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Recenzija prispevka**Katja Malovrh Rebec****DVOSLOJNE STEKLENE FASADE S SENČILI V MEDPROSTORU****Članek v reviji AR 2009/II**

Članek z naslovom Dvoslojne steklene fasade s senčili v medprostoru avtorice Katje Malovrh Rebec podaja pregled znanstvenih pristopov k računalniškemu modeliranju dvoslojnih steklenih fasad s senčili.

Uvodoma opisuje fizikalne procese, ki se odvijajo v fasadnem sistemu zaradi kombiniranega prenosa toplote s prevajanjem, konvekcijo in sevanjem. Nadalje je izpostavljeno je tveganje pregrevanja pri omenjenih fasadah in pregledno so predstavljeni so mehanizmi senčenja. V tretjem delu je predstavljena problematika modeliranja dvoslojnih steklenih fasad s senčili in sicer z možnimi področji simulacije, z vsebinskim opisom in namembnostjo računalniških modelov in s pregledom nekatere programske opreme, ki omogoča simulacijo delovanja dvoslojnih steklenih fasad.

Članek ne vsebuje avtorskih simulacij, niti ne prinaša novih zaključkov in dognanj na področju modeliranja in načrtovanja dvoslojnih fasadnih sistemov. Podaja pa primerjavo in kritični pregled v tuji znanstveni literaturi predstavljenih simulacijskih metod in modelov, s čimer podaja projektantu širše obzorje pri razumevanju dometa različnih simulacijskih metod, ki so v pomoč pri načrtovanju stavb z dvoslojnimi steklenimi fasadami.

dr. Marjana Šijanec Zavrl

Gradbeni inštitut ZRMK

Vodja centra za bivalno okolje, gradbeno fiziko in energijo in raziskovalna sodelavka na UL, Fakulteti za gradbeništvo in geodezijo

Recenzija prispevka**Larisa Brojan****OPEKA IN NJENA PROBLEMATIKA****Članek v reviji AR 2009/II**

Avtorica Larisa Brojan v članku s naslovom Opeka in njena problematika podaja zgodovinski pregled razvoja uporabe opeke kot gradiva od obdobja prvih zgodnjih civilizacij do danes. Med vidiki uporabe opeke kot najpogostejšega gradiva je opisan prvotno najpomembnejši, t.j. funkcionalni vidik gradnje z opeko, tako v fazi izdelave gradiva, kot pri sami gradnji in pri kasnejši uporabi stavb; v nadaljevanju je predstavljen pogled sodobne družbe na izbiro opeke kot gradiva, kjer je pozornost usmerjena na okoljski, zdravstveni in ekonomski vidik gradnje z opeko. Okoljski vidik pokriva problematiko glinokopov, ki predstavljajo rano v okolju, in energijsko emisijski vidik uporabe opeke v celotnem življenjskem krogu gradiva. Avtorica

se pri tem opira na aktualne domače in tuje vire, vključno s poročili proizvajalcev in statističnim podatki. Prispevek je strukturiran v več poglavij, ki poleg zgodovine gradnje z opeko, predstavljajo tudi postopek izdelave opeke, razvoj oblike in dimenzij opeke, hipotetični okoljski odtis zaradi količine uporabljene opeke v Sloveniji, različne vidike vrednotenja gradnje z opeko v primerjavi z drugimi gradivi. Razprava je posvečena dilemi razumevanja opeke kot ekološkega gradiva v celotnem življenjskem krogu, pri čemer so povzete strategije proizvajalcev za izboljšanje tega vidika. Članek sicer ne podaja morebitne celovite metode za vrednotenje izbire gradiva, vendar pa pregledno podaja argumente, na katere se lahko opira arhitekt projektant pri soodločanju o izbiri gradiva.

dr. Marjana Šijanec Zavrl

Gradbeni inštitut ZRMK

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Tomaž Novljan**SVETLOBNA GVERILA****Mednarodni festival****UL FA****15. – 29. junij 2009, Ljubljana**

Festival spodbuja umetniško ustvarjanje svetlobnih projektov ter sooblikovanje urbanega okolja in posledično bolj kakovostnega življenja. Lanski festival se je odvijal na temo »reciklaže«. V tem okviru je bila v mesecu maju in juniju na fakulteti za arhitekturo pod mentorskim vodstvom doc. dr. Tomaža Novljana izpeljana tudi študentska delavnica z mednarodno zasedbo. V delavnici z naslovom SVETLOBNI ODTISI PROSTORA je bila s pomočjo recikliranih fluorescentnih sijalk izdelana posebna svetlobna inštalacija. Postavljena je bila v občutljivo okolje ljubljanskih Križank, kot nočni pandan dnevnemu svetlobnemu ambientu.



