLŽNIMI OJAČITVAMI

Mentor: prof. dr. Darko Beg
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Diplomsko delo obravnava izračun nosilnosti polnostenskih nosilcev, enostransko ojačanih z vzdolžnimi ojačitvami pravokotnega prereza, pri tlačni in upogibni obremenitvi, ki ga določa standard EN 1993-1-5. Predstavljena so pravila za upoštevanje vpliva izbočenja pločevine zaradi normalnih napetosti. V delu je avtorica v skladu s standardom Evrokod 1993-1-5 obravnavala določanje tlačne in predvsem upogibne nosilnosti polnostenskih nosilcev, ki imajo vitko stojino, ojačano z vzdolžnimi ojačitvami. Pri poenostavljenem računskem postopku, podanem v EN 1993-1-5, mejne lege ojačitev, npr. ojačitev blizu tlačene pasnice ali v sredini višine stojine upogibnega nosilca, dajejo nenavadno velike vrednosti za kritične napetosti.

Dosedanja praksa je pokazala, da taki rezultati begajo projektante, zato je avtorica v svojem diplomskem delu ta fenomen podrobno razložila in nato pokazala, da ne vpliva bistveno na končno upogibno nosilnost polnostenskih nosilcev. V nadaljevanju je v obsežni parametrični študiji podrobno analizirala vpliv lege ojačitve (za eno in dve ojačitvi) in drugih pomembnih parametrov na upogibno nosilnost. Analizirala je tudi optimalno lego ojačitev, ki zagotavlja najvišjo upogibno nosilnost.

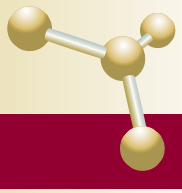
Diploma paper

COMPRESSION AND BENDING RESISTANCE OF LONGITUDINALLY STIFFENED PLATE GIRDERS

Mentor: Prof. Dr. Darko Beg
University of Ljubljana, Faculty of Civil and Geodetic Engineering

This diploma paper deals with the resistance of plate girders stiffened with one sided rectangular longitudinal stiffeners under compression and bending, determined according to the rules given in EN 1993-1-5. It presents the rules for determination of plate buckling effects due to direct stresses.

Compression and bending resistance was calculated for a wide range of cross sections, using the computer program EXCEL, and the effects of different parameters were studied. The parameters investigated were: the location of the stiffener, the slenderness of the plate, the plate aspect ratio, the stiffener to plate area ratio, the flange to web area ratio, the steel grade and the web height. Separate calculations were made for three different cases: I-girder stiffened with one or two longitudinal stiffeners under bending and plate stiffened with n longitudinal stiffeners under compression. In EN 1993-1-5 the effects of plate buckling are taken into account by effective cross sectional areas, determined by reduction factors which depend on elastic critical buckling stresses. Calculation of critical stresses is based on simplified models which may have limited applicability. Elastic critical buckling stresses were calculated more accurately by using the computer program EBPlate (energy method). In addition to the comparison of critical stresses, we were interested in the effect that the different critical stresses have on the section resistance. Therefore, the critical plate buckling stress in the expressions given by EN 1993-1-5 was replaced by critical stresses from EBPlate calculation. The comparison of the results of both methods of calculation showed that the differences in critical stresses were differently reflected in the results for section resistance.



Boštjan BARTOLJ

Diplomsko delo

DOKAZOVANJE POŽARNE ODPORNOSTI JEKLENIH NOSILNIH ELEMENTOV

Mentor: izr. prof. dr. Janez Kramar
Univerza v Ljubljani, Fakulteta za strojništvo

V diplomskem delu so najprej predstavljeni osnovni pojmi s področja požarne odpornosti jekla, nosilnih elementov iz jekla in sovprežnih konstrukcij. V nadaljevanju so za povečanje požarne odpornosti jekla in nosilnih elementov opisani sistemi pasivne zaščite in podani sistemi aktivne zaščite. Delo se osredotoča predvsem na pasivno zaščito.

V drugem delu diplomsko delo prinaša pregled standarda: Preskusi požarne odpornosti nosilnih elementov SIST EN 1365-3:2001. Tretji del pa se že konkretno, praktično ukvarja z dokazovanjem požarne odpornosti jeklenih preizkušancev, zaščitenih z intumescentnim premazom in brez te zaščite.

Delo ima širši pomen v več pogledih: obravnava tematiko požarne zaščite, ki v zadnjem času pridobiva vse večji pomen v gradbeništvu; analitično obdela standardne testne pogoje (SIST EN 1365-3) in potem s praktičnim poskusom prikaže konkretno testiranje; po svoji vsebini je lahko tudi praktični pripomoček pri pripravi in izvedbi testiranj po veljavni zakonodaji.

Diploma paper

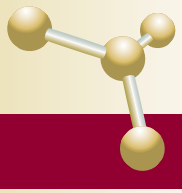
PROVING FIRE RESISTANCE OF STEEL SUPPORT ELEMENTS

Mentor: Associate Prof. Dr. Janez Kramar
University of Ljubljana, Faculty of Mechanical Engineering

The first part of the thesis contains basic definitions in the area of fire resistance of steel, steel elements, and composite structures. In addition different passive and active protection systems are described that can increase the fire resistance of steel and load-bearing elements. The main emphasis, however, is on passive fire protection.

The goal of the second part is to review the standard: testing the fire resistance of structural elements SIST EN 1365-3:2001.

The third part deals with proving the fire resistance of steel test objects protected by an intumescent coating, and those without.



Marko BERNIK

Diplomsko delo

INTELEKTUALNI KAPITAL V GRADBENI INDUSTRIJI

Mentorica: doc. dr. Jana Šelih
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

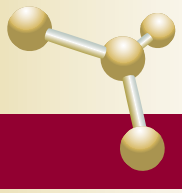
Gradbena industrija med zadnjimi spoznava vrednost, ki jo prinaša podjetju ustrezen razvoj intelektualnega in človeškega kapitala. Glede na zadnje svetovnogospodarsko dogajanje, posledico nepremičninske krize v ZDA, se sicer z manjšim zamikom pričakujejo bolj negativni trendi tudi v gradbeništvu, zato bodo rezultati te naloge še toliko bolj aktualni predvsem v Sloveniji, kjer je večina gradbenih podjetij "zaspala" zaradi investicijskih projektov iz javnih virov.
Diplomsko delo opisuje teoretična načela, opredelitve in sestavne dele intelektualnega kapitala. Posebno poglavje je posvečeno trenutnim izzivom razvoja intelektualnega kapitala ter ustreznih organizacijskih struktur za njegovo učinkovito obvladovanje. V okviru diplomskega dela je bila izvedena tudi empirična raziskava stanja na obravnavanem področju v slovenski gradbeni industriji. Izvedena analiza odgovorov kaže, da ima slovenska gradbena industrija z redkimi svetlimi izjemami na področju učinkovitega upravljanja z intelektualnim kapitalom še precejšnje rezerve. Gradbena podjetja, ki temu področju posvečajo pozornost, pa po drugi strani izkazujejo izjemno poslovno uspešnost. Avtor je v svojem diplomskem delu obravnaval temo, ki je v svetu odmevna, v Sloveniji pa se ji doslej še ni posvečalo posebne pozornosti kljub dejstvu, da se mora gradbeni inženir v svojem delu (še zlasti kadar je v vlogi vodje gradbenega projekta) v veliki meri posvečati tudi upravljanju z intelektualnim kapitalom.

Diploma paper

INTELLECTUAL CAPITAL IN THE CONSTRUCTION INDUSTRY

Mentor: Doc. Jana Šelih
University of Ljubljana, Faculty of Civil and Geodetic Engineering

Many researchers, scientists and leading world managers are convinced that only people with their intellectual capital, abilities, relationships and values represent an advantage among competitors in the present society. Intellectual, and its inseparably connected human capital, can therefore represent either a competitive advantage on one hand or badly exploited potential of the company on the other hand. The construction industry is one of the last that recognizes the value of appropriate development of intellectual and human capital and its contribution to the company.
The diploma paper presents theoretical bases of intellectual and human capital, how it is defined, divided and what it consists of. In the second and third chapter I concentrate on the challenges of intellectual and human capital development and the formation of appropriate organization structures that enable its efficient exploitation. Results and analysis of a short empirical study dealing with intellectual capital in the Slovenian construction industry are presented. The results show that the intellectual capital potential in the Slovenian construction industry could be better exploited.



Dušan BORAK

Diplomsko delo

OBJEKT OB UNIVERZITETNI OSI V MARIBORU

Mentor: prof. mag. Peter Gabrijelčič, univ. dipl. inž. arh.
Somentorji: doc. dr. Alenka Fikfak, univ. dipl. inž. arh., pred. Uroš Lobnik, univ. dipl. inž. arh., prof. dr. Vojko Kilar, univ. dipl. inž. grad.
Univerza v Ljubljani, Fakulteta za arhitekturo

Diplomsko delo obravnava možnost postavitve prizidka – novega sodobnega izobraževalnega centra – k tehniški fakulteti v Mariboru.

Razvejanost kompleksa tehniške fakultete v Mariboru, ki vsebuje pester nabor izobraževalnih programov, po ugotovitvah avtorja diplomskega dela povzroča organizacijsko zmedo. Na osnovi te predpostavke avtor postavi cilj svoje naloge – izdelati idejni projekt za osrednji prostor, ki bi vse te programe ohranil skupaj in jih nemoteno povezoval, hkrati pa tudi nudil prostore novim izobraževalnim programom.

Z izbiro programa avtor sledi potrebam po novih izobraževalnih vsebinah in novi programski organizaciji obstoječega šolskega kompleksa. Izbira programa temelji na konkretnih in stvarnih izhodiščih. Program organizira na podlagi analize obstoječih programskih sklopov, novih strateških in razvojnih usmeritev mesta in izobraževalnih ustanov Maribora.

Nosilni elementi spodnjega dela objekta so armiranobetonski, zadnja etaža pa je sestavljena iz jeklene konstrukcije, jeklenih stebrov in nosilcev, na katere je nameščena streha.

Tematika diplomskega dela je času in prostoru primerna ter sledi razvojnim strategijam programskih potreb. Arhitektura idejnega projekta skuša uskladiti značilnosti prostora s funkcionalnimi zahtevami. Organizacija prostora je naravnana na potrebe sodobnih izobraževalnih programov in obstoječi stavbni kompleks. Poseben poudarek je na oblikovanju fasade, ki v abstraktni obliki poizkuša posnemati podobo obrisa drevesa, sestavljena je iz treh različnih steklenih modulnih elementov, ki omogočajo razgibano kompozicijo in sledijo zahtevam različnih programov.

Diploma paper

BUILDING BY UNIVERSITY AXIS IN MARIBOR

Mentor : Prof. Peter Gabrijelčič, MSc. u.d.i.a.
Co-mentors: Doc. Dr. Alenka Fikfak, Lect. Uroš Lobnik, Prof. Dr. Vojko Kilar
University of Ljubljana, Faculty of Architecture

It is a review about the possibility to erect an extension to the Faculty of Technology in Maribor, and separate central administrative activities of existing faculties.

The complex of the Faculty of Technology in Maribor contains a variety of educational programmes. The diversity of particular components of this complex causes organizational confusion, and the need for central space, which would undisturbly hold all those programs together, is shown.

Façade forming is a result formed under consideration of the façade on existing buildings. With their heterogeneity they cause a phenomenon of numerous disturbances of visual elements. It follows by forming the façade for a new building with minimal number of different elements or an attempt on reaching the effect of uniformity for an external cover of a new building. A façade cover mainly consists of glass – which is perfectly evident on the ground floor, and outwards is partially evident on higher floors. Higher floor façade tries, in an abstract sense, to copy the outline of a tree image. It consists of three different modules which can still make agitated composition of a whole cover possible and at the same time an easier making of structural parts for separate modules. The form of a separate module is derived from lines that are acquired from tree crown outline abstraction, which the author has applied on an orthogonal net, acquired from the gauge of surrounding buildings and the elementary volume of a new building. Module arrangement follows the creation of a dynamic frame effect and the ground plan needs of different containing programmes.

Tadeja BOŽIČNIK

Diplomsko delo

HIŠA SODOBNEGA PLESA

Mentor: prof. Vojteh Ravnikar
Somentorica: asis. doc. Maruša Zorec
Univerza v Ljubljani, Fakulteta za arhitekturo

Zasnova nove hiše sodobnega plesa z multifunkcionalno in fleksibilno dvorano, prostorom in plesnimi studii bi s svojo programsko ponudbo in fleksibilnostjo dopuščala razvoj sodobne plesne dejavnosti in jo hkrati približala širši populaciji.
Hiša je obravnavana kot velik paviljon, katerega streha lebdi med krošnjami obstoječih dreves in s tem ohranja ter določa prostor kot točko v zelenem sistemu Ljubljane, hkrati pa si na ta način vzame ves prostor med obstoječima stanovanjskima stavbama. Naenkrat ima ta prostor mestotvoren pomen. Ima jasno vsebino, ki deluje kot popkovina do samega centra. Ravno zaradi narave neprekinjenega prehajanja notranjosti v zunanje dogajanje hiša sodobnega plesa obstaja v prostoru kot živ organizem.

Po študiju konstrukcije in možne uporabe materiala se je avtorica odločila za kovinsko konstrukcijo in kovinsko oblogo fasade, kar je dosledno izpeljala tako v zasnovi kot v detajlu. Pri tem ni le dokazala, da je zasnova izvedljiva, ampak tudi, da je s sodobno oblikovanim objektom in sodobnimi materiali mogoče zasnovati kvalitetno oblikovane prostore. Streha, kot glavni element ideje diplomske naloge, nežno zaplava med krošnjami obstoječega parka in tako tvori notranji ambient, ki ga v več nivojih povezuje prostor. Streha je iz kovinske konstrukcije in kovinske fasadne obloge, kar dosledno izpelje s fasadnim pasom in celotno pripoved objekta domiselno zaključi.

Delo poleg vseh smernic oblikovanja, analize prostorskih potreb, smeri pogledov, komunikacij, analiz programa, branja obstoječega koncepta prostora in konstrukcije v proces vnaša veliko količino umetniškega občutka. Obširno poznavanje teorije, problematike, zahtev sodobnega plesa ter razumevanje potreb bodočih uporabnikov doprinese h kvalitetni arhitekturni stvaritvi.

Diploma paper

HOUSE OF CONTEMPORARY DANCE

Mentor: Prof. Vojteh Ravnikar
Co-mentor: Assis. Doc. Maruša Zorec
University of Ljubljana, Faculty of Architecture

The concept of a new House of Contemporary Dance with a multi-purpose and variable hall and dancing studios, would allow the progress of contemporary dance activity with a new programme offer, and enable flexibility.

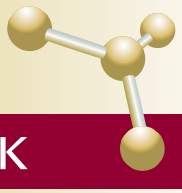
The focus is not restricted only to the interior. The ramp – descending between the school and the theatre into a multi-purpose space which functions as a bridge between covered parts of the building – lengthens the indoor space and pulls the inside events to the outside area.

The building is treated as a great pavilion, the roof floating among the tops of the existing trees. This composition preserves the site as the point in the green system of Ljubljana and playfully places the whole site between the existing residential buildings. At that point the site gets an important role in the city plan: it has clear content which acts as an umbilical cord to the city centre.

Due to the nature of continuously passing interiors to outside activities, the House of Contemporary Dance exists as a living organism.

The architecture and the content determine the site as place of 'experiencing', 'informing', of 'sensing', and a place of confrontations; it is both a public and intimate place at the same time; its shape, function, and atmosphere are abstract.

The open structure of the pavilion would allow the establishment of a new generator of urban activities.



Gregor CERINŠEK

Diplomsko delo

INŠTRUMENT PREPOZNAVANJA INOVACIJSKE KOMPETENTNOSTI ZAPOSLENIH

Mentor: doc. dr. Branko Ilič
Univerza v Ljubljani, Fakulteta za družbene vede

Nujnost nenehnega spreminjanja postaja vse pomembnejše vodilo v današnjem poslovanju organizacij. Problem pa nastane, kadar se inovativnost pojavlja zgolj in samo kot deklarativni okrasek v strategiji organizacije in njenega najožjega vodstva. Odločilno vlogo pri premagovanju tovrstnih ovir lahko odigra menedžment človeških virov, katerega glavna naloga je približati pomen inovativnosti vsem zaposlenim.

S kompilacijo konceptov inovativnost in kompetentnost je definiran pojem inovacijska kompetentnost. Ta se razume kot zmožnost posameznika, da aktivira, uporabi in poveže pridobljeno znanje, sposobnosti in veščine v situacijah, ki zahtevajo inovativne reakcije in inovativno vedenje. Hkrati so opredeljene pripadajoče lastnosti in vedenjske dimenzije inovacijsko kompetentnega posameznika. Te so razvrščene v devet, med seboj povezujočih se sklopov: 1. radovednost, 2. avtonomnost, 3. fleksibilnost, 4. sposobnost opazovanja, 5. motiviranost, 6. ambicioznost, 7. ustvarjalnost, 8. samozavestnost, 9. podjetnost.

Cilj diplomskega dela je bil oblikovati ustrezen inštrument, s pomočjo katerega lahko menedžment človeških virov prepoznava inovacijsko kompetentnost zaposlenih v organizaciji.

Oblikovani inštrument je lahko zelo uporaben v sklopu letnih razgovorov z zaposlenimi. Z doslednim in organiziranim prepoznavanjem in razvijanjem inovacijske kompetentnosti vsakega zaposlenega lahko menedžment človeških virov prevzame vodilno vlogo pri načrtovanju, organizaciji in vodenju inovacijskih procesov v organizaciji.

Pri diplomskem delu posebej velja izpostaviti tenkočutnost metodološkega pristopa, znanstveni stil pisanja, prepletanje teoretičnih in empiričnih spoznanj, analitičnost lastnih razmislekov in dognanj, refleksijo ter priporočila za menedžment.

Diploma paper

INSTRUMENT FOR IDENTIFYING EMPLOYEES' INNOVATION COMPETENCY

Mentor: Doc. Dr. Branko Ilič
University of Ljubljana, Faculty of Social Sciences

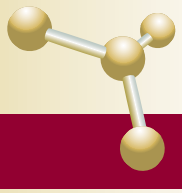
Management research confirms that innovative firms outperform their competitors, measured in terms of market share, profitable growth, or market capitalization.

However, depending only on an innovative management strategy and entrepreneurial management, style is not enough. Therefore, the main issue, which is discussed in this diploma paper, is how human resource management can bring basic principles, concepts, and philosophy of innovation, closer to every single employee.

Innovation competency is understood as the potential for an individual to act and react in an innovative manner in order to deal with different critical incidents, problems, or tasks, that demand innovative thinking and reactions, and which can occur within a certain context. Furthermore, the proper underlying characteristics of an innovation-competent individual were defined. They are divided into 9 basic and linking joints: 1. Curiosity 2. Autonomy 3. Flexibility 4. Perceptiveness 5. Motivation 6. Ambitiousness 7. Creativity 8. Self-Confidence 9. Entrepreneurship.

The main objective of this diploma paper is to develop a corresponding instrument that would aid human resource management to identify and model an employees' innovation competency in the organization.

For an innovative and consequently successful organization, it is crucial to employ and stimulate innovative individuals. Therefore, by identifying and modelling employees' innovation-competency, human resource management can play a crucial role in managing the innovation processes in the organization.



Vladimir DIVIĆ

Diplomsko delo

PRENOS ENERGIJE IN CESTNI MOST ČEZ MORSKO OŽINO ŽDRELAC

Mentor: prof. dr. Bernardin Peroš, dipl. inž. grad.
Univerza v Splitu, Fakulteta za gradbeništvo

Cilj diplomskega dela je analizirati in definirati različne možnosti rekonstrukcijecestnega mostu čez morsko ožino Ždrelac. Avtor v delu obravnava problematiko sovprežnih jeklenih konstrukcij. Najzahtevnejši del naloge je primerjava razlike obtežb po HRN-normah in standardih Evrokod.

Na osnovi določenih vhodnih gabaritov je bilo potrebno po novih standardih dimenzionirati vse elemente konstrukcije in jih primerjati glede na obstoječo varianto z jekleno ortotropno ploščo. V rekonstrukciji se obstoječe tri razpone zamenja z enim skupnim 67-metrskim razponom.

Nosilna konstrukcije je sovprežna AB-plošča in jekleni L-profil z jeklenim lokom in zategami.

Diplomsko delo je zelo praktično usmerjeno. Na podlagi primerjave uporabljenih količin materiala avtor ugotovi, da ima sovprežna konstrukcija 88 odstotkov več uporabljenega jekla kot varianta mostu z ortotropno ploščo. Ta bistvena razlika je predvsem posledica uporabe evropskih norm za definirano prometno obtežbo in spremembe statičnega sistema mostu.

Diploma paper

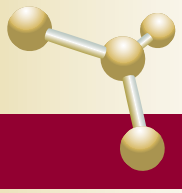
ENERGY TRANSFER AND ROAD BRIDGE OVER THE ŽDRELAC NARROW SEA

Mentor: Prof. Dr. Bernardin Peroš, BSc (Civil Engineering)
University of Split, Faculty of Civil Engineering

The goal of this diploma paper is to analyse and define the variants for the reconstruction of the bridge over the narrow sea at Ždrelac.

The span of construction is 67 m long and requires 56 by 16.6m of free space under the bridge for sea traffic. The construction concept of the road and energy bridge over the Ždrelac narrows is a composite construction. The main construction system is made of reinforced concrete slabs and welded steel and a beam and steel arch which is made as a closed rectangular cross-section with strengthenings.

All the loads, section checks, and stability checks used are defined by the European code and compared with Croatian national regulations (HRN). The final dimensions of all elements are calculated to match all constructional needs as well as architectural harmony with the landscape. The larger dimensions of the longitudinal beams and arch cross-sections are a direct implication of strict Eurocode regulations which also affected the wind-loads on beams because of larger impact surfaces.



Gregor GOSLAR

Diplomsko delo

POZICIONIRANJE STREŠNIH IN FASADNIH PANELOV TRIMO NA SLOVENSKEM TRGU

Mentorica: prof. dr. Vesna Žabkar
Univerza v Ljubljani, Ekonomska fakulteta

Namen diplomskega dela je analizirati pozicijo blagovne znamke Trimo, ki jo v primerjavi s konkurenčnimi blagovnimi znamkami zavzema na slovenskem trgu.

Avtor je izpeljal analizo anketnih vprašalnikov ter grafično izrisal zaznavne zemljevide, ki slikovno prikazujejo pozicijo Trima v primerjavi z drugimi v raziskavo zajetimi ponudniki strešnih in fasadnih panelov na slovenskem trgu. Rezultati kažejo, da je Trimo med vsemi v raziskavo zajetimi ponudniki najbolj prepoznaven in pri vseh parametrih zavzema najboljši položaj (izjema sta cena in ostali ponudniki, kjer se je izkazalo, da razlika ni statistično značilna). Uporabniki dobro prepoznajo pozicijo strešnih in fasadnih panelov, kar dokazuje, da je pozicioniranje panelov in blagovne znamke Trimo ustrezno. Anketiranci prav tako dobro prepoznajo slogan »celovite rešitve«, ki predstavlja prednost pred ostalimi v raziskavo zajetimi ponudniki, in mu tudi zaupajo. Raziskava razkriva, da bi bilo blagovno znamko možno pozicionirati tudi na podlagi »hitre gradnje«, saj je to ena izmed lastnosti, ki so anketirancem najbolj pomembne, hkrati pa jo Trimo zadovoljuje bolje kot konkurenti.

V diplomskem delu je dokaj podrobno prikazana metodologija raziskave, ki lahko služi kot model za izvedbo omenjene raziskave na katerem izmed tujih trgov ter razkrije pozicijo blagovne znamke Trimo tudi izven meja Slovenije.

Diploma paper

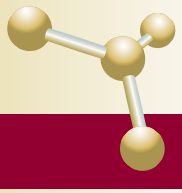
POSITIONING OF TRIMO ROOF AND FAÇADE PANELS IN THE SLOVENIAN MARKET

Mentor: Prof. Dr. Vesna Žabkar
University of Ljubljana, Faculty of Economics

The purpose of this study is to analyse the position of the Trimo trade mark which is taken in comparison with other competitive brands on the Slovenian market.

The analysis of questionnaires is taken from the survey and perceptional maps are drawn, where the position of Trimo is presented in comparison with other competitors included in the survey on the Slovenian market. The results show that Trimo is the most noted among other competitors involved in the survey and has the best position amongst all its competitors (the exception is price and other suppliers, where the difference is not statistically sufficient). The position of roof and facade panels is well recognised among users, which shows that the positioning of Trimo panels and the brand is adequate. The slogan "complete solutions" presents an advantage compared to competitors and is also well recognised and trusted among participants in the survey. The survey also reveals that the positioning of the Trimo brand could also be possible because of the characteristic of "fast assembly". This is one of the characteristics which plays a great deal of importance to clients and is also better perceived with Trimo than the competition.

The methodology of research is represented in quite detail in the survey and can be used as a model for further research on foreign markets to reveal the position of the Trimo brand in countries other than Slovenia.



Stanislav HOSTA

Diplomsko delo

DALJINSKI NADZOR DELOVANJA DIAGNOSTIČNEGA SISTEMA ELEKTROMOTORSKIH POGONOV

Mentor: doc. dr. Rastko Fišer, univ. dipl. inž. el.
Univerza v Ljubljani, Fakulteta za elektrotehniko

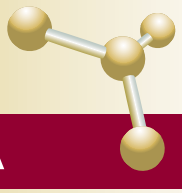
Diplomsko delo obravnava zasnovo, razvoj in realizacijo sklopa za daljinski nadzor delovanja diagnostičnega sistema, ki v industrijskem objektu spremlja stanje pogonskih električnih motorjev, ki so ključni za zagotavljanje obratovalne zanesljivosti. Nenaden izpad enega od teh motorjev lahko povzroči izpad celotne proizvodnje linije in s tem znatno materialno škodo. Diagnostični sistem, ki se uporablja v tem objektu, omogoča zgodnje odkrivanje napak, še preden pride do motenj v delovanju. Sklop za daljinski nadzor je dodatni modul obstoječega, predhodno razvitega diagnostičnega sistema in nadgrajuje avtomatizacijo komunikacije z odgovornimi posluževalci pogonov. Osnovna funkcija sklopa za daljinski nadzor je takojšnje obveščanje o napakah v delovanju pogonskih motorjev preko SMS-sporočil v mobilnem GSM-omrežju in tako odpravlja do sedaj potreben dostop do interneta za osnovni vpogled v delovanje pogonov. Sklop zagotavlja tudi takojšnje obveščanje o izpadih oz. napakah v delovanju diagnostičnega sistema in v primeru izpada poskrbi za ponovni zagon. Nudi tudi možnost izbire avtomatskega ali ročnega ponovnega zagona procesnega računalnika v diagnostičnem sistemu.
Celoten sklop vodi AVR-mikrokrmilnik, avtor pa je razvil programsko opremo, realiziral celoten strojni del ter ga namestil v funkcionalno ohišje z vsemi potrebnimi priključki in signalizacijo. Opravljeno delo pomeni dragocen prispevek k zagotavljanju zanesljivosti in varnosti delovanja postrojev v industrijskih objektih in odpira nove možnosti v avtomatizaciji nadzora stanja elektromotorskih pogonov ali katere koli druge pomembne naprave.

Diploma paper

REMOTE SUPERVISION OF ELECTRIC MOTOR DIAGNOSTIC SYSTEM OPERATION

Mentor: Dr. Rastko Fišer, Assistant Professor, BSc (Electrical Engineering)
University of Ljubljana, Faculty of Electrical Engineering

The objective of this diploma paper is the design and construction of a subsidiary system to remotely check the operation of a diagnostic system.
The diagnostic system supervises the condition of propellant electric motors, which are essential for the working of an industrial plant. An unexpected breakdown of one motor can cause the entire production line to stop operating and thus cause material damage. The diagnostic system that is used in a treatment plant is capable of early detection of working anomalies before a serious fault occurs.
A subsidiary system is an additional module of a previously developed diagnostic system that perfects automatic communication with the supervisors responsible for the electric drive motors. The essential function of the 'subsidiary system for remote supervision' is the immediate reporting of errors in the operation of propellant motors, by means of SMS messages over the mobile GSM network, thus eliminating the need for instant access to the internet for a basic insight into the operation of the electric drive motors.
The module also makes possible the immediate reporting of operational malfunctions, or any problem with the diagnostic system itself. In case a problem with the diagnostic system occurs, the module takes over the re-start procedure. It is possible to choose between an automatic or manual procedure for the re-start of the processing computer in the diagnostic system.
The subsidiary system is controlled by an AVR micro-controller. The author has developed a software package and built the complete hardware, which was put into fully functional housing with all the necessary connections and transmitters. The work performed is a valuable contribution to the reliability and operational safety of electric drive motors in industrial plants. It gives new opportunities to the automation process for supervision of electric drive motors, or any other important system.



Tinkara KODELJA

Diplomsko delo

CENTER ZA PROSTI ČAS V NOVI GORICI

Mentor: prof. mag. Peter Gabrijelčič
Somentorica: dr. Alenka Fikfak
Univerza v Ljubljani, Fakulteta za arhitekturo

Povod za določitev teme diplomskega dela je bila Poletna plaža 2006, ki je s številnimi prireditvami in pestrim programom prebudila dogajanje v centru Nove Gorice. Poletni pa je v manjšem obsegu v decembru sledila še Zimska plaža 2006.

Dobri zamisli celotnega koncepta ter programa skuša avtorica v nalogi zagotoviti primeren mestni prostor. Ta prostor naj zagotovi primerne zunanje površine, ki bodo lahko skozi različne letne čase namenjene različnim dogodkom (koncerti, predstave, projekcije, delavnice ...), hkrati pa bodo v vsakdanu uporabljene kot nov, odprt prostor mesta. Objekt, ki se prepleta z zunanjimi površinami in z njimi tvori celoto, skuša zagotoviti dodatne možnosti preživljanja prostega časa, ki jih v mestu primanjkuje.

Izbrana lokacija v trenutnem stanju predstavlja sivo cono v središču mesta ter kot taka bariero za širitev glavne točke mestnega utripa proti jugu. Idejna zasnova objekta temelji na zamisli povezovanja obstoječega središča mesta z novonastalim objektom in s tem širitvijo ožjega središča mesta.

Ne samo programsko, ampak posledično tudi formalno je objekt medij povezovanja. Objekt predstavlja trak, ki se ovija okrog povezovalne poti – galerijske poti, ki je glavna os komunikacije med obstoječimi objekti oziroma glavnima centroma dogajanja na obeh straneh obravnavane lokacije. Materializacijo tako zastavljene strukture prepleta objekta in zunanjih površin pa pogojuje tudi inovativna uporaba primernih materialov.

Idejna zasnova celotnega območja temelji na oblikovanju različnih mrež, ki so osnovane glede na danosti prostora ter z medsebojnimi odnosi tvorijo kompleksnejšo strukturo v več nivojih, ki služi kot vodilo za oblikovanje posameznih elementov.

Diploma paper

LEISURE TIME CENTRE IN NOVA GORICA

Mentor: Prof. Peter Gabrijelčič, MSc
Co-mentor: Dr. Alenka Fikfak
University of Ljubljana, Faculty of Architecture

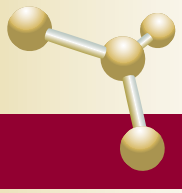
The cause of the theme of the diploma paper was »Summer Beach 2006«, which has revived a social event in Nova Gorica's centre with numerous events and a varied programme. 'The Summer Beach' was followed by »Winter Beach 2006«, which took place in December.

The diploma paper's main goal is to ensure an appropriate space in the city, able to accommodate the overall well-developed concept and program of the above-mentioned events. This space has to offer outer spaces designed to host various events (concerts, shows, projections, workshops, etc) throughout all the seasons and, at the same time, to be used as a new open space in the city's everyday life. The building, interweaving with outer spaces and forming a whole with them, also ensures additional possibilities for spare time pursuits, which the city lacks.

The chosen location in its present state represents a barrier to expansion of the main focus of events in the city centre, southwards. As a consequence, the building's concept is founded on the idea of connecting the existing with the new, and through extending the city centre.

Not only functionally, but also formally, the building is a medium for connection. It represents a ribbon, folding around the gallery path, which is the main communication axis between the two sides of the site. The materialisation of such a structure is only possible with the innovative use of appropriate materials.

The concept of designing the site as a whole is established by forming different layers of nets, based upon the sites' features, which are then overlaid to form more complex structures at various levels and serve as a lead for designing individual elements of the site.



Tina KOZIC

Diplomsko delo

UPRAVLJANJE INTELEKTUALNEGA KAPITALA IN KONKURENČNE PREDNOSTI PODJETJA TRIMO, D. D.

Mentor: doc. dr. Branko Ilič
Univerza v Ljubljani, Fakulteta za družbene vede

V evropskih podjetjih vrednost in pomen intelektualnega kapitala naraščata skladno z vlogo, ki jo imajo pri nadnacionalni konkurenčnosti podjetij znanje, inovacije in obvladovanje informacij, in zato je za doseganje konkurenčnih prednosti pred tekmeci ključnega pomena učinkovita uporaba znanja in višanje potenciala skozi inovacije. Posredovanje informacij o neotipljivih virih podjetja predstavlja enega ključnih faktorjev uspeha v sistematičnem posredovanju informacij o neotipljivih virih.

Namen diplomskega dela je bil prikazati teoretično–praktične ugotovitve glede pomembnosti intelektualnega kapitala in njegove uporabe ter merjenja v podjetju Trimo, d. d., in istočasno pripraviti nekaj predlogov za izboljšave (primerjavo benchmarking, analizo SWOT, strukturo intelektualnega kapitala in predlagano metodo za njegovo merjenje).

Najpomembnejši element konkurenčne prednosti podjetja postajajo zaposleni v podjetju kot nosilci znanja in izkušenj. Podjetja, ki vlagajo v nenehno učenje zaposlenih in same organizacije, imajo boljše možnosti za poslovni uspeh. Da bi te naložbe dejansko ustvarjale donos, jih je potrebno ocenjevati.

Diploma paper

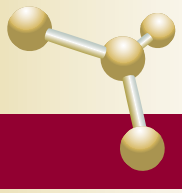
MANAGING INTELLECTUAL CAPITAL AND COMPETITIVE ADVANTAGES IN TRIMO D.D.

Mentor: Doc. Dr. Branko Ilič
University of Ljubljana, Faculty of Social Sciences

According to the role of knowledge, innovation, and control of information, the value of intellectual capital increases with global competition between companies. That is why the effective use of knowledge and increasing innovation are the most important things to achieve competitive advantages. Intervention with information from the intangible sources of a company's knowledge is one of the key factors for success.

The purpose of the diploma paper is to present theoretical and empirical findings about the importance of intellectual capital, its use, and measurement in Trimo; and at the same time to make some proposals for improvement - benchmarking comparison, swot analysis, structure of intellectual capital in Trimo, and a suggested method for measuring intellectual capital.

Employees are becoming the most important element of competitive advantage for a company, because they are the carriers of knowledge and experience. Companies which invest in continuous learning for employee's have a better chance to achieve business success. But if we want profit out of these investments, we have to evaluate and measure them.



Balazs KÖVESDI

Diplomsko delo

ODPORNOST NA KONCENTRIRANO OBTEŽBO PROFILIRANE JEKLENE STOJINE ZA GRADNJO MOSTOV

Mentor: prof. dr. Laszlo Dunai
Somentorja: prof. dr. Ulrike Kuhlmann,
Benjamin Braun, dipl. inž.
Univerza za tehnologijo in ekonomijo v Budimpešti

Vodilo diplomskega dela je izdelati učinkovito in uporabno metodo za računsko analizo porušnih mehanizmov obravnavanih elementov. Pri tem se avtor opira na redke izkušnje predhodnih raziskovalcev, in sicer na tri sete eksperimentalnih preiskav sedemnajstih preizkušancev. Zaradi pomanjkanja literature na specifičnem področju se je moral pri tem zadovoljiti z obstoječimi analizami čistih jeklenih nosilcev s profiliranimi stojinami. Pri nadgradnji obstoječih in razvoju novih računskih pristopov je skušal v največji možni meri slediti principom EC3.

Predmet diplomskega dela je obnašanje s koncentrirano obtežbo (v lastni ravnini) obremenjenih (trapezno) profiliranih stojin, kar je predvsem v mostogradnji trenutno aktualen problem. Uporaba teh elementov v kombinaciji z masivnimi (armiranobetonskimi) namreč pomeni občutno zmanjšanje lastne teže konstrukcije, sam proces gradnje pa je hitrejši in bolj ekonomičen.

Predstavljeno delo predstavlja pionirsko delo na obravnavanem področju in temelj razvoja učinkovitejših in bolj ekonomičnih sistemov (mosto)gradnje.

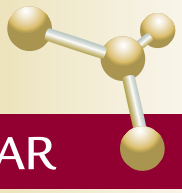
Diploma paper

THE PATCH LOADING RESISTANCE OF CORRUGATED STEEL WEBS USED IN BRIDGE BUILDING

Mentor: Prof. Dr. Laszlo Dunai
Co-mentors: Prof. Dr. Ulrike Kuhlmann, Benjamin Braun, BSc (Eng)
Budapest University of Technology and Economics

The corrugated steel plate is a widely used structural element in many fields because of its favourable properties. For the last 20 years it has been increasingly used as a web of hybrid and composite bridges. From the modern bridge erection methods the incremental launching technique is one of the most competitive. But this building process involves a problem with buckling of the thin steel web. Bearing stiffeners give no solutions in the case of moving loads, therefore it is necessary to determine the load-carrying capacity of the corrugated webs under partial compressive patch loading. This university diploma paper focuses on that.
Investigations up to now have focussed on typical building structures, where the web slenderness is high and the loading length is very short. These investigations are extended to typical bridge structures in this university thesis.

Existing design methods from literature are studied and compared to the experimental and numerical results. The usability of the recommended design formulas were analyzed from the point of view of hybrid bridges. On the basis of numerical simulations by the Finite Element Method (FEM) an enhanced design method was developed for local buckling (web crippling). For global buckling a formula is developed to avoid a global failure-mode in the function of geometric parameters.



Primož KOZLEVČAR

Diplomsko delo

POTRESNA ANALIZA VISOKOREGALNIH PALETNIH SKLADIŠČ

Mentor: prof. dr. Darko Beg
Somentor: dr. Leon Hladnik
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

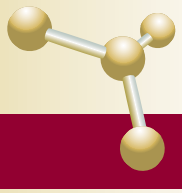
V diplomskem delu sta obravnavani dve različni visokoregalni skladišči, njun investitor je podjetje Trimo, d. d. To sta visokoregalni skladišči Trimo VRS 2 in Trimo VRS 3. Visokoregalna skladišča niso običajne konstrukcije, saj pri njih večino gravitacijske obtežbe predstavlja koristna obtežba. Ta se lahko med potresom premika, kar ugodno deluje na potresno obremenitev skladišč. Dinamična analiza da z reduciranim prerezom diagonal manjše sile v elementih in večje pomike v primerjavi s konstantnim prerezom diagonal. Pokazala je nekatere pomanjkljivosti, ki jih modalna analiza ne odkrije. S primerjavo dinamične in modalne analize so tudi ugotovili, ali so izbrali primeren faktor obnašanja. Pomembna je ugotovitev, da je nelinearna dinamična analiza zelo zamudna in je zaenkrat brez ustrezne programske opreme, ki omogoča obdelavo izhodnih podatkov, in zmogljive strojne opreme neuporabna za vsakdanjo prakso.
Avtor je podrobno analiziral potresno odpornost obeh skladišč in pri tem uporabil modalno analizo s spektri odziva in nelinearno dinamično analizo. Pokazal je, na kakšen način se lahko pri konstrukcijah regalnih skladišč disipira energija. Posebej se je ukvarjal s povezji z zmanjšanim prečnim prerezom (dog bone) in pokazal, da so lahko prekratke oslabitve neugodne, saj se v njih lahko razvijejo prevelike deformacije. S točnejšo analizo regalnih skladišč je potrdil rešitve, ki so bile podane v projektih.

Diploma paper

ANALYSIS OF PALLET RACKS UNDER SEISMIC CONDITIONS

Mentor: Prof. Dr. Darko Beg
Co-mentor: Dr. Leon Hladnik
University of Ljubljana, Faculty of Civil and Geodetic Engineering

The present diploma paper deals with two different steel pallet high-rack warehouses, Trimo VRS 2 and Trimo VRS 3. Pallet HRW are not typical structures, as their variable load presents the most significant part of the gravity load. During an earthquake that variable load proves to have an advantageous influence on the racks' seismic load. Results of time history analysis are less advantageous than results of modal analysis. Time history analysis with reduced section of tension diagonals contribute smaller internal forces but bigger displacements than constant sections of tension diagonals. With help of time history analysis we uncover some weakness in structure, which modal analysis did not. From comparison of modal analysis with time history analysis we ascertain if the behaviour factor was suitable. Important comprehension is that time history analysis is not useful for everyday practical use.