Domen Zupančič
SYMMETRY OF CORBELLED STONE
STRUCTURES : SACRED WELL IN SARDINIA

Symmetry: Art and Science

International Society for the Indisciplinary Study of Symmetry ISIS

14. – 19. september 2009, Wrocław – Cracow, Poland

Mednarodna znanstvena konferenca Symmetry of Forms and Structures se je odvijala na temo umetnosti in prostorskih struktur. Symmetry konferenca združuje znanstvenike z različnih področij, kjer se pojavlja simetrija. Na teh srečanjih se srečujemo arhitekti, fiziki, gradbeniki, urbanisti, arheologi, ki se praktično ukvarjamo na realnih primerih. Namen konference je v povezovanju idej, vedenja in utrjevanju misli o ravnovesju, naj bo to arhitektura ali fizika.

Izvleček

Sardinia abounds with megalithic towers of Nuraghe culture, tombs devoted to giants, necropolises and other structures as sacred wells. Unified presence of the wells undoubtedly implies that they originate upon the template scheme. The common attributes are underground corbelled stone space with narrow steps toward the ground and above the corbelled dome is positioned the circular hole. There are many hypotheses why the wells are named sacred, however there are no graphical presentation of the explanations. The most common idea is the wells are sources of water and they were used as telescope mirrors. Mirror has much in common with symmetry – mirrored picture is symmetrical presence of reality. Technically the mirror collect the rays of light and reflect them back, the angle of inclination is symmetrical to reflected angle.

Paper presents the sacred well of St Anastasia in Sardara using architectural sketch analysed and evaluated upon the hypothesis the wells are some kind of mirrors. As analysis positively shows the hypothesis of reflecting rays the real experiment was made on the site in the 2003 and rechecked in the 2009. With symmetry we may be able to explain the meaning the adjective word sacred. However the questions remain: how the ray of light was observed and what kind of rituals were enrolled. Some wells on the island have additional structure above the central top hole – some kind camera obscura. Probably the principle of symmetry of construction may be able to give some new answer to new assumptions.

*ZUPANČIČ, Domen. Symmetry of corbelled stone structures : sacred well in Sardinia. V: REBIELAK, Janusz (ur.), LUGOSI, George (ur.), NAGY, Dénes (ur.). Symmetry : Arts and Science. Leto 2009, Št. 1-4, str. 272-275, ilustr. ISSN 1447-607X * formerly Symmetry, Culture and Science, ISSN 0865-4824.*

Domen Zupančič
CARDBOARD MODELLING METHODS

MOTIVATION (for) INNOVATION and CREATIVITY of YOUTH * MICY2009

Association of the Slovene Fine Artists Societies (visual arts education section)

The National Institute of Education (visual arts department)

International Society for Education through Art (InSEA)

14. – 17. oktober 2009, Piran - Ljubljana, Slovenija

Mednarodni znanstveno – praktični kolokvij na temo kreativnosti in inovativnosti pri uvajanju likovne in umetniške ustvarjalnosti mlade populacije (vrtni, osnovne šole in srednje šole). V štirih dneh je bilo predstavljenih mnogo referatov z vsega sveta. Ob referatih so bile organizirane praktične delavnice za pedagoške delavce in muzejske kustose. S kolegico Beatriz Tomšič Čerkez sva ob predstavitvi referata vodila delavnico na temo : problem based learning (PBL) workshop. Osnovno gradivo je bil enojno valovit karton, problematika je bila: uporabna struktura in umetnost. Pri delavnici je sodelovalo 25 oseb. Končni rezultati so bili javno predstavljeni na razstavi v mestni hiši občine Ljubljana.

Izvleček

The creative process in the architecture workshops depends on the kind of task, on individuals, on mentors and on the cultural framework of all participants.