Franci KRALJ

Diplomsko delo

POTRESNA ANALIZA JEKLENE STOLPNICE

Mentor: prof. dr. Darko Beg
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Tema diplomskega dela je analiza jeklene stolpnice elipsaste oblike in višine 70 m. Glede na podane zahteve o tlorisu in višini so za prenos obtežbe izbrali tri različne konstrukcijske zasnove. Vsak od treh konstrukcijskih sistemov je bil najprej dimenzioniran na mejno stanje nosilnosti in uporabnosti. Nato so vse tri konstrukcije dimenzionirali na potresno obrežno stanje z metodo modalne analize. Za objekte, dimenzionirane po modalni analizi, je bila v nadaljevanju opravljena nelinearna statična (pushover) analiza. Poseben poudarek v diplomskem delu pa je na nelinearni dinamični analizi vseh treh konstrukcijskih sistemov. Analiza je bila narejena za 7 dejanskih akcelogramov, ki so bili ustrezno skalirani glede na zahteve standarda EN 1998-1. Pri tem so rezultati vseh analiz povprečje merjenih količin vseh 7 akcelogramov. V zadnjem delu diplomskega dela pa so primerjave posameznih konstrukcijskih sistemov glede na rezultate modalne analize, analize pushover in nelinearne dinamične analize. Opravljene so tudi primerjave med posameznimi analizami in ocenjena ustreznost njihove uporabe za dimenzioniranje visokih objektov. Primerjava rezultatov je pokazala, da vsi trije statični sistemi dajejo zadovoljive rezultate glede porabe jekla, kot najustreznejša rešitev pa se je pokazal prvi sistem. Poudariti je potrebno, da uporabljene nelinearne metode presegajo vsebino dodiplomskega študija, kar daje diplomskemu delu še posebno vrednost.

Delo je zelo praktično usmerjeno in kljub svoji veliki strokovni usmerjenosti ponazori in prikaže probleme in dileme, ki lahko nastanejo v postopku inženirskega projektiranja konstrukcije. Za konkreten primer, iskanje najboljše rešitve z analizo več statičnih sistemov osnovne nosilne jeklene konstrukcije in problemov statike in dinamike konstrukcij, avtor preveri vse možnosti, ki jih ponuja standard Evrokod. Delo pomeni zelo praktičen, uporabljiv in aktualen doprinos na področju projektiranja jeklenih konstrukcij s pomočjo standardov Evrokod.

Diploma paper

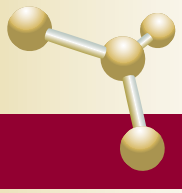
SEISMIC ANALYSIS OF STEEL HIGH RISE BUILDING

Mentor: Prof.Dr. Darko Beg
University of Ljubljana, Faculty of Civil and Geodetic Engineering

The subject of this diploma paper is the analysis of a high-rise steel building which is 70m high and has an elliptical shape. According to the requirements of the ground plan and the height of the building, 3 different constructional designs for load transfer were chosen. At the beginning all 3 constructions were measure for the ultimate, and serviceability, limit state. Then all 3 constructions for the seismic limit using the method of modal analysis, were measured. For buildings which had been already measured a non-linear, static-pushover analysis was done. The main interest was in the development of a plastic collapse mechanism, displacement at the elastic limit state, and displacement on the top floor of the building which is equal to the displacement which represents the demands of seismic resistance.
From the static non-linear analyses capacity curves were obtained which were analysed using the N2-analysis method. It is now understood how a building behaves in the condition of seismic load.

Special emphasis was given to the nonlinear time history analysis. Analyses were made for 7 different records of accelerations of ground motion, which were scaled so that they were suitable to the demands of EN 1998-1. The result was the mean value of the maximum values (displacement, internal force, plastic deformation) for every 7 analyses. Interest was mainly in the maximum displacement at the top, the maximum storey displacement, maximum plastic deformations, and maximum internal forces.

In the last section of the diploma paper a comparison is made between all 3 constructions and all the analyses that were used. A comparison was made between the results of the different analyses. An opinion is given of how suitable each analysis is for high rise buildings.



Aleš KROFLIČ

Diplomsko delo

ANALIZA DVOSLOJNIH ELASTIČNIH NOSILCEV Z UPOŠTEVANJEM ZDRSA IN RAZMIKA

Mentor: doc. dr. Bojan Čas, univ. dipl. inž. grad.
Somentor: izr. prof. dr. Igor Planinc
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Sestavljeni oz. slojeviti ravninski nosilci sodijo med inovativnejše konstrukcijske elemente. Umeščamo jih med t. i. kompozitne konstrukcije. Njihova uporaba strmo narašča ne le v gradbeništvu, ampak tudi v ladjedelništvu, vesoljski in avtomobilski industriji. S kompozitnimi nosilci lahko v večji meri izkoristimo ugodne lastnosti posameznih sestavnih materialov in s tem dosežemo učinkovitejšo in cenejšo izrabo materialov. Diplomsko delo predstavlja analizo mehanskega obnašanja dvoslojnih elastičnih nosilcev z upoštevanjem zdrsa in razmika med slojema na podlagi teorije prvega reda ravninskih nosilcev. Natančnost in primernost dobljenih rezultatov so ocenili s primerjavo z že znano, primerljivo analitično rešitvijo, numerično rešitvijo po metodi končnih elementov in dejanskimi eksperimentalnimi rezultati. Pravilnost dobljene rešitve je omogočila izdelavo obširne parametrične študije. Podrobno so ocenili vpliv prečne togosti stika in debeline vmesnega sloja na stiku na mehansko obnašanje dvoslojnega lesenega prostoležečega nosilca. Vpliv obeh parametrov lahko v analizi dvoslojnih kompozitnih nosilcev v okviru inženirskih natančnosti zanemarimo.

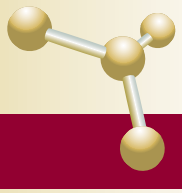
Rezultati diplomskega dela predstavljajo pomemben in izviren prispevek k znanosti s področja analize mejnega stanja uporabnosti kompozitnih gradbenih konstrukcij. Zasnova razvite računske metode je tako splošna, da omogoča analizo mejnega stanja uporabnosti vseh vrst kompozitnih gradbenih konstrukcij z upoštevanjem zdrsa in razmika med sloji, kot so na primer sovprežne konstrukcije iz jekla in betona, ojačane dvoslojne armiranobetonske konstrukcije in podobno. Tako zasnovan matematični model dvoslojnega kompozitnega nosilca in pripadajoča analitična rešitev predstavljata pomembno novost in dopolnitev znanim matematičnim modelom in pripadajočim analitičnim rešitvam v svetovni literaturi.

Diploma paper

NUMERICAL ANALYSIS OF TWO-LAYERED ELASTIC BEAMS CONSIDERING INTERLAYER SLIP AND DELAMINATION

Mentor: Doc. Dr. Bojan Čas,
Co-mentor: Associate Prof.Dr. Igor Planinc
University of Ljubljana, Faculty of Civil and Geodetic Engineering

Layered planar beams belong to a group of modern structural elements. Generally we treat them as composite structures. Composite beams are being increasingly employed in civil engineering structures as well as in structures of the marine, space and automotive industry. Since specific material properties of various layers can be well used, composite structures are also known as efficient and cost-reducing. A variety of mathematical models and theories analysing the behaviour of composite beams that can be found in literature were developed in past decades. In the present paper the analysis of two-layer elastic beams, based on the first order theory, considering interlayer slip and vertical uplift at an interface of the sub elements, is presented. The accuracy and suitability of the presented analytical solution was estimated by comparing an already known adequate analytical solution, numeric finite element solution and actual experimental results. Regularity of solution enabled us to prepare a more detailed parametric study. By presented parametric study we tried to estimate the influence of vertical uplift stiffness of the connection and thickness of the sub layer on the behaviour of the two-layer wood beams. The influence of both parameters can be, considering the engineering accuracy, neglected in analysis of two-layer wood composite beams.



Grega LJUBEJ

Diplomsko delo

SIMULACIJSKI MODELI NAČRTOVANJA SKLADIŠČNIH SISTEMOV

Mentor: doc. dr. Matjaž Šraml
Somentor: doc. dr. Tone Lerher
Univerza v Mariboru, Fakulteta za gradbeništvo

Diplomsko delo je zasnovano in izdelano zelo pregledno in vsebinsko usklajeno. V teoretičnem delu dovolj poglobljeno predstavi problematiko načrtovanja in možnega optimiranja skladiščnega sistema v sodobnih regalnih skladiščih ter teorijo diskretnih simulacij. Teorija nato povezano preide v aplikativno uporabno metodo, za katero je avtor nakazal svojo naravnanost na aplikacijo metode pri snovanju regalnih skladišč. Priložen računalniški program in primerjava štirih simulacij s to metodo kaže na visoko stopnjo njene uporabnosti pri načrtovanju tehnologij za regalna skladišča. Zaradi vse višjih stroškov logistike je optimalno načrtovanje regalnih skladišč vse bolj pomembno. Trimo je v svojo strategijo vključil tudi ponudbo visokoregalnih skladišč, zato je tema oz. diplomsko delo uporabno tudi za podporo tej strategiji.

Z opisom procesov in praktičnim prikazom na konkretnih primerih je delo razumljivo tudi širšemu krogu tehničnih strokovnjakov in javnosti, ki se ukvarja s procesi logistike in skladiščenja. Tematika je sodobna, izsledki služijo uporabnikom pri pripravi ponudb in kalkulacij optimalnega volumna načrtovanih skladišč, potencialnim uporabnikom pa dajejo možnost, da lahko s prilagoditvami TSE bistveno prispevajo k optimalni izbiri regalnega skladiščnega sistema. Oba pristopa pomenita dodano vrednost tako za ponudnika kot uporabnika bodočega regalnega skladiščnega sistema.

Tema diplomskega dela je zelo aktualna pri reševanju kompleksnih problemov logistike in simulacije optimalnega načrtovanja skladiščnih sistemov, ki jih sodobne industrije in distribucijske verige vse bolj potrebujejo. Rešitev, ki jo je avtor predstavil, prikazuje možnosti optimalne izbire sistema s pomočjo simulacijskih orodij in računalniške podpore, ki posledično vplivajo na pravo odločitev in s tem povezane stroške investicije. Tema je dovolj strokovno obdelana in preverjena tudi na praktičnih primerih, da daje delo vtis visoke stopnje verodostojnosti in širše uporabnosti.

Diploma paper

SIMULATION MODELS OF WAREHOUSING SYSTEM PLANNING

Mentor: Doc. Dr. Matjaž Šraml,
Co-mentor: Dr. Tone Lerher,
University of Maribor, Faculty of Civil Engineering

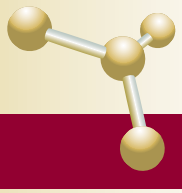
In the theoretical part this diploma paper gives an in-depth presentation of problems with planning, and possibly optimising, a warehousing system in modern rack warehouses, and the theory of discrete simulations.

In addition, the theory subtly evolves into a method of application. The enclosed computer programme and the comparison of four simulations using this method show the high degree of applicability of this method in planning technologies for rack warehouses.

In addition to the higher logistics costs, the optimal planning of rack warehouses is becoming increasingly popular. Trimo includes high-rack warehouses in its offers, which is why the topic and the diploma paper can be seen as a basis for this strategy.

With a demonstration of processes and a practical presentation with examples, the wider public, experts, and people dealing with logistics and warehousing processes alike, can easily understand the topic of the thesis. The topic is really popular; users can apply its results when preparing offers and calculating the optimal volume of designed warehouses. It also gives potential users the possibility to contribute in choosing an optimal shelf warehousing system with TSE adjustments. The approach means extra value for the buyer as well as the user of the shelf warehousing system.

The topic of the diploma paper is really popular in solving complex logistical and simulation problems in planning warehousing systems, which modern industries and distribution chains desperately need. The solution that the author presents in this thesis shows the possibilities of the best choice of systems using simulation tools and computer support, which directly effect the right decision, and consequently investment costs. The diploma paper has a strong theoretical basis and also provides practical examples, giving the impression of being highly credible and having a lot of possibilities in usage.



Eva LOVRENČIČ

Diplomsko delo

PRIMERJAVE RAZLIČNIH METOD POTRESNE ANALIZE NA PRIMERU 15-NADSTROPNE JEKLENE STAVBE

Mentor: prof. dr. Darko Beg
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Potres je del narave in ga zato ne moremo napovedati. Lahko pa bistveno zmanjšamo škodo, če učinkovito in natančno projektiramo konstrukcije na potresni vpliv, kar nam omogoča dobro poznavanje standarda, analiz in računalniških programov.

Cilj diplomskega dela je primerjava različnih metod potresnih analiz. Obravnavana je 15-nadstropna poslovna stavba pravilne oblike, tlorisnih dimenzij 15 x 30 m ter višine 60,5 m.

Obravnavana stavba je bila najprej projektirana s pomočjo modalne analize s spektri odziva, v nadaljevanju pa še z obema nelinearnima analizama za opazovanje konstrukcije med delovanjem potresnega vpliva. Pri nelinearni statični analizi (pushover) je bil poudarek na opazovanju ciljnega pomika konstrukcije in nato na opazovanju obnašanja konstrukcije pri tem pomiku. Pri nelinearni analizi časovnega odziva pa je bila obravnavana konstrukcija obremenjena z gibanjem tal, ki je bilo določeno na osnovi izbranih akcelerogramov, izmerjenih med potresi.

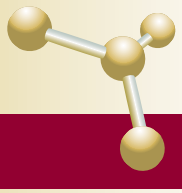
Pri vseh treh analizah so bili kontrolirani pomiki (etažni in na vrhu) in nosilnost, pri nelinearnih analizah pa je bila pozornost posvečena tudi morebitni plastifikaciji elementov. Obe nelinearni analizi sta se izkazali kot zelo uporabni za opazovanje odzivanja konstrukcije na potres. Tudi ostala dva modela sta tvorila ustrezna mehanizma, vendar manj prepričljivo. Nelinearna analiza časovnega odziva se je izkazala za precej zamudno.

Diploma paper

COMPARISONS OF VARIOUS EARTHQUAKE ANALYSIS METHODS BASED ON AN EXAMPLE OF A 15-STORY STEEL BUILDING

Mentor: Prof. Dr. Darko Beg
University of Ljubljana, Faculty of Civil and Geodetic Engineering

The diploma paper focuses on the comparison of three different analyses, which are used. The author compared a modal response-spectrum analysis and nonlinear static analysis, also known as Pushover analysis and nonlinear time history analysis. The steel building which was analyzed is rectangular in plan and is 60.5 m high.
At the beginning the author used a modal analysis for designing the building. She proceeded in analyzing the structure by using nonlinear static and dynamic analysis. The author used those two analyses for observing the response of the structure against an earthquake. For nonlinear static analysis she had to calculate the target displacement, and later she observed the response of the structure at target displacement. Ground motion for the time history analysis was defined by selected seismic records. The author observed joint displacement in every storey and displacement on the top of the building. For every analysis she has also checked carrying-capacity and maximum plastic deformations.



Ivana MARIĆ

Diplomsko delo

PLESNI CENTER OSIJEK

Mentor: prof. dr. Emil Špirić
Univerza v Zagrebu, Fakulteta za arhitekturo

Osnovna ideja dela je v strnjeno urbano strukturo umestiti objekt, ki se bo s svojim izgledom in obliko prilagodil lokaciji. Linija parcele se nahaja v prvem planu zazidave, ki je orientirana proti obrežju Drave in jo do sprehajališča in reke loči le veliko javno parkirišče. Koncept objekta izhaja iz zamisli o plesnem paru. Gre za preplet moške in ženske figure, ki ju predstavljata višji in stabilnejši ter nižji in na videz krhkejši volumen. V njunem ozadju pa ju – kot glasba plesni par – spremlja nižji volumen s servisnim spremljajočim programom. Avtoričino glavno izhodišče za oblikovanje je torej namen ustvarjanja zgradbe, ki bo s svojo funkcijo in izgledom plesala na dravski promenadi.
Ples v samem centru mesta daje mestu novo programsko vsebino in se skozi javne programe povezuje z mestom.

Diploma paper

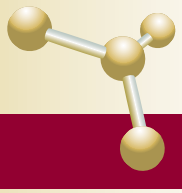
DANCE CENTRE OSIJEK

Mentor: Prof. Dr. Emil Špirić
University of Zagreb, Faculty of Architecture

The designed building is situated in a relatively small area, so the given space is used to the maximum. The concept was to evoke an image of a man and woman in a dance embrace, with a music box in the background. As a result, 3 buildings were designed: in the first plan a higher, dark-coloured ''male'' building on columns, i.e. ''dancing feet''; and a shorter, dark-red ''female'' building in a glass ''dress''. By different architectural solutions the two of them permeate and connect by half-flowers and in that way make visual contact.

The third building is in the background and has a secondary purpose. It contains all communication and secondary activities, but is nevertheless important for the functioning of the complex; it is like background music without which there is no dance. Several glass bridges connect this building to the other two, so together they work like one.

Although this three-piece building is very simple in its essence, it is carefully thought out, paying special attention to details, views, and perspectives. Passers-by were also taken into consideration, as well as the whole surrounding area.



PETRA MARINKO

Diplomsko delo

MINIMALNI BENCINSKI SERVIS

Mentor: doc. Črtomir Mihelj, univ. dipl. inž. arh.
Somentor: David Koren, univ. dipl. inž. grad.
Univerza v Ljubljani, Fakulteta za arhitekturo

Delo predstavlja način razmišljanja o minimalnem, funkcionalnem in učinkovitem načinu gradnje ter oblikovanja bencinskih servisov prihodnosti. Ideja je bila ustvariti najmanjši, najenostavnejši bencinski servis z možnostjo širitve storitev z modularnim sistemom zlaganja. Celovita rešitev za današnji svet z avtomatskim sistemom delovanja, ki poceni obratovalne stroške in je optimiziran za manjše parcele.

Bencinski servis, imenovan Olea, je zasnovan na preprosti konstrukciji, sestavljeni iz standardnih elementov, z enostavnim montažnim sistemom gradnje. Oblečena v strešno-fasadni plašč, ki zaključuje ločno konstrukcijo, dopolnjuje in dodela servis z oblikovno-arhitekturnega vidika. Drugačnost v vseh pomenih besede ter ustvarjanje še nevidenega je pripomoglo k ločni obliki servisa, ki z nadstrešnico nudi zadostno zavetje. Prepoznavna oblika omogoča uporabo vseh fasadnih površin tudi za namene oglaševanja.

Diploma paper

MINIMALISTIC PETROL STATION

Mentor: Dr. Črtomir Mihelj, BSc
Co-mentor: David Koren, BSc
University of Ljubljana, Faculty of Architecture

This work represents a way of thinking about a functional and efficient construction method and the design of future small petrol stations. The idea was to produce the smallest and simplest petrol station, with an optional expansion of performance, using a modular piece-by-piece system. A complete solution for today's world, with an automatic operational system, which reduces operating costs and is optimized for smaller units.

The petrol station, named Olea, is based on a simple construction composed of standard elements, with a simple pre-fabricated system of construction. Covered in a roof-facade coat that ends up in an arcaded construction, completes the petrol station from an architectural point of view. Difference and creativity of the invisible, are instruments of the arcaded shape of the petrol station that offers enough shelter. Recognizable form enables use of all facade elements for advertising purposes.

JELENA MITROVIĆ

Diplomsko delo

ŠPORTNI STOLP, Blok 23, NOVI BEOGRAD

Mentor: doc. mag. Vladimir Milenković
Univerza v Beogradu, Fakulteta za arhitekturo

Avtorica s kakovostnim analiziranjem konkretnega okolja bloka 23 v Novem Beogradu prihaja do pomembnih izhodišč oblikovanja predlagane nadgradnje. Pri tem se ne opira zgolj na uveljavljene teoretske metode, temveč svoja dognanja utemeljuje tudi z zgodovinskim razvojem in stanjem družbe. Svoje arhitekturne predloge formira na osnovi verodostojnih predpostavk razvoja, ki naj bi se zgodil v prihodnosti. Opira se na zakonsko predpisane normative športnih in javnih površin na prebivalca.
Velik vpliv na projektiranje predstavlja tudi komponenta vplivanja novogradnje na regeneracijo širšega območja Novega Beograda. Pri tem avtorica s poglobljenim konstrukcijskim in inženirskim znanjem odgovarja na probleme različnih etažnih višin in prenosa obremenitev z uporabo jeklenih nosilnih sistemov.

Diploma paper

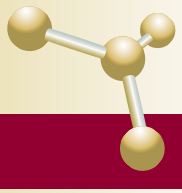
SPORTS TOWER, 23th block, NOVI BEOGRAD

Mentor: Dr. Vladimir Milenković, MSc.
University of Belgrade, Faculty of Architecture

The subject of research was the area of Block 23 in New Belgrade. The interventions` size and organization originate from a study of changes that were happening intensively in modern blocks in New Belgrade, particularly Block 23. The changes were taking place due to the increase and transformation of its inhabitants and their needs. Open space, once supposedly used as public space, was converted to private space (commercial and shopping area), or devastated. During the same period of time, the process of restoration of the apartments` organization was taking place.

In New Belgrade, at the moment, although very intensive building process is taking place, architects and planners rarely consider quality and life-style as a major issue, ignoring the possibilities of having a recreational programme in addition to a housing area. This programme should support the congregation of inhabitants and their social life and introduce a sense of community which existed in the basic concept of New Belgrade.

The Tower of Sports is a study of a possible programme model that could solve the gap which is now present among the huge numbers of inhabitants, their leisure time, and the open space, and thus improve the quality of modern blocks that was ignored in years past.



Miha MOŽINA

Diplomsko delo

GALIJNITRIDNI IN ALUMINIJNITRIDNI DETEKTORJI ULTRAVIJOLIČNE SVETLOBE

Mentor: prof. dr. Marko Topič
Univerza v Ljubljani, Fakulteta za elektrotehniko

Današnji detektorji ultravijolične (UV) svetlobe kažejo resne omejitve v delovanju, tehnologiji in življenjski dobi.

Izboljšava starih detektorjev predstavlja zelo velik tehnološki izziv. Polprevodniški materiali s široko energijsko režo so prva izbira za fotodetektorje svetlobe višjih energij. Največ pozornosti se dandanes posveča hitro razvijajočemu galijevemu nitridu – GaN in aluminijevemu nitridu – AlN. Prednosti materialov AlGaN/GaN pred silicijem so, da niso občutljivi na vidno svetlobo, ampak so neposredno občutljivi na UV-svetlobo in imajo nižje temperaturno odvisne temne tokove. Večina dela se nanaša na procesiranje in karakterizacijo MSM in diod Schottky kot detektorjev UV-svetlobe na GaN in AlN. Poskušalo se je razviti primeren detektor, ki bi bil en majhen piksel za UV-kamero, ki je končni cilj projekta BOLD (ang. Blind to the Optical Light Detectors).

Na koncu se je pozornost preusmerila v diode Schottky zaradi rezultatov simulacij, njihove manjše občutljivosti pri izdelavi ter delovne točke, ki je pri 0 V, kar je ugodno pri uporabi v sistemih z omejeno količino energije.

Diploma paper

ULTRAVIOLET DETECTORS BASED ON GALLIUM NITRIDE AND ALUMINIUM NITRIDE

Mentor: Prof. Dr. Marko Topič
University of Ljubljana, Faculty of Electrical Engineering

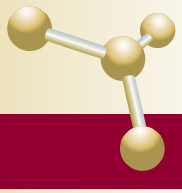
The present detectors of ultraviolet (U/V) light exhibit serious limitations on performance, technological complexity, and lifetime.

Improving the former today represents, overall, the major technological challenge in detector development . Wide-band gap semiconductors are the primary choice for photo-sensitive material for high-energy.

The most rapidly maturing material that has recently seen substantial development is Gallium Nitride – GaN, mostly motivated by its advantages over silicon, especially for electronic component development. By its nature, AlN or GaN is insensitive to visible light, has a much lower thermally induced dark current component, and is a direct-band gap semiconductor.

In this diploma paper fabrication, and electrical and optical characterization, of MSM and Schottky diodes, on GaN and AlN as photo-detectors, are performed.

In the last part of the diploma paper the research was fully directed towards the Schottky diodes, mostly due to simulation results, because of the Schottky diode's priorities - such as less fragile structures and the capability of working at zero voltage, which is an advantage for use in systems with a limited amount of energy.



JELENA PEROVIĆ

Diplomsko delo

PROSTORSKO / PROGRAMSKI PRIZIDKI SREDNJIH GLASBENIH ŠOL V CENTRALNEM BEOGRADU

Mentor: doc. mag. Vladimir Milenković
Univerza v Beogradu, Fakulteta za arhitekturo

Avtorica na osnovi predpostavk in analiz obstoječega stanja srednjih šol in srednjih glasbenih šol v jedru starega Beograda ugotavlja, da na vsebinskem, programskem in infrastrukturnem področju obstaja velika praznina. Z dobrim branjem predhodno izbranih lokacij možne ekstenzije in potencialne nadgradnje išče možnosti reformacije v smislu dodajanja lahkih, hitro izvedljivih struktur, v katerih se rešujejo prostorske pomanjkljivosti in v interjerju vedno znova dodajajo kvalitete. Pri tem se avtorica ne omejuje samo na horizontalno dodajanje, temveč programsko dopolnjuje tudi vertikalne površine. Z individualnim obravnavanjem rešuje vsako lokacijo, pri tem pa upošteva večino značilnosti obstoječega stavbnega tkiva.

Gradnja z minimalno gradbeno intervencijo in minimalnim posegom v učni proces ustanov je sodoben način arhitekturnega načrtovanja. Avtorica predstavlja nekaj idej izrabe površin, streh, idejo umestitve športnih, sprostitvenih, večnamenskih prostorov in multidisciplinarnih sob. Vnaša nove oblike dejavnosti z razlogom oživitve pustih, programsko mirujočih šol. Inovativni pristop predstavlja tudi ideja artikuliranja območja gradnje v smislu transparentne hortikulturne opne. Na področju oživljanja starih struktur tudi v strjenem mestnem jedru je predlog sodoben in aktualen.

Diploma paper

SPATIAL / TOPICAL EXTENSIONS OF SECONDARY MUSIC SCHOOLS IN CENTRAL BELGRADE

Mentor: Dr. Vladimir Milenković, MSc.
University of Belgrade, Faculty of Architecture

The author comes to her conclusion based on the analyses of secondary schools, specifically musical secondary schools. She discovers a huge gap as far as the content, programme, and infrastructure go. After studying the pre-chosen extension locations really well, she looks for possibilities of improvement by adding easy, quickly-made structures, where spatial inadequacies can be solved and qualities re-added to the interior. The author does not limit herself to adding just horizontal surfaces, but also adds vertical surfaces using different programmes. Dealing with each location individually, she takes into account most characteristics of the existing building structure.

Building with as little as possible constructional intervention and intervention in the learning process of institutions, is the modern method of architectural design. The thesis also introduces ideas on how to use space, roofs, how to define sports, relaxation, and multi-purpose space/rooms. New ways of reviving dull schools that have been forgotten with time. The idea is to articulate building zones, emphasising transparent horticultural membranes.
In reviving old structures in the cramped city centre, the idea is modern and up-to-date.

Klemen POLANEC

Diplomsko delo

BREZKONTAKTNO MERJENJE DIMENZIJ SPOJNIH PROFILOV OGNJEVARNIH FASADNIH PANELOV

Mentor: prof. dr. Stanislav Kovačič
Univerza v Ljubljani, Fakulteta za elektrotehniko

Diplomsko delo obravnava zgradbo in delovanje merilnega sistema za avtomatsko kontrolo kakovosti pri proizvodnji ognjevarnih fasadnih panelov v podjetju Trimo. Merilni sistem je bil razvit v okviru projekta q-SPAI: avtomatizirano vizualno pregledovanje gradbenih plošč in je namenjen za preverjanje kakovosti izdelka, merjenje določenega parametra za posredovanje podatka predhodnim fazam proizvodnje, kot povratna zanka in za arhiviranje podatkov z namenom sledljivosti reklamacij. Merilni sistem temelji na principu linijskega laserskega 3D-skenerja, kar je razmeroma enostaven in poceni način brezkontaktnega merjenja dimenzij. Sistem omogoča veliko konfigurabilnost merjenja in je zato primeren za merjenje na proizvodni liniji, kjer se tip izdelka pogosto menja.

Med proizvodnjo panelov prihaja do nedovoljenih odstopanj profilacije pločevine ter zamika zgornje in spodnje pločevine panela. Preverjanje odstopanj je implementirano na mehanski način z valjčki, kar pa ima nekatere pomanjkljivosti. Predlagana je univerzalna rešitev avtomatizirane kontrole dimenzij spojnih profilov panelov, ki temelji na principu linijskega laserskega 3D-skenerja s triangulacijo.

Zahtevane meritve se sistemu podajajo s pomočjo posebej razvitega interpreterskega programskega jezika, kar daje sistemu veliko prilagodljivost različnim tipom panelov, izračuni pa temeljijo na posebnih algoritmih, ki detektirajo značilne trikotne ali poljubne oblike na izmerjenem profilu.

Tema diplomskega dela je zelo aktualna, saj omogoča pogoje za učinkovito zagotavljanje kvalitete izdelkov. Merilni sistem ima tu osrednji pomen, saj lahko le na osnovi natančnih ter pravočasnih meritev dovolj hitro reagiramo v proizvodnem procesu.

Diploma paper

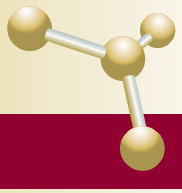
NON-CONTACT DIMENSIONS MEASUREMENT OF FIRE RESISTANT FACADE PANELS

Mentor: Prof.Dr. Stanislav Kovačič
University of Ljubljana, Faculty of Electrical Engineering

This diploma paper deals with the structure and operating of a measuring system of automatic quality control within fire-resistant facade panel production at Trimo. The measuring system was developed in the framework of the project q-SPAI: automatic visual monitoring of construction panels. The system's purpose is quality control, measurement of some parameter to be used in previous sections of production as feedback and archival for reclamation backtracking purposes. The measuring system is based on the concept of a laser line 3D scanner which is a relatively simple and low cost way of non-contact measuring of dimensions. The system offers great measurement configurability and is suitable for production lines where the type of product often changes.

During production irregularities may occur on the profile, and metal plates may be displaced. Control of such errors is implemented by a mechanical method with rollers, but this method has some disadvantages. The universal solution to the automatic monitoring of panel joint profile dimensions is offered, which is based on the concept of triangulation and a laser line 3D scanner.

Measurement demands were defined through a special purpose interpreter programming language, which makes this system very configurable and adjustable to various types of product. Specific parameters are calculated by special algorithms which detect characteristic forms in the measured profile.



Uroš RUS

Diplomsko delo

NAPRAVA ZA AVTOMATSKO MERITEV MAGNETOV V SERIJSKI PROIZVODNJI

Mentor: doc. dr. David Nedeljkovič
Univerza v Ljubljani, Fakulteta za elektrotehniko

Za ohranitev konkurenčnih prednosti je v velikoserijski proizvodnji magnetov potrebno zagotavljati visoke kakovostne standarde in povečevati produktivnost, pri čemer igra pomembno vlogo avtomatizacija proizvodnih in merilnih postopkov. Avtor je v okviru diplomskega dela sodeloval pri razvoju avtomatiziranega sistema, ki serijsko izdelanim magnetom izmeri zahtevane magnetne lastnosti in jih po kriterijih, postavljenih s strani kupca magnetov, tudi razvrsti. Njegovo delo je obsegalo načrtovanje in izgradnjo električnega dela sistema, pri čemer velja izpostaviti zlasti razvoj pripadajoče magnetilno-razmagnetilne naprave. Poskrbel je še za optimalno krmiljenje celotnega sistema z ustrezno izbranim krmilnikom, za katerega je izdelal krmilni program, ki ga je nadgradil z učinkovitim uporabniškim vmesnikom na operaterskem panelu.

Avtor je pri razvoju svojih rešitev izkazal veliko mero inovativnosti, ki se je izrazila zlasti pri naporih za čim hitrejši potek meritev in čim manjše število zastojev. Celoten avtomatizirani sistem je tako izpolnil pričakovanja uporabnikov, zato je bilo izvedenih že več njegovih ponovitev in integracija v nadzorni sistem (SCADA), avtor pa je podal predloge tudi za nadaljnjo pospešitev postopkov.

Diploma paper

AUTOMATED MAGNET MEASUREMENT DEVICE IN SERIES PRODUCTION

Mentor: Doc. Dr. David Nedeljkovič
University of Ljubljana, Faculty of Electical Engineering

The task of the author, by constructing a machine, was to make an electrical circuit and to select appropriate elements and electronic components, which will be suitable as an automatic device and be also economically justified. Further, a magnetizing – demagnetizing device and its corresponding coil were also requested to be designed. For proper operation of the device, the author wrote a program for the implemented PLC.

In the introduction, the main reasons for automation of the process are presented, as well as the problems, which appear in the design of the automatic device. A brief history of the construction of magnetizing–demagnetizing machines is also presented.

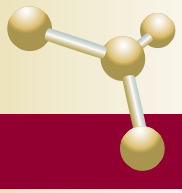
In the next chapter, the structure of the automatic device is shown with a short description of its sub-systems, their component parts, and its operation.

The third chapter describes the principle of magnetizing and demagnetizing by the automatic device in detail. Furthermore, this chapter describes the magnetizer and other components, which are involved in the magnetizing–demagnetizing process. Later, the author has developed an advanced magnetizer, which besides magnetization enables demagnetization; its voltage of charging can be set to the required level.

The principles of applied magnetic flux measurement are presented in the fourth chapter. Results, obtained by the measurement of first magnets, which were the basis for further proper tuning of the automatic device, are also presented in this chapter.

The last chapter presents the operator's interface with the automatic device with its entire management, provided by a PLC's program, which was written in the STEP 7 statement list.

In the conclusion, solutions of some problems, which appeared in the introduction of the device into its regular operation, are presented.



Jože SENICA

Diplomsko delo

RAČUNALNIŠKO PODPRTO KONSTRUIRANJE HIDRAVLIČNE VPENJALNE PRIPRAVE

Mentor: prof. dr. Bojan Dolšak
Somentor: Jasmin Kaljun, univ.dipl.inž.
Univerza v Mariboru, Fakulteta za strojništvo

Diplomsko delo obravnava postopek projektiranja hidravlične vpenjalne priprave za vpenjanje dveh tipov ohišij turbo kompresorja AUDI (OTK 776466 in OTK 767781) in varovalne naprave. Z običajnim ročnim žaganjem delov, ki ostanejo po litju na tlačni in sesalni cevi odlitka, namreč ni bilo mogoče doseči zahtevane natančnosti žaganja kot končne obdelave tlačne cevi in količine. Zato je bilo potrebno izdelati hidravlično vpenjalno pripravo za žaganje dveh tipov ohišij turbo kompresorja AUDI OTK 776466 in OTK 767781, ki bo omogočila avtomatizirano žaganje.

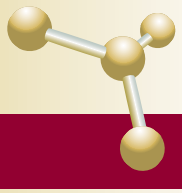
Avtor se je v svojem diplomskem delu ukvarjal z računalniško podprtim konstruiranjem, inovativnim pristopom, ki omogoča razvoj in izdelavo tehnološko, oblikovno in funkcionalno izpopolnjenih izdelkov. Na praktičnem primeru konstruiranja hidravlične vpenjalne priprave je s programskim paketom CATIA prikazal sodoben razvoj izdelka od zasnove, oblikovanja do izdelave tehnične dokumentacije ter simulacije.

Diploma paper

COMPUTER DESIGNING OF A HYDRAULIC CLAMPING DEVICE

Mentor: Associate Prof. Dr. Bojan Dolšak
Co-mentor: Jasmin Kaljun, BSc.
University of Maribor, Faculty of Mechanical Engineering

The main subject of this diploma paper is a way of designing a hydraulic device for fixing two types of housing to the turbo compressor AUDI (OTK 776466 and OTK 767781) and their safety devices.
Using normal hand cutting of parts that remain after casting an exhaust and inject pipe it would be impossible to achieve the appropriate accuracy. For this reason it is necessary to build a hydraulic clamping device in order to cut two types of housing automatically.
Development of the hydraulic clamping device is described through all the phases of design; from a 3D model to technical documentation.
One of the advantages is complex modelling that allows the addition of all elements of the hydraulic clamping device into a work-piece and machine tool complex. By this way of working we have good transparency. New elements are added on the basis of the geometry of existing elements, which means constantly checking capability in order to ascertain the relationship between them. That is the way we can check the possibility of covering individual parts with work-piece, machine tools...
Computer aided design also includes a review of the detail modelling of some basic components of the clamping and safety device.
After modelling, the simulation of cutting was created. This way it was possible to deduce the possibility of physical damage to the clamping device as well as the work-piece in the case of hydraulic failure. Consequently, this prevents the possibility of damage before it happens. It also describes a safety device that protects the clamping device before damage.



Blaž SKUBIC

Diplomsko delo

KRISTALIZACIJA EKSPANDIRANEGA PERLITA

Mentor: prof. dr. Igor Plazl
Somentor: prof. dr. Anton Meden
Univerza v Ljubljani, Fakulteta za kemijo in kemijsko tehnologijo

V novejšem času se zahteve po vedno večji ekonomičnosti, varnosti ter hkratni okoljski prijaznosti pojavljajo praktično že na vseh področjih človekovega delovanja. Prav zato se na področju razvijanja in proizvodnje novih toplotno izolativnih izdelkov pozornost ponovno obrača k anorganskim materialom, ki so bili v preteklosti zapostavljeni zaradi organskih snovi (polimerov). Delo se usmeri na reakcijo med ekspandiranim perlitom ter vezivom, vodnim steklom, do katere pride med postopkom termične obdelave (eden od procesov izdelave termoizolacijske plošče iz ekspandiranega perlita).

Opravljene raziskave kažejo, da sta spreminjanje stopnje kristaliničnosti in krčenje materiala tako temperaturno kot koncentracijsko odvisna. Rezultat povišane temperature termične obdelave je višja celotna stopnja kristaliničnosti ter hkrati večji končni skrček. Prav tako v večji skrček ter višjo stopnjo kristaliničnosti vodi povečana koncentracija uporabljenega vezivnega sredstva. Na osnovi eksperimentalnih podatkov sta v nalogi podani empirični enačbi, ki omogočata določitev teoretičnega skrčka ter celotne stopnje kristaliničnosti pri poljubni temperaturi termične obdelave.

Diploma paper

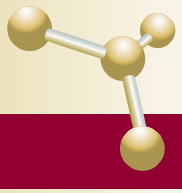
CRYSTALLISATION OF EXPANDED PERLITE

Mentor: Prof. Dr. Igor Plazl
Co-mentor: Prof. Dr. Anton Meden
University of Ljubljana, Faculty of Chemistry and Chemical Technology

The focus on developing and applying new thermal insulation products is nowadays again turned to inorganic materials. Inorganic materials can, in most cases, easily suit the requirements for good product safety, economics of the production process and ecological acceptability.

The diploma paper presents an analysis of reaction between expanded perlite and selected binder, and silica water glass. The reaction occurs during the process of thermal treatment, which is one of the procedures in the production of a thermally insulating product.

Results show great temperature and concentration dependence of both phenomenons. Increased temperature of thermal treatment or higher binder concentration leads to a higher degree of total crystallinity. In both cases, greater volume contraction is also observed. Based on experimental data, empirical formulas are present for theoretical volume contraction and total crystallinity calculation for selected temperature of thermal treatment.



Marko SLADIČ

Diplomsko delo

NAČRTOVANJE MANJŠEGA SAMOSTOJNEGA FOTONAPETOSTNEGA SISTEMA ZA RAZSVETLJAVO

Mentor: doc. dr. Janez Krč
Univerza v Ljubljani, Fakulteta za elektrotehniko

Tematika diplomskega dela spada v področje fotovoltaike. Usmerjeno je v segment samostojnih fotonapetostnih (PV) sistemov. V diplomskem delu je predstavljen pristop k načrtovanju manjšega samostojnega PV-sistema, ki je v konkretnem primeru namenjen oskrbovanju manjše svetilke za javno razsvetljavo z električno energijo.

V prvem delu je na kratko podan pregled različnih tipov fotonapetostnih sistemov, samostojnih in omrežnih. Nato sledi pregled in opis gradnikov fotonapetostnih sistemov s poudarkom na gradnikih samostojnih PV-sistemov – PV modul, polnilni regulator, akumulator in porabnik.