The motivation is based on the following steps: discovering the problem and becoming familiar with it, and establishing easy and open, multidirectional communication. Each task requires, firstly, becoming acquainted with general issues, from the basics to individual existing solutions, and, secondly, passing to the next stage i.e. becoming acquainted with concrete issues. In terms of methodology, this means: working; a workshop participant passes from theory to practice (idea – concretisation), whereas the mentor stimulates, observes and synthesises the participants' flow of thoughts (concretisation – idea). The analogy of the relationship between the mentor and the participant lies in chemical reactions where catalysts are used to accelerate reactions.

The fundamental concrete problems were sitting and cardboard. The abstract problem of the workshop extends into the field of psychology, revealing fixed intellectually self-grounded attitudes (provincial mentality). The motivation was based on the following steps: discovering the problem and becoming familiar with it, and establishing easy and open multidirectional communication. The purpose of the workshop was two-fold: interactive intergenerational collaboration, and revealing clichés through a selected medium – the utility of cardboard in designing furniture. We successfully overcame the mental frameworks and also introduced a measure of creative excitement into the educational process.

Domen Zupančič
ECONOMY AND COMMON SENSE: SIMPLE SOLUTIONS FROM PAST FOR TODAY AND BEYOND

Mediterra 2009, 1st Mediteranean Conference on Earth Architecture
DiArch Facolta di Architettura, Italy
Escola Superior Gallaecia, Portugal
CRATerre-Ecole Nationale Supérieure d'Architecture de Grenoble, France
13. – 16. marec 2009, Sardinija, Italija
<http://www.uni-terra.org/events/mediterrera-2009>

Mediterra 2009 je bila prva mednarodna konferenca, kjer smo se srečali raziskovalci glinene arhitekture (eng. earthen architecture), graditelji, konservatorji in drugi. V štirih dneh je bilo predstavljenih preko 45 referatov na temo gline, arhitekture, ekonomije, upravljanja, raziskav gradiv. Konferenca je bila organizirana na pobudo treh organizacij (fakultete in inštitut). Referati so bili strnjeni v zborniku.

Izvleček

The builder used constructing material due to rational reasons: source at hand with short delivery pathways; nature of material is verified from forefathers; handling with material is imparted through childhood. The last one has the most significant role in vernacular architecture. Why? In childhood way of thinking and solving problems are raised. Sincere constructional solutions in architecture are result of logic and local knowledge. Local knowledge may be concerned as variable resulting variances of solutions of the same problem - clay ceiling in Egypt and Yemen. The following paper shows how solutions from nowadays have origin in "past" architecture. Smart materials using low tech, with no artificial energy have much in common with smart materials "invented" in modern age. Clay and pine tree branch has much in common with reinforced concrete; soft soil and straw has much in common with fibreglass flooring; thin gypsum layers covering rammed earth may extent life span of construction as thin façade coating protect insulation from decay.

ZUPANČIČ, Domen. *Economy and common sense simple solutions from past for today and beyond*. V: ACHENZA, Maddalena (ur.), CORREIA, Mariana (ur.), GUILLAUD, Hubert (ur.). *Mediterra 2009, (Architettura sostenibile / documenti)*. 1a ed. Monfalcone: EdicomEdizioni, cop. 2009, str. 537-547, ilustr. ISBN 978-88-86729-95-6.

Tadeja Zupančič
COMMUNICATING (BY) CURRICULUM DESIGN: THE INTEGRAL TRADITION ON DOCTORAL SCHOLARSHIP IN ARCHITECTURE

Communicating (by) Design
Chalmers University of Technology
15. – 17. april 2009, Göteborg

Izvleček

The intensive programmes offer an opportunity to introduce fast changing and developing fields into the experience of architectural students regardless of the flexibility level of curricular structures and institutional contexts. The main aim is to enhance and promote place-sensitive interventions in physical and virtual worlds. The paper concludes with a discussion of intentions, experience gained, some sobering moments as well as the learning curves of participants and organizers when it comes to design culmination of sensitive physical and virtual realities.