Posebna pozornost je posvečena tudi opisu različnih tipov sončnih celic kot osnovnih gradnikov PV-modulov.

Diploma paper

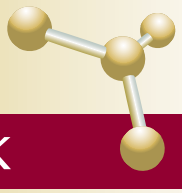
DESIGNING A SMALLER INDEPENDENT PV SYSTEM FOR PUBLIC

Mentor: Doc. Dr. Janez Krč, PhD
University of Ljubljana, Faculty of Electrical Engineering

This diploma paper deals with photovoltaics, specifically independent photovoltaic (PV) systems. The paper presents an approach in designing smaller PV systems, which are specifically designed to supply electrical energy to smaller lamps used for public lighting.

The first part of the paper provides a brief preview of various types of PV systems, both independents and networks. This is then followed by a preview and description of PV arrays, with the emphasis on independent PV arrays, PV modules, conduits, and circuit combiners.

A special focus is also given to the description of different types of solar cells as basic PV arrays.



Tomaž STANONIK

Diplomsko delo

ZAGOTAVLJANJE KAKOVOSTI IN ZMOGLJIVOSTI PROCESA SESTAVLJANJA

Mentor: prof. dr. Mirko Soković
Univerza v Ljubljani, Fakulteta za strojništvo

V delu je predstavljen razvoj avtomatizirane linije za sestavljanje po priporočilih in zahtevah priročnika APQP, ki vključuje tudi metodo FMEA, diskretna simulacija z možnostjo in priložnostjo za njeno uporabo pri razvoju procesov sestavljanja, izdelava digitalnega modela linije ter analiza in optimiziranje njenega delovanja na osnovi simulacije. Glavna rezultata dela sta spoznanje in potrditev, da je diskretna simulacija zelo koristna metoda in uporabno orodje za zagotavljanje kakovosti in zmogljivosti procesa sestavljanja na stopnji njegovega načrtovanja.
Delo je zelo praktično naravnano in na konkretnem primeru ponuja zelo lepo predstavljen postopek za izpeljavo takšnega projekta. Od korakov, metod, problematike, zahtev ... do končnega cilja. Podjetja, ki so tehnološko razvojno naravnana, bi lahko delo uporabila kot navodila, na kakšen način se je potrebno lotiti takšnega projekta. Na ta način bi si lahko časovno precej skrajšali celoten proces projekta in verjetno tudi zmanjšali stroške.

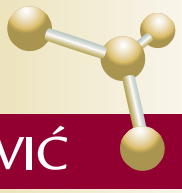
Diploma paper

ASSURANING QUALITY AND CAPACITY LEVELS OF ASSEMBLYING PROCESS

Mentor: Prof. Dr. Mirko Soković
University of Ljubljana, Faculty of Mechanical Engineering

For the development of an assembly line for vacuum-cleaner-motors the APQP was extended by analysis and the optimization of assembly line operation using discrete simulation.

The work presented includes:
- presentation of the development of an automated assembly line, according to procedures in the APQP handbook, which includes also a FMEA method,
- the opportunities and benefits of using simulation for the development of assembly processes, the use of digital models and simulation of an assembly line,
- and the analysis and optimization of a line operation with simulation as a very useful method, and an efficient tool, for quality and capacity assurance of an assembly process in its development phase.



Nataša STEFANOVIĆ

Diplomsko delo

URBANI PEJSAŽ KOT ANALIZA OBLIKE ČRPANJA IZVIRA VODE NA NOVOBEOGRAJSKI OBALI SAVE

Mentor: doc. mag. Vladimir Milenković
Univerza v Beogradu, Fakulteta za arhitekturo

Diplomsko delo obravnava arhitekturno-urbanistični projekt oblikovanje urbanega pejsaža na izviru vode ob obali reke Save v bližini Novega Beograda.

Avtoričin pristop k diploskemu delu je sodoben in konceptualen. Opredeljena je osnovna delovna hipoteza, ki sloni na odnosu do širšega mestnega okolja, odnosu do narave in ekološki osveščenosti. Cilj diplomskega dela je zasnovati urbano pot in ustvariti živahen javni ambient, pomembno programsko žarišče znotraj širšega mestnega prostora, v katerem se prepletajo identitete naravnega, kulturnega, intimnega in socialnega okolja. Opredelitev programa je vezana na sodobne potrebe ljudi in njihov način življenja, tako se prepletajo lokacije za šport, rekreacijo in počitek s komercialnimi vsebinami, zabavo in izobraževanjem. Koncept odprtega načrtovanja prostora, ki dopušča fleksibilnost in možnost sprememb skozi čas, kaže na zrel in odgovoren odnos avtorice do okolja, v katerega umešča svojo idejno rešitev.

Da bi objekti čim manj obremenjevali naravni habitat, so te prefabricirane enote iz masivnega lesa na stebrih in podestih iz jeklene konstrukcije visoko dvignjene od tal, ravno tako so iz jeklenih elementov sestavljene od tal dvignjene poti in mostiči.
Tematika diplomskega dela je času in prostoru primerna, ekološka naravnanost postaja trend v oblikovanju arhitekturnih prostorov in je še pomembnejša pri urbanističnih posegih v naravno okolje. Jeklo pa dokazuje svojo ekološko prednost kot material, ki omogoča kar najmanjše posege v prostor in kar največjo prilagodljivost in fleksibilnost v zasnovi konstrukcij.

Diploma paper

URBAN LANDSCAPE AS AN ANALYSIS OF A FORM OF WATER SOURCE USAGE ON THE SAVA RIVER BANK IN NOVI BEOGRAD

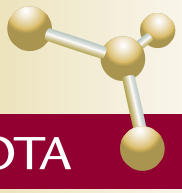
Mentor: Doc. Vladimir Milenković, MSc.
University of Belgrade, Faculty of Architecture

This diploma paper deals with an architectural project of designing urban landscape around a water source close to the banks of the Sava river near Novi Beograd.

The author's approach to the thesis is modern and conceptual. The thesis is based on the relationship of a broad urban environment to nature and environmental awareness. The goal is to define an urban path and create a lively public ambiance - an important programme focus within a broader city area - where the identities of the natural, cultural, intimate, and social environment, intertwine. Programme definition is linked with the modern needs of people and their lifestyle. This means that sport, recreation, and rest intertwine with commercial contents, entertainment, and education. The concept of open space planning, allowing for flexibility and changes, reflects the author's mature and responsible attitude to the environment in which it uses its ideas and solution.

To minimize the impact of buildings on the natural habitat, prefabricated units made from large pieces of wood are lifted high from the floor on pillars and steel landings. From the upraised floor, pathways and gangways are also made from steel elements.

The topic of the diploma paper is appropriate for the time and space at hand; environmental awareness is becoming a trend in designing architectural spaces. This topic is also becoming increasingly important in urban planning interventions in the natural habitat. Steel demonstrates its environmental advantages as a material that enables minimal interventions in space and high flexibility in designing constructions.



Aleksandra ŠOBOTA

Diplomsko delo

STROŠKI V MODELIH MERJENJA IN PRESOJANJA USPEŠNOSTI POSLOVANJA PODJETIJ

Mentor: prof. dr. Metka Tekavčič
Univerza v Ljubljani, Ekonomska fakulteta

Učinkovito obvladovanje stroškov je v sodobnem poslovnem okolju zagotovo ena izmed najpomembnejših nalog vsakega podjetja, saj je prav od stroškov močno odvisna uspešnost poslovanja. Vendar pa so se razmere, v katerih poslujejo podjetja, v zadnjih desetletjih močno spremenile. V strukturi stroškov se je namreč zelo povečal delež splošnih stroškov, zaradi česar tradicionalni sistemi spremljanja stroškov, ki s pomočjo razdelitvenih ključev razporejajo splošne stroške po stroškovnih mestih in stroškovnih nosilcih, ne dajejo več zanesljivih informacij za sprejemanje kakovostnih poslovnih odločitev. Zaradi tega so se razvili številni novejši pristopi obvladovanja stroškov, ki opozarjajo na potrebo po poglobljeni analizi poslovanja.

V okviru diplomskega dela so predstavljene pomembne razlike v vlogi stroškov v tradicionalnih in sodobnih modelih presojanja uspešnosti poslovanja. Za stroške v tradicionalnih modelih je značilno, da se jih zgolj ugotavlja. V teh sistemih ne preučujemo vzrokov za njihov nastanek oziroma vzročno-posledičnih razmerij med stroški in kazalniki uspešnosti poslovanja, ampak stroške zgolj merimo in jih izmerjene vnašamo v izračune različnih finančnih kazalnikov, s katerimi potem presojamo doseženo uspešnost. V nasprotju s tem pa sodobni koncepti zahtevajo poznavanje in razumevanje posameznih aktivnosti poslovnega procesa, kar vključuje tudi poglobljeno analizo stroškov teh aktivnosti.

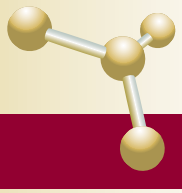
Diploma paper

COSTS IN MEASURING AND ASSESSING COMPANIES' PERFORMANCE

Mentor: Prof. Dr. Metka Tekavčič
University of Ljubljana, Faculty of Economics

Effective cost management in a contemporary business environment is certainly one of the most important tasks in every company since overall efficiency strongly depends on costs. However, in the last decades the circumstances of doing business have markedly changed. The percentage of indirect costs has risen and consequently the traditional management systems in which costs are being arbitrarily allocated to products have become inappropriate. Therefore, many new approaches to cost management have been developed, which emphasize the need for in-depth performance analysis.

The diploma paper presents important differences in the role of costs between traditional and contemporary performance management models. In traditional models costs are only assessed. In these models we do not study the causes for them or the cause-consequence relations between the costs and the business performance measures. We only measure the costs and use the measurements as inputs for calculations of different financial performance measures which are then used for performance management. On the contrary, the contemporary concepts require knowledge and understanding of individual business process activities which also includes an in-depth analysis of these activities' costs.



Urška TORI

Diplomsko delo

ZNAČILNOSTI BRAZILSKEGA POGAJALSKEGA SLOGA

Mentorica: prof. dr. Maja Makovec Brenčič
Univerza v Ljubljani, Ekonomska fakulteta

Razlike v kulturi med poslovnimi partnerji ustvarjajo pregrade, ki ovirajo ali onemogočajo pogajalski proces. Bolj ko razumemo odnos med različnimi primernimi okoliščinami, pogajalskimi stališči in obnašanji v različnih kulturah in ekonomskih situacijah, bolj učinkovita bodo postala tudi mednacionalna oziroma medkulturna pogajanja.

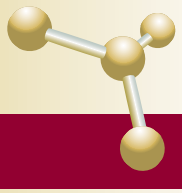
Osnovni namen diplomskega dela je prikazati in podrobneje osvetliti ter na zgoščen način prikazati ključne značilnosti brazilskega pogajalskega sloga, njegove posebnosti ter ozadja, s katerimi se srečujejo poslovneži, ki nameravajo poslovati na brazilskem trgu. Brazilski trg kljub navzočnosti velikih multinacionalk še zdaleč ni zasičen in prostora je dovolj tudi za slovenske podjetnike. Ti lahko iščejo priložnosti predvsem s prodorom v manjše in ožje opredeljene tržne segmente, namenjene zlasti skupini zahtevnejših potrošnikov, kjer delujejo tudi nekateri izprašani slovenski pogajalci. Vsebina diplomskega dela je ne le aktualna, ampak predvsem uporabna za vsa podjetja, ki bodo ali pa že vstopajo na brazilski trg. Delo namreč prestavlja zaokroženo strokovno vsebino, nekakšen priročnik vpogleda v značilnosti in posebnosti pogajanj na izbranem trgu. Pri tem se avtorica osredotoči na posebnosti okolja, predvsem kulturološkega, ter v skladu z njegovimi značilnostmi analizira pogajalski model Weissa in Stripa. Avtorica tudi izvede globinske intervjuje s predstavniki podjetij, ki že imajo izkušnje na tem trgu, in tako s kvalitativno raziskavo preveri sekundarno analizo dosedanjih spoznanj o posebnostih brazilskega in južnoameriškega sloga pogajanj. Na ta način poveže splošna spoznanja o pogajanjih na izbranem trgu in kulturi z vidikom izkušenj slovenskih poslovnežev.

Diploma paper

CHARACTERISTICS OF BRAZILIAN NEGOTIATION STYLE

Mentor: Prof. Dr. Maja Makovec Brenčič
University of Ljubljana, Faculty of Economics

Differences in culture among business executives can create barriers that impede or completely stymie the negotiating process. The more we can understand the relationship between various moderating conditions and negotiator attitudes and behaviors in differing cultures and economic conditions, the more effective and efficient cross-national or cross-cultural negotiations can become. The basic purpose of the diploma paper is to examine and enlighten the key characteristics of the Brazilian negotiating style, its uniqueness and cultural backgrounds that business executives encounter when conducting business in Brazil. Despite the emergence of multinational companies the Brazilian market is not oversaturated. There is more than enough space for Slovenian enterpeneurs who can seek opportunities on the Brazilian market, mostly entering smaller and niche market segments which are earmarked for a group of demanding consumers, where interviewed Slovenian negotiators already operate.



JANEZ TROŠT

Diplomsko delo

RAZVOJ PROGRAMSKE OPREME ZA NAČRTOVNAJE PLINSKIH NAPELJAV V OKOLJU AUTOCAD

Mentor: doc. dr. Bogdan Filipič
Univerza v Ljubljani, Fakulteta za strojništvo

V delu se v uvodu predstavlja problematika projektiranja notranjih hišnih plinskih napeljav. Prikazana je možnost programiranja in prirejanja programskega paketa AutoCAD potrebam tega projektiranja in s tem povečanja učinkovitosti dela. S tem pristopom je bila v programskem jeziku Visual Basic razvita programska oprema za načrtovanje plinskih napeljav. Opisani so osnovni koncepti in principi prepoznavanja objektov v AutoCADu, zapisovanja podatkov v objekte, dela z zunanjimi podatki, računalniškega odločanja, sklepanja in ponavljanja opravil.
V nadaljevanju so predstavljeni razviti programski moduli, združeni pod imenom PlinCAD. Razviti so bili z namenom lažjega in hitrejšega risanja ter določanja plinskih elementov. Razvoj modulov je prikazan na primeru modula Plinske tuljave.
Programski moduli so bili uspešno preneseni v prakso. Z razvito programsko opremo smo poleg hitrejše izdelave projektov zagotovili poenotenje postopka projektiranja plinskih napeljav, dosegli večjo preglednost pri ustvarjanju projektov in zmanjšali možnost napak.
Razvita programska oprema za projektiranje plinskih napeljav predstavlja specializiran segment, ki ga je težko najti oz. kupiti na trgu.
Omogoča hitrejšo izdelavo projektov skladno s predpisi in priporočili, ki veljajo na tem področju, poenoti postopke projektiranja in zmanjšuje možnost napak.

Znanje, ki je bilo pridobljeno pri izdelavi diplomskega dela, je uporabno pri razvoju različne programske opreme za nadgradnjo AutoCADa, ki je eden najbolj razširjenih programov za računalniško podprto načrtovanje.

Diploma paper

DEVELOPMENT OF SOFTWARE FOR PLANNING GAS INSTALLATIONS IN AUTOCAD

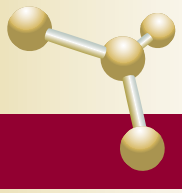
Mentor: Doc. Dr. Bogdan Filipič
University of Ljubljana, Faculty of Mechanical Engineering

This thesis first introduces the area of application, ie. the design of domestic gas installations. It then describes how a popular design environment program, AutoCAD, can be customized and upgraded with programming to better serve designers. The 'Visual Basic' programming language was used for this purpose.

We explain the basic concepts and principles needed with specialized software development: data object recognition in AutoCAD, handling databases and external data, computer-aided decision making, the reasoning, and repeated actions.

Next, the software modules developed under the name PlinCAD are presented. They enable drawing, dimensioning, and connection of gas installation elements, such as gas pipes, gas meters, gas ovens and ranges, internal gas connections, and gas coils. A specific module, "Plinska tuljava" (Gas coil) is described in detail and its structure and operation are explained. The relationships between individual software components are discussed. The program code is shown for some segments of the software.

The developed software has made the designing of gas installations faster, and designing has become more uniform and better organized, while the overall number of errors per project has been notably reduced.



Mitja ZORKO

Diplomsko delo

IDEJNA ZASNOVA PALEONTOLOŠKEGA MUZEJA

Mentor: prof. mag. Peter Gabrijelčič
Somentorica: dr. Alenka Fikfak
Univerza v Ljubljani, Fakulteta za arhitekturo

Namen diplomskega dela je poiskati in izdelati arhitekturno rešitev problema, ki se pojavlja predvsem v razvijajočih se državah, natančneje v ruralnem okolju. Pokazati želi možnost revitalizacije starega in sožitje tega ter naravnega prostora z novim, sodobnim. Je hkrati poizkus zasnove muzeja s specifično tematiko, ki daje objektu individualnost in identiteto.

Diplomsko delo ponuja strokovni vpogled v razvoj in družbeni pomen javnih družbeno koristnih zgradb. Nosilna konstrukcija je konglomerat armiranobetonske in jeklene gradnje. V zasnovi strehe se pojavlja ozelenjena streha in zastekljen vrt, izveden z jeklenim prostorskim paličjem.

Poleg verodostojnih in ilustrativnih analiz ter nadpovprečno dodelanih tehničnih risb in vizualizacij diplomsko delo nudi nov pogled na pomen muzejev in zgradb javnega pomena.

Diploma paper

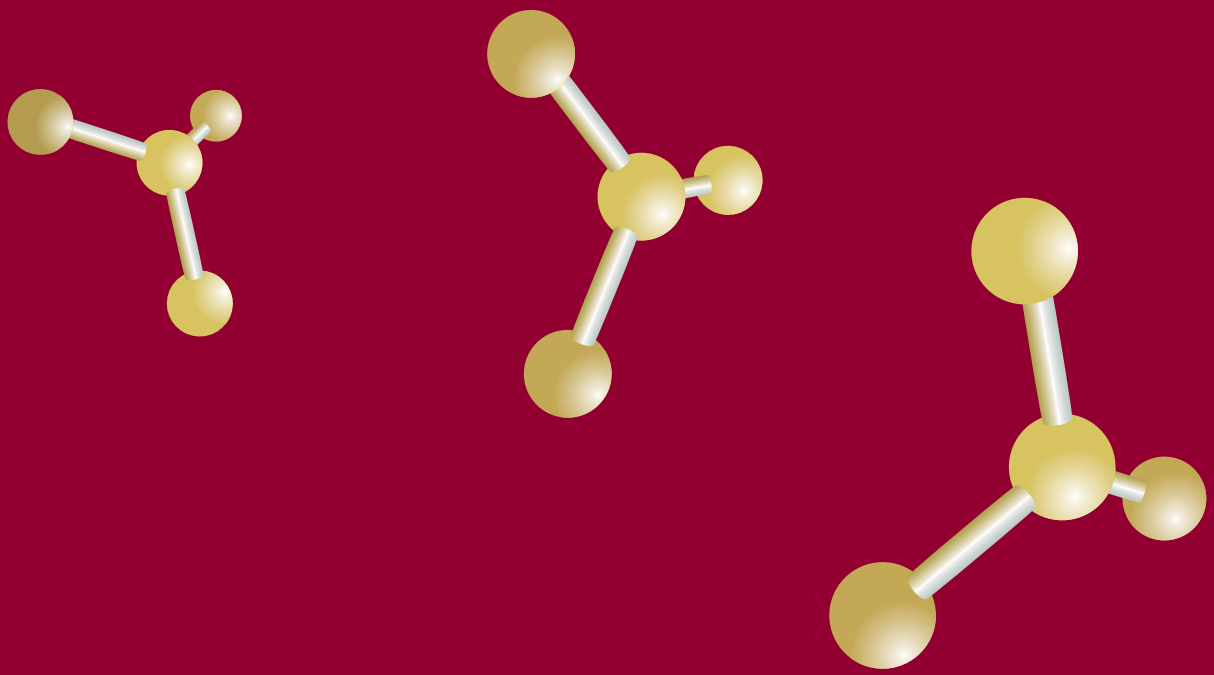
IDEAL PROJECT OF THE MUSEUM OF PALEONTOLOGY

Mentor: Prof. Peter Gabrijelčič, MSc
Co-mentor: Dr. Alenka Fikfak
University of Ljubljana, Faculty of Architecture

The purpose of this work is to find an architectural solution, which appears in the countries in progress, especially in the rural world. The work shows the possibility of the revitalisation of the old, and harmony between the old and new intervention and natural environment. It is a concept of a museum with special thematic which gives the building its identity. The context considered as important is the complexity of the natural and built environment and the purpose of the building.

It is a museum complex, assembled of six different program units, which are functionally combined and create a spatial whole. The primary function is the presenting and preserving of the palaeontology finds of the whole region. As the additional activities it also includes also research and education, accommodation capacities, multipurpose edifice and a congress hall.

The whole complex is assembled of six different program units, which are captured in individual spatial entitles and those are functionally connected. They are arranged successfully on the braking axle and so create an internally central atrium. The major part of the complex is single-storey, only the museum has one more floor. The way from the arrival to the entrance of the museum is defined by breakable walls, which are in some parts roofed and present open-air exhibition spaces.

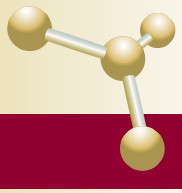


ZBORNIK POVZETKOV NAGRAJENIH DEL

ABSTRACTS OF THE PROJECTS AWARDED

SPECIALISTIČNA IN MAGISTRSKA DELA

SPECIALIST THESIS AND DISSERTATIONS



Mojca CVIRN

Specialistično delo

IZZIVI RASTI SLOVENSKIH GAZEL: GENERACIJA 2000

Mentorica: doc.dr. Mateja Drnovšek
Univerza v Ljubljani, Ekonomska fakulteta

Vodilo dela je pokazati vlogo dinamičnih podjetij v Sloveniji na področju ustvarjanja dodane vrednosti in zaposlovanja. Avtorica se tako loti izjemno pomembnega področja za slovensko gospodarstvo, tudi zato, ker je še precej neobdelano predvsem zaradi slabše podjetniške kulture v primerjavi z razvitimi gospodarstvi.
Gre za kombiniranje teoretične vsebine in empiričnih podatkov, ki jih z uporabo longitudinalne analize obdela in pridobi uporabne sklepe. Analizira tako sekundarne kot tudi primarne podatke na strokovni osnovi in z uporabo preizkušenega statističnega SPSS-programa. Tovrstne analize so lahko dobra osnova za odločanje države in njenih institucij pri sprejemanju nadaljnje podjetniške zakonodaje.

Dinamična podjetja imajo širšo vlogo pri ustvarjanju dodane vrednosti, novih delovnih mest, razvoja novih tehnologij in produktov ter povečanju produktivnosti. So pomemben generator narodnogospodarskega razvoja. V Sloveniji imajo dinamična podjetja še precej razvojnih priložnosti, sploh v prihodnjih letih, ko se bo razvijalo makroekeonomsko okolje, ki bo bolj naklonjeno razvoju tovrstnih podjetij. Ključnega pomena je stopnja inovativnosti določenega narodnega gospodarstva.

Poleg spodbujanja inovativnosti in znanja je še naprej potrebno ustvarjati ugodne makroekonomske dejavnike, ki bodo pritegnili posameznike ali ekspertne skupine v podjetniške aktivnosti, ne glede na uporabljeno pravno-formalno obliko. Posebej bo to pomembno pri aplikaciji specifičnega, nišnega znanja, ki se bo razvijalo skozi dinamična podjetja in v povezavi z akademskimi krogi.

Specialist Thesis

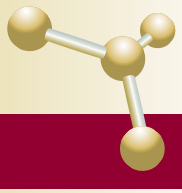
GROWTH CHALLENGES FOR SLOVENE GAZELLES: GENERATION 2000

Mentor: Doc. Dr. Mateja Drnovšek
University of Ljubljana, Faculty of Economics

The aim of the paper is to demonstrate the role of dynamic companies in Slovenia in creating extra value and new jobs. The author therefore tackles an extremely important area of the Slovene economy, largely because rough entrepreneurial culture in comparison to the more developed economies is not yet so clearly defined.
It combines theoretical and empirical data, which is used for analysis and to reach useful conclusions. It analyses the secondary as well as primary data by using the statistical 'SPSS' programme. Such analyses are a good basis for decisions made by the state and its institutions in forming entrepreneurial legislation.

Dynamic companies play a wider role in creating extra value, job vacancies, research in new technologies, products, and increasing productivity. They are an important generator of new economic development. In Slovenia dynamic companies possess a lot of development potential, especially in the next couple of years as the macro-economic environment develops, which will hopefully be more in favour of the development of such companies. The key is the degree of innovation within a specific national economy.

In addition to increasing innovation and knowledge, active macro-economic factors need to be encouraged. These will attract individuals or expert groups to get involved in entrepreneurial activities, regardless of the formal legal forms in use. This will be of special importance in applying specific marketing knowledge that will develop through dynamic companies in relation to academic circles.



Jasmina FERK

Magistrsko delo

INTERNACIONALIZACIJA SLOVENSKIH PODJETIJ NA NETRADICIONALNE TRGE KOT INSTRUMENT MEDNARODNE KONKURENČNOSTI: PRIMER INDIJE IN KITAJSKE

Mentor: izr. prof. dr. Milan Jurše
Univerza v Mariboru, Ekonomsko-poslovna fakulteta

Nobeno podjetje se pri snovanju svoje strategije rasti in razvoja ne bi smelo več spraševati, ali Indijo in Kitajsko obravnavati resno; edino vprašanje bi moralo biti: kako lahko podjetje kar najhitreje začne tam poslovati.

Vsa podjetja v svojem delovanju naravno težijo k večanju svojih konkurenčnih sposobnosti, torej tistih razlikovalnih lastnosti, ki jih bodo dolgoročno obdržale ali okrepile na globalnem gospodarskem zemljevidu. Določene od teh usmeritev so povezane in/ali kompatibilne tudi z izhodno internacionalizacijo, ki jo mnogokrat motivira ravno iskanje cenejših nabavnih virov, možnosti za znižanje stroškov proizvodnje ali priložnosti za razširitev prodajnega trga. Za podjetje je idealno, če si ustvari skoraj monopolni položaj, kar se naravno zgodi v obdobju 20 do 30 let v procesu koncentracije panog.

Obstaja torej pozitivna povezava v trikotniku med konkurenčnostjo, internacionalizacijo.

V magistrskem delu se prepletajo teoretični in aplikativni vidiki raziskave, zlasti z vidika procesov internacionalizacije podjetij, razvoja hitro rastočih gospodarstev (Kitajske, Indije) in vzvodov sodobne konkurenčnosti podjetij v procesu izhodne internacionalizacije poslovanja. Avtorica je poglobljeno osvetlila proces globalizacije in proces internacionalizacije kot strateški odziv podjetij pri izkoriščanju tržnih priložnosti v procesu odpiranja dinamičnih in netradicionalnih lokalnih trgov. Posebej poglobljeno se je ukvarjala s procesom izhodne internacionalizacije, njenimi vzvodi ter konceptualnimi vidiki internacionalizacije slovenskih podjetij.

Dissertation

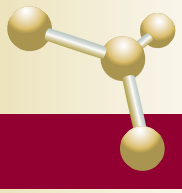
THE INTERNATIONALIZATION OF SLOVENE COMPANIES INTO NON-TRADITIONAL MARKETS AS AN INSTRUMENT OF INTERNATIONAL COMPETITIVENESS, PARTICULARLY IN INDIA AND CHINA

Mentor: Associate Prof. Dr. Milan Jurše
University of Maribor, Faculty of Economics and Business

In their growth and development strategy, no company should wonder any more if India and China are to be taken seriously; the only question that should be asked is: how to start doing business there as soon as possible.

In their actions, all companies naturally aim at increasing their competitive advantages, which are those differentiating characteristics that will either preserve or strengthen their positions on the global economic map. For this purpose, enterprises are reengineering their supply chains, reinventing their marketing strategies, innovating products, improving after-sales services, strengthening social and ecological consciousness and optimizing processes with the goal of increasing productivity. Some of those efforts are linked with and/or compatible with outward internationalization which, is often motivated precisely with the search for cheaper resources, the lowering of production costs, or the widening of the consumer market. It is ideal if the company manages to create little short of a monopoly position for itself, which is what naturally happens in the process of industry concentration in the course of 20-30 years.

Thus there is a positive connection in the triangle between competitiveness (as one of the company's main goals), internationalization (as one of the possible instruments for strengthening competitiveness) and industry concentration (as a consequence of cross-border mergers and acquisitions, which were enabled by a strong and healthy financial position of the company, created precisely due to the company's international competitiveness).



Andraž KREBS

Magistrsko delo

ANALIZA CELOVITOSTI NOSILNEGA PRSTANA RAKETE ARIANE

Mentor: izr. prof. dr. Nenad Gubeljak
Univerza v Mariboru, Fakulteta za strojništvo

V delu je obravnavana problematika vpeljave nove tehnologije izdelave nosilnega prstana rakete Ariane. Novovpeljana tehnologija izdelave konstrukcijske komponente temelji na izdelavi zvarnih spojev z modernim postopkom spajanja materiala tornega varjenja z gnetenjem (ang. Friction Stir Welding oziroma kratko: FSW). Ustreznost tehnologije in kvaliteta izdelave zvarnih spojev je opredeljena z eksperimentalnimi metodami, na osnovi katerih so izdelani zvarni spoji preiskani metalurško, mehansko in lomno mehansko.

Avtor je uspel določiti parametre optimalnega postopka spajanja nosilnega prstana, uspešno opraviti eksperimentalne meritve in kvantitativno analizirati rezultate raziskav, na osnovi katerih je mogoče oceniti celovitost nosilnega prstana rakete Ariane. Z upoštevanjem dobljenih materialnih lastnosti in ob podani geometriji prstana je bil s pomočjo metode končnih elementov izdelan numerični model in določeno napetostno stanje konstrukcijske komponente pod vplivom mejne obremenitve konstrukcije. Numerična analiza je opravljena za različne lege in dimenzije razpok v kritičnem delu prstana.

Celovitost konstrukcijske komponente je bila določena na osnovi porazdelitve napetosti iz numeričnega modela. Rezultat predstavlja velikost, obliko in lego razpoke, pri kateri je konstrukcijska komponenta še varna za uporabo.

Uporabna vrednost magistrskega dela v gradbeništvu se vidi v primerih izdelave specialnih konstrukcij iz lahkih materialov, kjer se mora zvar obnašati kot konstrukcijski element in ne sme predstavljati šibkega člena konstrukcije.

Dissertation

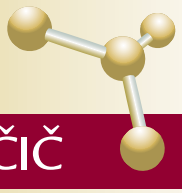
STRUCTURE INTEGRITY ANALYSIS OF THE SUPPORTING RING OF ROCKET ARIANE

Mentor: Associate, Dr. Nenad Gubeljak
University of Maribor, Faculty of Mechanical Engineering

Problems with introducing new technology for the supporting ring fabrication of the rocket, Ariane, are well discussed in this postgraduate work.
Previous fabrication technology for the supporting ring, based on using laser beam welding procedures, has been rejected because of the high loss of material strength in the weld-joint region. Consequently, construction components have not satisfied the required working conditions well. For that reason it is clear that new fabrication technology has to be applied.
Newly introduced technology for the fabrication of construction components is based on performing weld joints, using a modern material-joining procedure, named Friction Stir Welding, or FSW.
The suitability of introduced fabrication technology and the quality of the weld joints performed is determined by experimental procedures. So weld joints are investigated metallurgically, mechanically, and by fracture testing.

Generally, experimental procedures with FSW weld joints show good results and verifies the suitability of the newly introduced fabrication technology. In some cases metallurgic investigation shows that defects can occur in some weld joints if optimal welding parameters are not used. In some locations the construction component cross-section has a complex geometry. This also presents a location where is quite difficult to achieve optimal welding parameters.

Results of numerical modeling show a strong decrease in limit-load values for the cases in which construction components contain a crack in the meridian direction. A limit-load solution for the construction component, containing a crack in the radial direction, is identical to the limit-load solution for construction components containing no crack. Hence, it follows, that for a detected crack in a radial direction is not necessary to adjust fabrication technology and a component with such a crack can be normally used for the service.



Andreja LAVRENČIČ

Magistrsko delo

IZHOD IZ SAMOZADOVLJNOSTI: TRANSFORMACIJA SAMOZADOVOLJNIH ORGANIZACIJ

Mentor: Paul Roberts, asistent
Univerza v Warwicku, Tehnična fakulteta

Delo med ključnimi ukrepi predstavi pomen samozavedanja in zavedanja zunanjega okolja, sprememb v zunanjem okolju, odpravo arogantnosti, občutek za smer, odgovornost, timsko delo, komunikacijo, razvoj vodij in priložnosti za učenje. Avtorica po navedenih virih predlaga, naj organizacija namesto odgovornosti za rezultate raje meri kakovost procesa odločanja posameznika. Odpraviti je potrebno aroganco, vodje morajo znati prisluhniti drugim in priznati tudi svoje napake.

Bistvo magistrskega dela je predstaviti in opozoriti na samozadovoljnost organizacij, predstaviti različne nivoje samozadovoljnosti in podati ukrepe za izhod iz takega stanja.

Tema je aktualna za vsa podjetja, saj govori o problemu, ki je v mnogih organizacijah impliciten, celo nezaveden, a vendar lahko povzroči velike težave pri doseganju nadaljnje rasti in poslovnih uspehov v prihodnosti. Prav zato je zavedanje o problematiki samozadovoljnosti zelo pomembno za podjetja, ki hočejo preživeti v hitro spreminjajočem se svetu in tudi postati vodilni na svojem področju. Delo obravnava in razkriva mehke dejavnike v organizacijah, predvsem vodenje in menedžment, pomemben problem, s katerim se sooča veliko podjetij.

Dissertation

LEADING OUT OF COMPLACENCY: TRANSFORMING COMPLACENT ORGANIZATIONS

Mentor: Paul Roberts, principal fellow
University of Warwick, Faculty of Engineering

The theme of this project, complacency, is cited by many as a significant barrier to successful organizational change. Not only does it cause organizations to miss the early warning signs of an upcoming upheaval, it also prevents them from reacting in an effective manner.

Because a crucial issue of complacent organization is that they are unaware that their responses are no longer appropriate, a self-diagnostic tool was developed.

Poor leadership has been identified as the root cause of complacency. A general set of recommendations is given, that is applicable to all five levels. In addition, specific measures are proposed, tailored to each level.

The project sends a message that complacency is not limited to very large corporations that are riding on the waves of their past success. It threatens any organization that is not doing all that it can to become a Level 5 organization, and is not learning from its own mistakes to become more effective in its responses.

Ivan USHINSKI

Magistrsko delo

TOVARNA BIOETANOLA – OBRAT ZA DESTILACIJO, JEKLENA STRUKTURA V ŠESTIH NIVOJIH

Mentor: Tzvetan Georgiev, inž.
Univerza v Sofiji, Fakulteta za arhitekturo, gradbeništvo in geodezijo

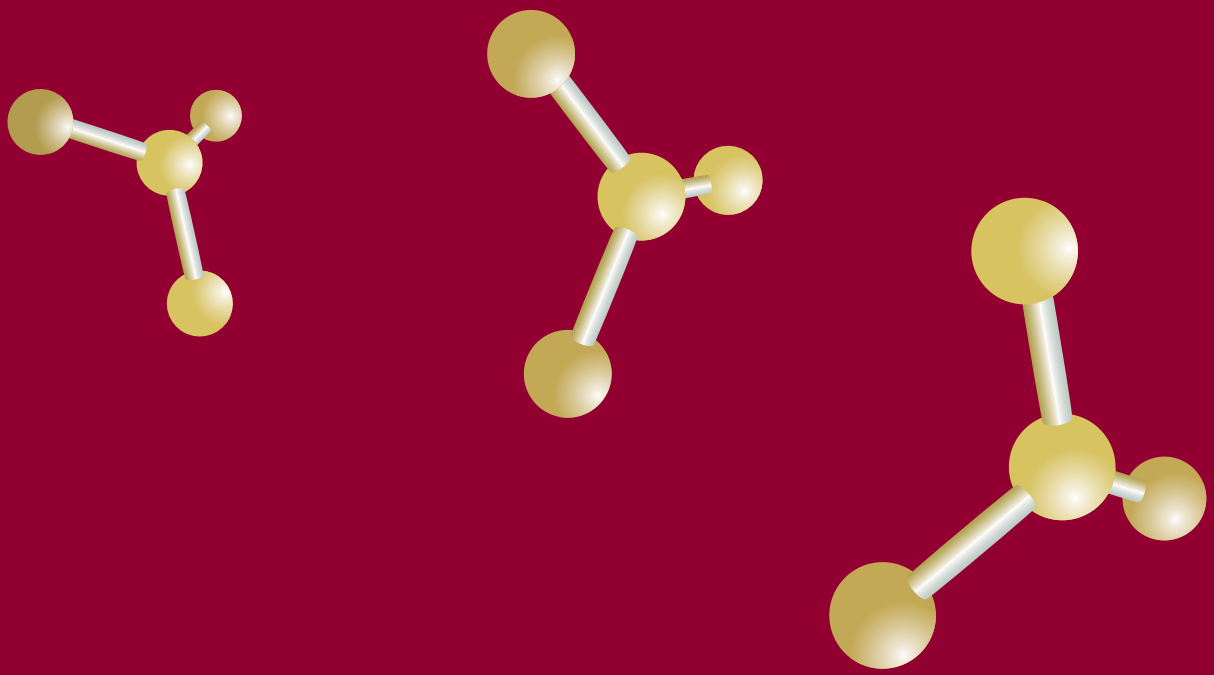
Predmet magistrskega dela je problem, s katerim se srečujemo vsakodnevno: kako kvalitetno, ekonomično in v najkrajšem času izpeljati proces implementacije jeklenih objektov od faze projektiranja, preko izdelave v delavnici in montaže na gradbišču ter pri tem reducirati količino morebitnih napak na najmanjšo možno mero. Avtor podaja tudi konkreten primer napake in njene učinkovite odprave.

Dissertation

FACTORY FOR BIOETHANOL – DISTILLATION SECTION. SIX LEVEL STEEL STRUCTURE.

Mentor: Tzvetan Georgiev, BSc
University of Architecture, Civil and Geodetic Engineering, Construction Faculty, Sofia

The main point of the project is the connection of analytic design, preparation for production, and assembly management. By analyzing and bringing these 3 stages together the margin of error is minimized and provide a better solution. Steel structure designing as a threefold process is managed through STRUCAD software.
The complex designing of steel structures from analyses, through manufacturing, to assembly, show the advantages. Modern CAD design and CAM manufacturing, by using CNC controlled machines, shorten the process and raise quality. This is the way that steel structure designing has to follow.

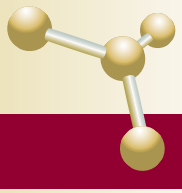


ZBORNIK POVZETKOV NAGRAJENIH DEL

ABSTRACTS OF THE PROJECTS AWARDED

DOKTORSKE DISERTACIJE

DOCTORAL THESES



Zoran BOSNIĆ

Doktorska disertacija

OCENJEVANJE ZANESLJIVOSTI POSAMEZNIH NAPOVEDI Z ANALIZO OBČUTLJIVOSTI REGRESIJSKIH MODELOV

Mentor: prof. dr. Igor Kononenko
Univerza v Ljubljani, Fakulteta za računalništvo in informatiko

Doktorska disertacija se ukvarja z razvojem pristopa ocenjevanja zanesljivosti posameznih regresijskih napovedi, ki temelji na analizi občutljivosti regresijskih modelov. Razvita metoda meri občutljivost modelov na podlagi sprememb njihovih napovedi, ki nastopijo kot posledica spreminjanja učne množice primerov z dodatnim primerom, katerega napoved nas zanima. Disertacija predlaga uporabo osmih novih ocen zanesljivosti, njihovo uspešnost testira na 28 testnih problemih in 8 regresijskih modelih (regresijska drevesa, nevronske mreže, metoda podpornih vektorjev, linearna regresija, posplošeni aditivni model, lokalno utežena regresija, naključni gozdovi in bagging) in uspešnosti ocen medsebojno primerja. Predlaga tudi uporabo dveh pristopov, ki omogočata avtomatsko izbiro najbolj ustrezne ocene zanesljivosti za dani problem in regresijski model.

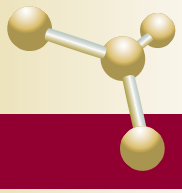
Tema doktorske disertacije je zelo aktualna, saj odpira nova področja učinkovitega ocenjevanja zanesljivosti napovednih modelov (strojno učenje, avtomatsko generiranje znanja), ki se v zadnjem času vedno pogosteje pojavlja na različnih področjih – od tehnike, ekonomije do uporabe v medicini in družbenih vedah. Predstavlja razvoj nove metode ocenjevanja posameznih napovedi, ki bo neodvisna od algoritmov napovedovanja.