ZUPANČIČ-STROJAN, Tadeja. *Communicating (by) curriculum design : the integral tradition on doctoral scholarship in architecture*. V: VERBEKE, Johan (ur.), JAKIMOWICZ, Adam (ur.). *Communicating (by) design : proceedings of the colloquium "Communicating (by) Design" at Sint-Lucas Brussels from 15th - 17th April 2009*. Brussels: Hogeschool voor Wetenschap & Kunst; Gent: School of Architecture Sint-Lucas; Göteborg: Chalmers University of Technology, 2009, str. 675-685, ilustr. [COBISS.SI-ID 2279812]

Tadeja Zupančič
Matevž Juvančič
VIRTUAL SPACE DESIGN : A FLEXIBLE LEARNING MODEL

27th Conference on Education and Research in Computer Aided Architectural Design in Europe
Yildiz Technical University
16.-19. september 2009, Istanbul, Turkey

Izvleček

Studies on 'the Unthinkable Doctorate', focused on the development of doctoral scholarship in architecture, have shown three types of scientific research approaches: 'conservative', 'pragmatic' and 'liberal'. The aim of this contribution is to indicate that the integration of all the three 'perspectives' is possible even within the 'conservative' complex larger institutions (institutional contexts). This can be explained through the discussions and the results of the recent curricular Bologna renewal endeavours in Ljubljana/Slovenia: communicating (by) curriculum design. Identifying its own research tradition, to be continued and enhanced.

ZUPANČIČ-STROJAN, Tadeja, JUVANČIČ, Matevž. *Virtual space design : a flexible learning model. V: ÇAĞDAŞ, Gülen (ur.), ÇOLAKOĞLU, Birgül (ur.). Computation : the new realm of architectural design : proceedings of the 27th Conference on Education and Research in Computer Aided Architectural Design in Europe, September 16-19, 2009, Istanbul, Turkey. 1st ed. Istanbul: Istanbul Technical University Faculty of Architecture: Yildiz Technical University, cop. 2009, str. 137-144, ilustr. [COBISS.SI-ID 2325380]*

Borut Juvanec
EARTH ARCHITECTURE AND SLOVENIA

Mediterra 2009, 1st Mediteranean Conference on Earth Architecture

DiArch Facolta di Architettura, Italy

Escola Superior Gallaecia, Portugal

CRATERRE-Ecole Nationale Superieure d'Architecture de Grenoble, France

13. – 16. marec 2009, Sardinija, Italija

<http://www.uni-terra.org/events/mediterrera-2009>

Na povabilo prof Mariane Correia iz ESG Gallaecia (Portugalska) sva se s kolegom dr Domnom Zupančičem udeležila 1ere Conference Mediterraneenne sur L'Architecture de Terre med 13. in 16. marcem 2009 na Univerzi v Cagliariu, Sardinija, Italija.

Kongres so organizirali pod pokroviteljstvom UNESCO World Heritage Centre, ICCROM Roma, ICOMOS Paris, GCI Getty Conservation Institute Los Angeles:

Universita di Cagliari, RAS Regione Autonoma di Sardegna, ESG Escola Superior Gallaecia, CRATERRE-ENSAG Centre Int. de la Construction en Terre pri L'Ecole Nationale Superiere sur l'Architecture de Grenoble, France (UNESCO Chair for Earthen Architecture).

Sam sem član Comitato Scientifico kongresa, recenziral sem štiri prispevke za objavo, bil sem v predsedstvu 4. seje.

Kongres je tekel tri dni s predavanji in en dan z vodenim ogledom. Na kongresu je bilo 200 udeležencev s 140 nastopi, od tega je natisnjenih 75.

Na kongresu smo sodelovali strokovnjaki iz 36 držav sveta.

S kolegom sva na Sardiniji zbirala gradivo o kamnitih konstrukcijah, predvsem na temo 'pozzo sacro' ali 'sveti vodnjak'. Dokumentirala sva vodnjake iz obdobja nuragijske kulture (1700 do 385 pred štetjem): Santa Vittoria (Serri), Su Tempiesu (Nuoro), Predio Canopoli (Perfugas) in grobnico Campu Lontanu (Sassari).

Izvilleček

Theory on building materials includes all the natural raw materials: all between water and stone. Cut or undressed stone can be composed directly, wood has to be hewed, clay can be moulded, dried or burned. The first two techniques need technical, the last one needs technological work.