Doctoral Theses

ESTIMATION OF INDIVIDUAL PREDICTION RELIABILITY USING SENSITIVITY ANALYSIS OF REGRESSION MODELS

Mentor: Prof. Dr. Igor Kononenko
University of Ljubljana, Faculty of Computer and Information Science

The thesis proposes a method for reliability estimation of predictions, which is based on the sensitivity analysis approach. The developed method measures sensitivity of the regression models based on the change of their predictions, which are influenced by expanding their learning data set with an additional learning example, for which we wish to estimate prediction reliability. Performance and comparative testing of the 8 proposed reliability estimates was performed with 28 testing domains and with 8 regression models (regression trees, neural networks, support vector machines, linear regression, generalized additive model, locally weighted regression, random forests and bagging). Two solutions for the problem of optimal reliability estimate selection based on the given problem and the regression model were also discussed.



Robert KAŠE

Doktorska disertacija

UČINKI AKTIVNOSTI RAVNANJA S ČLOVEŠKIMI VIRI NA PRENOS ZNANJA V VISOKOTEHNOLOŠKIH PODJETJIH: POSREDOVALNA VLOGA DIMENZIJ SOCIALNEGA OMREŽJA

Mentorica: prof. dr. Nada Zupan
Somentor: prof. dr. Jaap Paauwe, Univerza v Tilburgu, Nizozemska
Univerza v Ljubljani, Ekonomska fakulteta

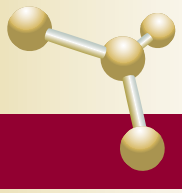
Disertacija s pomočjo pristopa socialnih omrežij in več teoretskega okvira proučuje povezanost med aktivnostmi ravnanja s človeškimi viri, socialnim omrežjem podjetja in notranjim prenosom znanja v visokotehnoloških podjetjih. Delo temelji na kvantitativni raziskavi, ki se je odvijala na več prizoriščih. Za potrebe raziskave so s pomočjo po meri pripravljene spletne ankete zbrali obsežne podatke o posameznikih in njihovih odnosih s sodelavci. Izsledki raziskave kažejo, da imajo v visokotehnoloških podjetjih aktivnosti ravnanja z ljudmi pri delu značilen vpliv na oblikovanje vzorcev medosebnih odnosov in posledično na notranji prenos znanja v podjetju. Pokazalo se je, da je pomembno predvsem, kako strukturna dimenzija socialnega omrežja posreduje učinke aktivnosti oblikovanja dela ter usposabljanja in razvoja na notranji prenos znanja. Poleg tega rezultati pokažejo tudi na možnost, da aktivnosti nagrajevanja in motivacije neposredno vplivajo na medosebno delitev znanja in spodbujanje povpraševanja po znanju. Disertacija tako znatno prispeva k znanstvenemu področju strateškega ravnanja s človeškimi viri, saj ponudi globlji vpogled v enega od bistvenih posredovalnih mehanizmov med aktivnostmi ravnanja s človeškimi viri in uspešnostjo podjetja, prepozna implikacije za prakso ter predlaga smernice prihodnjega raziskovanja na tem področju. Delo prinaša pomembna spoznanja in odpira nov pogled na pomembno vlogo socialnih omrežij v procesu prenosa znanja. Raziskava je pokazala tako neposredne kot posredne učinke aktivnosti nagrajevanja in motivacije na prenos znanja. Posebej uporabna so priporočila, kako lahko predvsem visokotehnološka podjetja s pomočjo aktivnosti razvoja človeških virov oblikujejo socialna omrežja in posledično bolj učinkovito in uspešno prenašajo znanje v podjetju.

Doctoral Thesis

EFFECTS OF HR PRACTISES ON KNOWLEDGE TRANSFER IN KNOWLEDGE-INTENSIVE FIRMS: THE MEDIATING ROLE OF SOCIAL NETWORK DIMENSIONS

Mentor: Prof. Dr. Nada Zupan
Co-mentor: Prof. Dr. Jaap Paauwe, University of Tilburg, The Netherlands
University of Ljubljana, Faculty of Economics

The thesis adopts the social network perspective and draws on a multi-theoretical framework to examine the relationship between HR practices, a firm's social network, and internal knowledge transfer in knowledge-intensive firms. A multi-site research design was employed in order to produce results. Complex individual and relational data was gathered by means of an extensive web-based survey. The results indicate that in knowledge-intensive firms HR practices contributed significantly to establishing the patterns of inter-personal relations and in turn to transferring knowledge internally. Specifically, the effects of work design along with training and development HR practices on intra-firm knowledge transfer were predominantly mediated by the structural dimension of a firm's social network. Furthermore, some less robust evidence was found supporting the argument that incentives and motivation HR practices directly affected inter-personal knowledge sharing and facilitated knowledge sourcing. The thesis contributed to the SHRM literature by looking further into the black box and advancing our understanding of a specific mediating mechanism within the HRM-firm performance relationship, identified implications for practice, and suggested future research directions.



Davorin KOFJAČ

Doktorska disertacija

PRILAGODLJIVI ALGORITEM ZA KONTROLO ZALOG Z MEHKO LOGIKO V NEGOTOVEM OKOLJU

Mentor: red. prof. dr. Miroljub Kljajić
Univerza v Mariboru, Fakulteta za organizacijske vede, Kranj

Disertacija se ukvarja s problemom kontrole zalog v podjetju kot posledice stohastičnih sprememb dobavnih rokov ter stohastičnih sprememb v proizvodnem in prodajnem procesu.

Predstavljena je kompleksna stroškovna funkcija, ki sestoji iz stroškov vezanih sredstev, skladiščenja palet, transporta, naročanja, prevzema in stroška manipulacije ob izdaji materiala iz skladišča.

Optimizacijo procesa naročanja so izvedli s pomočjo metod simulacije in uporabo mehke logike.

V okviru raziskave je bil razvit tudi simulacijski sistem za podporo odločanju pri kontroli zalog, katerega namen je nuditi odločevalcu, tj. naročevalcu, informacijo, kdaj in koliko naročiti. Sistem temelji na prej omenjenih algoritmih naročanja in z izvajanjem simulacijskih scenarijev nudi odločevalcu anticipativno in povratno informacijo o kontroli zalog ter s tem pripomore k hitrejši konvergenci odločevalčeve krivulje učenja k popolnemu razumevanju procesa kontrole zalog.

Disertacija je zelo kompleksno zastavljena v smeri rešitve problematike zalog v podjetju, kjer je raznolikost in spremenljivost v proizvodnji zelo velika in je planiranje optimalnih zalog zelo kompleksno. Razvit je bil sistem za optimizacijo zalog v okolju, kjer je veliko spremenljivk oz. kriterijev za naročanje materiala. Naloga na konkretnih primerih prikazuje konkretne prihranke pri uporabi tega modela. Pokazala je tudi, da ni vedno bolje imeti nizko zalogo, kar se je tudi prikazalo na konkretnih primerih, ampak optimalno zalogo glede na stroške, ki niso vedno stroški materiala.

Doctoral Thesis:

THE ADAPTIVE INVENTORY CONTROL ALGORITHM WITH FUZZY LOGIC IN AN UNCERTAIN ENVIRONMENT

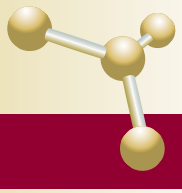
Mentor: Prof. Dr. Miroljub Kljajić
University of Maribor, Faculty of Organizational Sciences, Kranj

This thesis deals with inventory control problems that are a consequence of stochastic lead-times and stochastic changes in the production and selling process.

Inventory control was approached by optimizing the ordering process which minimizes the cost function and does not violate two restrictions: no 'stock-outs' may occur (out of stock) and inventory capacity must not be exceeded.
A complex cost function is introduced consisting of: cost of capital, cost of physical storage, transportation cost, fixed ordering costs, handling costs, and cost of taking over products.

The ordering process optimization was performed using simulation methods and fuzzy logic.

The inventory control decision-support simulation system was developed during research. Its task is to provide information to the decision maker, i.e. the ordering manager - when and how many items to order. The system is based on the algorithms mentioned above and provides anticipative and feedback information to the decision maker by performing different simulation scenarios, thus making the decision maker's learning curve converge faster towards a full understanding of the inventory control process.



Tadeja KOSEC

Doktorska disertacija

MEHANIZEM INHIBICIJE BAKRA IN NJEGOVIH ZLITIN S CINKOM Z DERIVATI BENZOTRIAZOLA V KLORIDNIH RAZTOPINAH

Mentorica: dr. Ingrid Milošev
Somentor: prof. dr. Boris Pihlar
Univerza v Ljubljani, Fakulteta za kemijo in kemijsko tehnologijo

Namen doktorske disertacije je bil sistematičen pristop k študiju mehanizma inhibicije korozije bakra, njegovih zlitin in cinka v kloridnem mediju v prisotnosti organskega inhibitorja benzotriazola (BTAH) s klasičnimi elektrokemijskimi postopki.

Inhibitorji so kemijske spojine, ki reagirajo s površino kovine ali vplivajo na kemijsko okolje, kateremu je izpostavljena površina materiala, ki mu dajejo določeno vrsto zaščite.

Eden od načinov za zaščito bakra in zlitin s cinkom pred korozijo je dodajanje korozijskih inhibitorjev v sistem. Benzotriazol je znan kot najboljši inhibitor za baker in medenino.

Kljub številnim raziskavam do sedaj ni bilo pojasnjeno, na kakšen način benzotriazol inhibira korozijo bakra. V doktorski disertaciji pa avtorica predstavi mehanizem inhibicije korozije.

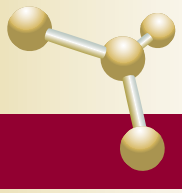
Doctoral Thesis

THE INHIBITION MECHANISM OF COPPER AND ITS ZINC ALLOYS IN CHLORIDE SOLUTION CONTAINING BENZOTRIAZOLE

Mentor: Dr. Ingrid Milošev
Co-mentor: Prof. Dr. Boris Pihlar
University of Ljubljana, Faculty of Chemistry and Chemical Technology

The current research explores the mechanism of formation of protective layers on copper, zinc and copper-zinc (Cu-10Zn and Cu-40Zn) alloys in a chloride solution containing benzotriazole (BTAH), by use of different electrochemical and spectroscopic techniques. Understanding the inhibition mechanism of a corrosion process on a micro scale enabled us to find versatile ways of material and metal protection in order to prevent or postpone the corrosion attack. Different environments require versatile inhibition actions. Inhibitors are chemical substances that react with the surface of the metal or they may affect the corrosion media to which the metal specimen is subjected to.

Despite many investigations, it is still a matter of debate whether the inhibitive film exists as a Cu(I)-BTA complex, an absorbed BTAH film or a BTA polymer structure. Many applied technologies use brass as well as copper. The aim of the work was also to find the inhibition efficiencies of the corrosion process on the different studied materials.



Aleš MAGDIČ

Doktorska disertacija

DINAMIČNI INFORMACIJSKO-KOMUNIKACIJSKI SISTEM ZA UČINKOVITEJŠE OBVLADOVANJE NEPREDVIDENIH DOGODKOV V PROCESU GRADNJE GRADBENEGA OBJEKTA

Mentor: prof. dr. Danijel Rebolj
Univerza v Mariboru, Fakulteta za gradbeništvo

Doktorska disertacija obravnava obvladovanje nepredvidenih dogodkov v procesu gradnje gradbenega objekta. Problem, opažen na aplikativnem področju, je prenesen na izvorno znanstveno področje gradbene informatike, kjer se nato rešuje, z uporabo novega znanja pa predpostavi tudi rešitev izvirnega problema. Namesto še bolj natančnega in togega planiranja so uporabljeni pristopi in tehnologije, ki podpirajo improvizacijo, komunikacijo in pristop, osredotočen na posameznika in njegov delotok.

Izvirna metoda mobilnega reševanja problemov neposredno na gradbišču z uporabo sodobnih informacijskih tehnologij, predvsem mobilnega računalništva, zagotavlja takšne informacijske tokove, ki v največji meri aktivirajo kadre v procesu gradnje in ki posredujejo informacije do tistih mest, kjer je to potrebno za učinkovito odločanje v pravem času in na pravem mestu.

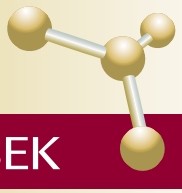
Doctoral Thesis

DYNAMIC INFORMATION AND COMMUNICATION SYSTEM FOR EFFICIENT CONTROL OF UNANTICIPATED EVENTS IN THE CONSTRUCTION PROCESS

Mentor: Prof. Dr. Danijel Rebolj
University of Maribor, Faculty of Civil Engineering

The focus of research in this thesis is unanticipated events in the construction process.
Usually, a problem noticed in application is transferred to the original scientific construction information technology, where a solution is defined. Instead of rigid and detailed planning; approaches and technology supporting improvisation, communication, and focusing on the individual, are used.

The original method for mobile, on-site problem-solving, uses mobile computing technology to ensure information flows, which gives maximum warning to personnel included in the construction process; and routes information to places where it is necessary for efficient decision making.



KARMEN POLJANŠEK

Doktorska disertacija

VPLIV KUMULATIVNIH POŠKODB NA ODZIV ARMIRANOBETONSKIH KONSTRUKCIJ PRI POTRESNI OBTEŽBI

Mentor: akad. prof. dr. Peter Fajfar
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Med potresi pride do cikličnega obremenjevanja konstrukcije in njenih elementov. Marsikateri od teh ciklov povzroči neelastične deformacije in pride do kopičenja poškodb (kumulativne poškodbe). S kopičenjem poškodb pride do zmanjševanja nosilnosti in togosti konstrukcije, kar je še posebno izrazito pri objektih, ki niso bili grajeni v skladu z današnjimi standardi. Čeprav se stroka dobro zaveda kumulativnih poškodb, te v obstoječih predpisih in standardih zaradi premajhne raziskanosti in zahtevnosti problema niso eksplicitno upoštevane.

Doktorska disertacija obravnava zmanjšanje deformacijske kapacitete pravokotnih armiranobetonskih stebrov zaradi nizkocikličnega utrujanja pri potresni obtežbi. V okviru disertacije je bil predlagan tudi nov, ekvivalenten model poškodb, s katerim se vpeljuje vpliv kumulativnih poškodb na oceno poškodb armiranobetonskih konstrukcij.

Rezultat disertacije je razvit postopek analize, ki bo omogočal upoštevanje vpliva kumulativnih poškodb pri ocenjevanju obnašanja gradbenih objektov med močnimi potresi. Rezultati prispevajo k zanesljivejšemu ocenjevanju kapacitete stebrov, ki so najpomembnejši nosilni element okvirnih konstrukcij.

Doctoral Thesis

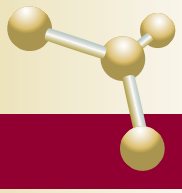
INFLUENCE OF CUMULATIVE DAMAGE ON THE SEISMIC RESPONSE OF REINFORCED CONCRETE STRUCTURES

Mentor: Academic Prof. Peter Fajfar
University of Ljubljana, Faculty of Civil and Geodetic Engineering

During strong earthquakes, structures and their elements are exposed to cyclic loading. Under the load reversals into the inelastic range, damage occurs. The accumulation of damage causes deterioration of the strength and stiffness of structures, especially in existing structures, which were not built in compliance with modern standards. Even though the experts are well aware of cumulative damage, it is not directly taken into account in existing regulations and standards, because of lack of research in the field of the described phenomenon.

In this dissertation the deterioration of the deformation capacity of reinforced concrete columns, due to low cycle fatigue during seismic response, is studied. A new equivalent damage model is proposed in order to introduce the influence of cumulative damage into the seismic damage analysis of reinforced concrete structures.

The proposed procedure is able to take into account the influence of cumulative damage for the estimation of seismic resistance of reinforced concrete frame structures.



Igor PRODAN

Doktorska disertacija

TEHNOLOŠKO PODJETNIŠTVO: PRENOS TEHNOLOGIJ IZ AKADEMSKIH INSTITUCIJ V NOVA PODJETJA

Mentorica: doc. dr. Mateja Drnovšek
Somentor: prof. dr. Jan Ulijn, Tehnična univerza v Eindhovnu, Fakulteta za tehniški management, Nizozemska
Univerza v Ljubljani, Ekonomska fakulteta

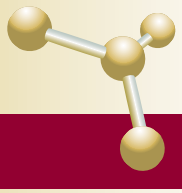
V okviru doktorske disertacije je avtor v teoretičnem delu razvil konceptni model tehnološkega podjetništva in konceptni model prenosa tehnologij iz akademskih institucij v nova podjetja z vidika akademika oz. akademskega podjetnika. V praktičnem delu je avtor model prenosa tehnologij iz akademskih institucij v nova podjetja z vidika akademika oz. akademskega podjetnika preveril na vzorcu 941 akademikov in akademskih podjetnikov iz treh različnih akademskih institucij (Univerza v Ljubljani, Tehnična univerza iz Eindhovna ter Univerza v Cambridgeu). Rezultati preverbe modela z uporabo celotnega vzorca akademikov brez lastnega podjetja so pokazali, da deset spremenljivk statistično značilno vpliva na akademikove podjetniške namere. Rezultati preverbe modela z uporabo celotnega vzorca akademskih podjetnikov po pokazali, da naslednjih sedem spremenljivk statistično značilno vpliva na udeleženost akademikov v lastnem podjetju. Tehnološko podjetništvo in prenos tehnološkega znanja iz akademskih krogov v gospodarstvo z ustanovitvijo novih podjetij, kjer je akademik aktivno vključen, je v Sloveniji skorajda neznanka. Vzroke je potrebno iskati tudi v stopnji razvoja slovenskega podjetništva, ki je še dokaj mlado, kot tudi v pravno-formalnih zadevah glede izvedbe tovrstnega transferja (ustanovitev akademskih "spinn-offov"). Eden od dejavnikov je tudi sama podjetniška kultura, ki je prisotna v akademskih krogih, ter zaznavanje potrebnih sprememb.
Zavedanje pomembnosti te teme in izpostavljanje prednosti, ki jih imata obe strani (torej akademska sfera in gospodarstvo), bo prispevalo k razvoju tega področja. Zavedanje, da so samo spremembe stalnica, bo prisililo tudi akademsko sfero, da svoje znanje »proda« na trgu, kajti le tako se bo to znanje oplajalo in prinašalo pogoje za pridobitev novega znanja. Država pa mora vzpostaviti instrumente, ki bodo tak pristop spodbujali.

Doctoral Thesis

TECHNOLOGICAL ENTREPRENEURSHIP: TECHNOLOGY TRANSFER FROM ACADEMIA TO NEW FIRMS

Mentor: Doc. Dr. Mateja Drnovšek
Co-mentor: Prof. Dr. Jan Ulijn, Eindhoven University of Technology, Faculty of Technology Management, The Netherlands
University of Ljubljana, Faculty of Economics

The author of the doctoral thesis has in its theoretical part developed a conceptual model of technological entrepreneurship and a conceptual model of technology transfer from academia to new firms from the academic/academic-entrepreneur's point of view. In the empirical part of the doctoral thesis the author tested a model of technology transfer from academic institutions to new firms from the academic/academic-entrepreneur's point of view using the sample of 941 academics and academic-entrepreneurs from three different academic institutions (the University of Ljubljana, Eindhoven University of Technology, and the University of Cambridge). The results of the model test, using the total sample of academics without their own company, indicated that the following ten independent variables are all significantly related to the academic's intention to become an entrepreneur: entrepreneurial self-efficacy, type of research, personal networks, a desire for wealth, a desire for safe and permanent employment, perceived role models, patents, number of years spent at the academic institution, a desire for independence, and a desire to bring technology into practice. The results of the model test, using the total sample of academic-entrepreneurs, indicate that the following seven independent variables are all significantly related to the academic's entrepreneurial engagement: personal networks, patents, scientific publications, type of research, dissatisfaction with the academic environment, a desire to disseminate findings through the scientific literature, and a desire for wealth.



Simon SCHNABL

Doktorska disertacija

MEHANSKA IN POŽARNA ANALIZA KOMPOZITNIH NOSILCEV

Mentor: izr. prof. dr. Goran Turk
Somentor: izr. prof. dr. Igor Planinc
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

V disertaciji sta predstavljena računski postopek in programska oprema za določitev napetostnega in deformacijskega stanja nelinearnih slojevitih kompozitnih nosilcev z upoštevanjem delne povezanosti slojev, strižne deformacije prečnih prerezov in oglenenja lesa pri sočasnem delovanju statične obtežbe in požara.

Glede na zahtevnost problema je disertacija vsebinsko razdeljena na dva zaključena dela. V prvem delu avtor analizira temperaturno-vlažnostno stanje slojevitih lesenih kompozitnih nosilcev pri požaru z upoštevanjem oglenenja lesa. V drugem delu disertacije predstavi osnovne enačbe, ki opisujejo mehansko stanje slojevitih kompozitnih nosilcev z upoštevanjem zdrsa med sloji in strižne deformacije prečnega prereza. Posebno pozornost nameni analitičnemu reševanju osnovnih enačb. Uporabnost predlaganega matematičnega modela za račun odziva slojevitih kompozitnih nosilcev na hkratno delovanje zunanje statične obtežbe in požara prikaže z računskimi primeri.

Rezultati doktorske disertacije predstavljajo prispevek na področju mehanske in požarne analize kompozitnih konstrukcij, vsebina pa pomemben korak k natančnemu razumevanju kompozitnih konstrukcij med požarom. V disertaciji razviti matematični modeli in računalniški programi so uporabni za nelinearno analizo vseh vrst kompozitnih konstrukcij, tudi takih z delno povezanimi sloji. Računski model in matematični postopek, ki ga je avtor razvil in predstavil v disertaciji, lahko pripomore k razvoju na področju požarne odpornosti konstrukcij in kompozitnih materialov.

Doctoral Thesis

STATIC LOAD AND FIRE ANALYSIS OF COMPOSITE BEAMS

Mentor: Associate Prof. Dr. Goran Turk
Co-mentor: Associate Prof. Dr. Igor Planinc
University of Ljubljana, Faculty of Civil and Geodetic Engineering

This thesis presents a numerical model and a computer program for the stress-strain analysis, of non-linear, multi-layered, composite beams, with inter-layer slip, shear deformation, and charring of timber, when simultaneously exposed to static loading and fire. The text is divided into two major parts. In the first part we analyze the temperature and moisture content distribution in timber composite beams when exposed to fire. In the second part the author introduces, firstly, the governing equations which describe the mechanical behavior of multi-layered composite beams with inter-layer slip and shear deformation.
Special attention is devoted to the analytical treatment of geometrically and materially linear, multi-layered, composite beams, with a significant interlayer slip. Furthermore, a new strain-based family of finite elements for a non-linear analysis, of multi-layered composite beams with inter-layer slip and shear is derived, and employed in the mechanical response analysis of the multi-layered composite beams when simultaneously exposed to static loading and fire.

The applicability of the present numerical model for stress-strain analysis of non-linear multi-layered composite beams subjected to mechanical and fire loads. is clearly illustrated by numerical examples.

Lara SLIVNIK

Doktorska disertacija

ZGRADBE SVETOVNIH RAZSTAV: KONSTRUKCIJA, ARHITEKTURA, URBANIZEM, OBLIKOVANJE

Mentor: prof. dr. Jože Kušar
Univerza v Ljubljani, Fakulteta za arhitekturo

Tema doktorske disertacije so stavbe in paviljoni, ki so bili zgrajeni za svetovne razstave od njihovih začetkov leta 1851 do danes. Kot osrednji raziskovalni problem je izpostavljeno vprašanje vpliva stavb in paviljonov na razvoj arhitekture in konstrukcij v drugi polovici 19. in v 20. stoletju.

V osrednjem delu disertacije so predstavljene konstrukcijske in arhitekturne značilnosti izbranih zgradb in paviljonov na svetovnih razstavah, poleg tega pa tudi njihova urbanistična umeščenost in oblikovne podrobnosti.

V drugem delu je predstavljen vpliv svetovnih razstav na razvoj arhitekture: vpliv novih konstrukcijskih tehnik in tehnologij, razvoj zasnove in funkcije objektov po letu 1850, razvoj urbanističnih elementov in uporaba novih gradiv. Opisan je vpliv zgradb in paviljonov svetovnih razstav na arhitekturo slovenskega prostora. Predstavljen je tudi vpliv arhitekture slovenskih sejemskih razstavišč na ostalo arhitekturo v Sloveniji. V zaključku so podane smernice za oblikovanje paviljonov na svetovnih razstavah.
Delo se odlikuje po izjemno natančnem sledenju zgodovinskega dogajanja na temelju marljivo zbrane dokumentacije in grafičnih ponazoril. Izbrani so ključni dogodki in objekti, pojasnjen je njihov včasih dokaj zapleten nastanek ter raziskani njihovi vplivi tako na sočasno gradnjo kot na stalne pridobitve v podobah svetovnih metropol, ki so postale njihov včasih celo najbolj prepoznavni del. Ob tem temo disertacije razširja v razponu od urbanističnih umestitev v prostor, raziskuje nove načine gradbenih tehnik, ugotavlja nove arhitekturne in konstrukcijske značilnosti ter poudari nekatera izrazito oblikovna vprašanja.

Doctoral Thesis

BUILDINGS FOR WORLD TRADE-FAIRS: CONSTRUCTION, ARCHITECTURE, URBANISM, DESIGN

Mentor: Prof. Dr. Jože Kušar
University of Ljubljana, Faculty of Architecture

The thesis presented is about buildings and pavilions built for world trade-fairs (and international exhibitions), from the first world trade-fair in 1851, until the present.

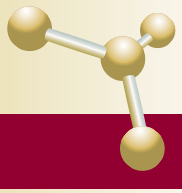
Research is focused on the influences that the buildings and pavilions built for world trade-fairs have had on the development of contemporary architecture and construction design, since 1851.

The main part contains a description and analysis of selected world trade-fair buildings and pavilions. The analysis focuses on constructional and architectural characteristics of each building, but urban and design issues are dealt with as well.

The second part includes a discussion on the influence world trade-fairs have exerted on contemporary architecture: introduction of new construction techniques; development of new functions of buildings, and within buildings; development of new urban planning elements; and the use of new materials.

The thesis ends with an analysis of the influence of world trade-fairs and Slovene exhibition grounds on Slovene architecture.

The conclusion includes guidelines for the design of world trade-fair pavilions.



Miha ŠKERLAVAJ

Doktorska disertacija

OMREŽNI VIDIK IN USPEŠNOST ORGANIZACIJSKEGA UČENJA: TEORETIČNA IN EMPIRIČNA ANLIZA

Mentor: prof. dr. Vlado Dimovski
Somentor: prof. dr. Emmanuel Lezega, Univerza Pariz - Dauphine, Francija
Univerza v Ljubljani, Ekonomska fakulteta

Doktorska disertacija proučuje povezavo med organizacijskim učenjem in uspešnostjo poslovanja podjetij ter omrežnim vidikom razumevanja procesa znotraj organizacijskega učenja.

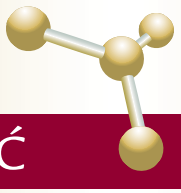
V teoretičnem delu disertacija obravnava koncept organizacijskega učenja in razvije omrežni vidik, ki združuje dve predhodno nepovezani perspektivi: vidik pridobitve in vidik sodelovanja. Na osnovi obsežne meta analize razvije integrativni model dejavnikov vpliva, posledic in konteksta organizacijskega učenja. Teoretična izvirnost dela je v tem, da kot prvo uvede pomen konteksta poslovanja organizacij v študije organizacijskega učenja. V empiričnem delu disertacija odgovori na dve vprašanji: (1) Zakaj vlagati v pobude organizacijskega učenja in (2) kako to početi? Pri iskanju odgovora na zakaj je pričujoča disertacija prva v svetovnem merilu, ki prouči vpliv organizacijskega učenja v dveh državah hkrati. Uporabljena metodologija je večskupinsko strukturno modeliranje na vzorcu 203 slovenskih in 202 hrvaških podjetij z več kot 50 zaposlenimi. Rezultati v splošnem pokažejo pozitiven vpliv organizacijskega učenja na rezultate poslovanja, neodvisno od mednarodnega konteksta. Študija izhaja iz eksploratornih tehnik in jih dopolnjuje z najnovejšimi spoznanji konfirmatorne analize omrežij. Ta del doktorske disertacije ima tudi največ praktičnih posledic za menedžment učečih se podjetij. Analiza omrežij znanja v organizacijah omogoča prepoznavanje strukturnih značilnosti in razvoja omrežij odnosov med sodelavci, prepoznavanje ključnih zaposlenih znotraj omrežij in kot takšna predstavlja močno diagnostično orodje v naboru, ki ga ima na voljo današnji menedžer. Disertacija prinaša pomembna spoznanja in odpira nov pogled na spodbujanje organizacijskega učenja. Zato so njeni izsledki praktično uporabni v vseh organizacijah, ki želijo čim hitreje ustvarjati, zajemati in prenašati nova znanja.

Doctoral Thesis

THE NETWORK PERSPECTIVE AND PERFORMANCE OF ORGANIZATIONAL LEARNING: THEORETICAL AND EMPIRICAL ANALYSIS

Mentor: Prof. Dr. Vlado Dimovski
Co-mentor: Prof. Dr. Emmanuel Lezega, University of Paris - Dauphine, FranceUniversity of Ljubljana, Faculty of Economics

The thesis examines the connection between organizational learning and business performance, and the network perspective as a way to gain a complete and comprehensive understanding of organizational learning processes within organizations. In its theoretical part, the thesis discusses the concept of organizational learning and develops the network perspective which combines previously disparate acquisition and participation perspectives. Based on extensive meta-analysis it develops an integrative model of the influences, consequences, and context of organizational learning. The theoretical originality of the study is to introduce the importance of context in which companies operate into the studies of organizational learning. In the empirical part, the study responds to two questions: (1) Why invest in organizational learning initiatives and (2) How to do that? In answering the question 'Why?' this thesis is the first research world-wide to simultaneously study the impact of organizational learning on organizational performance in two countries. Methodology used here is multi-group structural equation modeling on the sample of 203 Slovenian and 202 Croatian companies with more than 50 employees. The results generally indicate the positive influence of organizational learning on business performance regardless of international context. The study builds upon the exploratory techniques of network analysis with the most recent approaches of confirmatory network analysis. This is also the part with the most practical implications for the management of learning organizations. Social network analysis of knowledge networks within organizations allow for identification of structural traits and development of relationship among co-workers, recognition of key employees within networks and is a powerful diagnostic tool in a modern managerial toolbox.



Dragana VASILJEVIĆ TOMIĆ

Doktorska disertacija

FENOMEN BARVE V DEFINICIJI JAVNE URBANE IDENTITETE PROSTORA

Mentor: dr. Vladan Djokić
Univerza v Beogradu, Fakulteta za arhitekturo

V doktorski disertaciji je predstavljeno teoretično in zgodovinsko raziskovanje barv, odnosov med njimi in povezava s svetlobnimi učinki na barvne površine. Tema je malokrat obravnavana v strokovnih krogih arhitektov in urbanistov. Zanimiva in vedno aktualna tema je tudi odnos med formo in barvo v arhitekturi, ki je v delu raziskana na teoretični osnovi in razložena tudi na veliko praktičnih primerih.

Vloga barve pri projektiranju je velikokrat premalo upoštevana in raziskana, zato je pomen te doktorske disertacije še toliko večji, obstaja namreč malo knjig na to temo. Včasih je pomen barve v javnih prostorih nejasen še samim avtorjem teh prostorov. Zelo dobrodošli so analizirani praktični primeri, ki nam podajo novo dimenzijo branja javnih prostorov v mestu.

Avtorica nam odpre nova obzorja v projektiranju arhitekture in urbanizma s pomočjo barvne kulture. Kulturna identiteta barve je del javnega prostora, ki ga nadgrajuje. Razumevanje in upoštevanje izsledkov disertacije sta osnova za kreativno oblikovanje javnih prostorov in razvijanje kvalitetnih komunikacij z mestom.

Avtorica pokaže novo dimenzijo branja mesta skozi barvno doživljanje prostora. V dokaz, da se simfonija mesta piše z barvo, je avtorica smelo pripravila temelje, na osnovi katerih se bodo v arhitekturi in urbanizmu lahko formirale razne smeri na temo fenomena barve v urbanem prostoru.

Doctoral Thesis

THE PHENOMENON OF COLOR IN DEFINING PUBLIC URBAN SPACE IDENTITY

Mentor: dr. Vladan Djokić
University of Belgrade, Faculty of Architecture

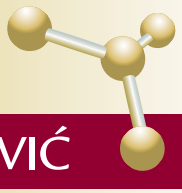
This doctoral thesis presents the theoretical and historical research of colours, colour relationships, and the relationship between colours and the effects of light on coloured surfaces. The topic of this thesis has not often been studied in architectural and urban planning circles. The relationship between form and colour in architecture is always an interesting topic. The topic is researched on a theoretical basis and explained with a lot of practical examples.

The role of colours in projecting is often neglected and not researched enough, which gives this thesis even greater value, as there are very few books on this topic.

Sometimes the significance of colours in public spaces is unclear to the authors themselves. Analysed practical examples are therefore highly welcome, enabling a new dimension for reading about public spaces in cities.

The thesis demonstrates new horizons in architectural and urban planning using colour culture. The cultural identity of colour is part of the public space that it defines. Understanding and making use of the results of this thesis is a basis for creative design of public spaces and developing quality communication with the city.

The author gives a dimension for reading a city through a colour experience of its space. To prove that the symphony of a city is written in colours, the author has established foundations for forming different architectural and urban planning trends with colour relationships in urban spaces.



ALEKSANDAR VUJOVIĆ

Doktorska disertacija

IZBOLJŠANJE DELOVANJA POSLOVNEGA SISTEMA NA PODLAGI SISTEMA MENEDŽMENTA Z UPORABO UMETNE INTELIGENCE

Mentor: prof. dr. Zdravko Krivokapić
Univerza v Črni gori, Fakulteta za strojništvo

Avtor je v disertaciji teoretično opredelil področja sistemov kakovosti, sistema odličnosti, sistem vodenja kakovosti, sistem odločanja, upravljanje z znanjem in umetno inteligenco s poudarkom na ekspertnih sistemih.

Prikazal je zbiranje in analizo podatkov o odstopanjih na presojah sistema kakovosti v 350 srbskih in črnogorskih podjetjih, podjetjih, certificiranih po standardu ISO9001 ter korelacijo med sistemom kakovosti in modelom poslovne odličnosti. Na koncu je prikazal uporabo softwarea za ekspertne sisteme, s katerim so analizirali procese kakovosti v podjetju, in kako se lahko na osnovi vzpostavljenih povezav in kriterijev pripravi drevo za odločanje.

Vodilo dizertacije je prikazati pripravljenost storitvenih in proizvodnih podjetij na izboljšanje procesov in z uporabo ekspertnih sistemov pripraviti preventivne ukrepe za izboljšanje delovanja procesov.
Tema doktorske disertacije je zelo aktualna na področju upravljanja sistema kakovosti in pri upravljanju z znanjem podjetja. Pristop je zanimiv in lahko rečemo edinstven na tem področju. Posamezna znanja, informacije in pristope lahko uporabijo v podjetjih ter inštitucijah kot tudi na nivoju države, bodisi za analizo stanja na širšem področju bodisi za vpeljavo izboljšav in metod v podjetju.

Opisane metode in pristopi dajo dobro osnovo za vzpostavitev sistematičnega spremljanja odstopanj od želenega stanja tako na področju sistema kakovosti, pri izbiri novih rešitev ali razvoju novih sistemov.

Doctoral thesis

IMPROVING A BUSINESS SYSTEM PERFORMANCE ON THE BASIS OF MANAGEMENT SYSTEM USING ARTIFICIAL INTELLIGENCE

Mentor: Prof. Zdravko Krivokapić, PhD
University of Montenegro, Faculty of Mechanical Engineering

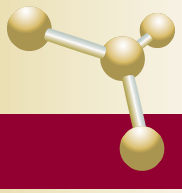
The author theoretically defines the areas of systems for quality, excellence, quality management, knowledge, and artificial systems, with the emphasis on expert systems.

The gathering and analysis of data is presented, with its discrepancies, based on the assessment of quality systems in 350 Serbian and Montenegrin companies. These are companies certified with the ISO9001 standard. In addition data is also gathered and analysed for the correlation between the quality system and the business excellence model. Finally, the use of software, for expert systems used to analyse quality processes in a company, and how a decision-making tree can be prepared on the basis of established correlations and criteria, is presented.

The main focus of the thesis is to show how prepared are the service and manufacturing companies to improve their processes and prepare the necessary precautions to improve working processes.

The topic of the doctoral thesis is really current in dealing with the management of quality systems and company knowledge. The approach is interesting, even unique in this field. Individual expertise, information, and approaches, can be used in companies and institutions, as well as at the state level, to analyse the general situation or to introduce improvements and new company methods.

The described methods and approaches provide a solid basis for systematic follow up to the discrepancies in the field of quality systems, choosing new solutions, or developing new systems.



KLEMEN ZAKŠEK

Doktorska disertacija

DOLOČITEV TEMPERATURE ZRAKA IZ MODELA TEMPERATURE POVRŠJA VISOKE PROSTORSKE IN ČASOVNE LOČLJIVOSTI

Mentor: izr. prof. dr. Krištof Oštir
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

Delo opisuje določitev zveznega polja temperature zraka na višini 2 m nad tlemi. Interpolacija meritev na meteoroloških postajah je zahtevna predvsem v hribovitem svetu, kjer je avtokorelacija med izmerjenimi vrednostmi nizka. Meritve so bile pojasnjene s podatki shranjenimi v GIS, iz digitalnega modela višin in pokrivnosti površja so bili izpeljani mnogi sloji, kot so naklon, razgibanost, oddaljenost od morja in gozda itd. S preizkušanjem različnih kombinacij podatkov se je izkazalo, da je za interpolacijo oddaljenost od morja pomemben in oddaljenost od gozda nepomemben vpliv. Na koncu so bile v GIS vpeljane tudi satelitske podobe MODIS. Tema, obravnavana v disertaciji, je bila do sedaj le redko predmet raziskave. V delu je obravnavanih več metod, od katerih je nekaj posodobljenih, večina pa razvitih povsem na novo. Najpomembnejša rezultata sta metodi za določitev polja temperature zraka velike časovne in prostorske ločljivosti in aplikaciji daljinskega zaznavanja.
Izsledki bodo v veliko pomoč v vsakdanji praksi – modelni pristop je geografsko univerzalno uporaben, praktični vidiki uporabnosti pa so aplikabilni na področju lokalnega napovedovanja kritičnih vremenskih pojavov, npr. pojav slane oziroma podobnih lokalnih pojavov, ki v agrarnem gospodarstvu povzročajo veliko škode. Posredno so izsledki zanimivi tudi na področju gradnje in racionalne rabe energije, saj je na njihovi osnovi možno dosti natančneje določiti lokalne klimatske pogoje.

Doctoral Thesis

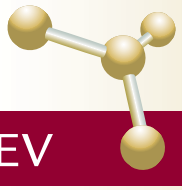
AIR TEMPERATURE DETERMINATION FROM LAND SURFACE TEMPERATURE MODEL OF HIGH SPATIAL AND TEMPORAL RESOLUTION

Mentor: Associate Prof. Dr. Krištof Oštir
University of Ljubljana, Faculty of Civil and Geodetic Engineering

This thesis describes a methodology for the generation of a continuous ambient air temperature field (AAT; 2 m above the ground), of a high spatial and temporal resolution.
The interpolation of spatial data recorded in meteorological stations is difficult, especially in mountainous countries with low auto-correlation among measurements. The measurements were linked with the data stored in GIS: with DEM and its derived layers, such as relief slopes, relief aspects, etc; and secondly, with the land-cover, including derived layers, such as the distance from the sea and forests.

Different tests were performed in order to find the optimal approach. First, the distance from the sea was added as an explanatory variable; second, the distance from forests was removed.

Finally, MODIS satellite images were introduced into the GIS.



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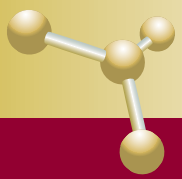

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LEKTORIRANJE IN PREVAJANJE /
Edited and translated by

Novak&Sykes-SterLing d.o.o.
Alkemist, d.o.o.

TISK / Print

Tiskarna Petrič

IZDAL IN ZALOŽIL / Issued by

Trimo, d. d.
Prijateljeva cesta 12
8210 Trebnje
Slovenija / Slovenia

NAKLADA / Edition

500

Maj / May 2008