Techniques depend on material. Turf, a combination of two

layers: soil and grass, can be composed in layers only. Moulded clay has to be reinforced, with branches of oily shrubs mostly. Rammed clay is the same material, but built-in between wooden wainscot and pressed hard. Adobe system is made of raw clay block, dried on air or on the sun. All these compositions need maintaining during all the use. After the use can clay in these constructions become strewed material again. Construction of raw clay needs water for forming as well as for its effect.

Burned bricks are technologically changed material and can not be returned into clay after burning. The point of elements with the same dimensions is proportional system. For bricks are mostly in use the formula 1 : 2 : 4 (width : height : length), which enables forming of corners, and variable thickness of the walls. Clay can be usefull material for connection between wooden beams, stones and bricks. On the surface clay can be used as plaster or coating, technically; with technological changes clay appears as enamel or even as kaolin in porcelain.

Examples from Mediterranean and Near East can be found as moulded walls in all the North Africa, Yemen. Rammed clay can be seen from Morocco to Caucasus Today too, as well as adobe.

Tiles as roofing material can be of burned clay, but better tiles have enamel surface, with double burning. Not only quality, tiles appearance with coloured surface is very typical for all the Mediterranean part of Europe, and is important part of its architecture. Porcelain technique for enamel plates or glazed tiles is used mostly on the Western part of Europe, in Spain and in Portugal, with its typical ajuleisos.

In Slovenia, clay architecture is very often, especially in its Nort-East part, also in combination with the wood, mostly with thatched roofs. Today it is matter of scientific work only.

JUVANEC, Borut. Earth architecture and Slovenia. V: ACHENZA, Maddalena (ur.), CORREIA, Mariana (ur.), GUILLAUD, Hubert (ur.). Mediterra 2009, (Architettura sostenibile / documenti). 1a ed. Monfalcone: EdicomEdizioni, cop. 2009, str. 71-84, ilustr.

Borut Juvanec
MAN'S FIRST STEPS INTO PROPORTION THEORY

Symmetry: Art and Science

International Society for the Indisciplinary Study of Symmetry ISIS

14. – 19. september 2009, Wroclaw – Cracow, Poland

Kongres Symmetry of Forms and Structures je tekel v Wroclawu in v Cracowu v okviru ISIS (International Society for the Interdisciplinary Study of Symmetry, Melbourne, Budapest).

Na kongres me je povabil profesor Denes Nagy, udeležila sva se ga s kolegom dr Zupančičem, žal le zadnje tri dni kongresa. Na kongresu je presenetilo izjemno mednarodno zastopstvo, s poudarkom na Japonski. Tradicija teorije je tam posebno pomembna in še vedno živa, tudi na področju proporcijских sistemov.

S kolegom sva bila povabljena tudi na naslednji kongres 2010 v Gmuendu, Avstrija, dogovorila sva se tudi za kak članek. Profesor Janusz Rebielak, soorganizator kongresa, ga je obljubil že za to številko AR.

Izveček

While practice for the most part means construction, theory is more complicated, especially in terms of mathematics. Primal man made the first measurements himself: with his brain and with his body. His brain developed the theory, his hands developed skills for practical use. Brain and hands together developed certain methods. Today, we have difficulty believing they existed, but they did.

Theory: An Egyptian triangle is triangle with sides: three, four and five.

The square root of two is the diagonal of a square with sides equal to one.

The square root of three is the height of an equilateral triangle with sides equal to two.

The golden section has a complex mathematical expression, but it is made by the man.

Practice: Square root of two/Case study - kozolec - hayrack: The most important vernacular architecture in Slovenia - a kozolec or hayrack - is designed by means of the square root of two. A practical example is a tree trunk and a square beam cut from it.

Square root of three divided by two / Case study - corbelling of stone shelters: This is simplified with an equilateral triangle, the height of which is equal to the square root of three by two, if the baseline is equal to one.

Conclusions: Today we understand theory as mathematics, yesterday it was understood in practice with simple tools. Theory and practice are much closer than we think.

JUVANEC, Borut. *Man's first steps into proportion theory. V: REBIELAK, Janusz (ur.), LUGOSI, George (ur.), NAGY, Dénes (ur.). Symmetry of forms and structures, Wrocław and Cracow Poland, September 14-19, 2009, (Symmetry, 1-4). Wrocław; [Kew, Vic.]: [International Society for the Interdisciplinary Study of Symmetry], 2009, str. 136-139.*

Borut Juvanec

EXPERTS WORKSHOP: ON THE STUDY AND CONSERVATION OF EARTHEN ARCHITECTURE, VILLANOVAFORU, ITALIA 2009

Getty Conservation Institute iz Los Angelesa me je povabil na Expert Workshop, ki je teklen na Sardiniji marca 2009. Workshop je bil zaključni del projekta TERRE iz leta 2003, ki sta ga vodila CRATerre iz Grenobla (Profesor Hubert Guillaud) in ICCROM iz Rima. Delo je potekalo v dveh ločenih skupinah (Group Sardegna v angleščini, Group Corse v francoščini) s skupnim zaključnim delom.

Kratko uradno poročilo

Experts Workshop on the Study and Conservation of Earthen Architecture in the Mediterranean Region

In March 2009, the GCI organized workshop in Villanovaforru, Sardinia for professionals with expertise in earthen architecture, construction, and conservation. The workshop was presented in partnership with the School of Architecture (DiARCH) at the University of Cagliari in Sardinia, Italy; Escola Superior Gallaecia of Portugal (ESG); and the International Research Center on Earth Construction and UNESCO Chair of Earth Architecture of IÉcole Nationale Supérieure d'Architecture de Grenoble, France (CRATerre-ENSAG), and with the generous support of the province of Medio Campidano and was held in conjunction with Mediterra 2009: the 1st Mediterranean Conference on Earth Architecture.

The experts workshop provided a forum to discuss two major issues: the challenges facing the conservation and management of earthen sites—broadly interpreted to include archaeological sites, vernacular and monumental architecture, as well as, cultural landscapes where earth is a predominant feature—and earthen architecture for sustainable development.

Participants included sixteen professionals from Bosnia-Herzegovina, Cyprus, Egypt, France, Greece, Italy, Morocco, Portugal, Slovenia, Spain, and Turkey who were selected for participation based on their expertise in the study and teaching of earthen architecture, materials science, construction, and conservation.

The GCI's involvement in the workshop facilitated the development of a regional action plan to advance the field in the above-mentioned themes, including a list of priorities for the Mediterranean region based on current trends and resources needed for research, training, and implementation of projects. (Claudia Cancino, vir: http://www.getty.edu/conservation/field_projects/earthen/earthen_component3.html, marec 2010)

Po zbranih podatkih skupnega dela so bili oblikovani sklepi in so sestavni del Project Terre 2003 - 2009, objavljeni so na svetovnem spletu na naslovu: http://www.getty.edu/conservation/field_projects/earthen/mediterra_finalreport.pdf Hkrati je bil izdan tudi v papirni verziji:

Ferron, A. ed. 2009: EXPERTS WORKSHOP : ON THE STUDY AND CONSERVATION OF EARTHEN ARCHITECTURE AND ITS CONTRIBUTION TO SUSTAINABLE DEVELOPMENT IN THE MEDITERRANEAN REGION, FINAL REPORT, Getty Conservation Institute, Los Angeles USA.

Simon Petrovčič

LIMIT HEIGHT-TO-WIDTH ASPECT RATIOS FOR SLENDER BASE ISOLATED OBJECTS OF HERITAGE ARCHITECTURE

**STREMAH 2009: 11th Int. Conf. on Struct. Repairs and Maintenance of Heritage Architecture
Wessex Institute of Technology, UK
22. - 24. julij 2009, Talin, Estonija**

<http://www.wessex.ac.uk/09-conferences/stremah-2009.html>
Na 11. mednarodni konferenci o sanaciji in vzdrževanju arhitekturne dediščine (STREMAH 2009), ki je potekala v Talinu, v Estoniji, je bilo predstavljenih 55 prispevkov. Konferenca je bila razdeljena v 10 sklopov. Naš prispevek je bil predstavljen v sklopu "Potresne obremenitve in vibracije".

Izveček

The article deals with a special technical aspect of base isolation design of slender base-isolated buildings, by considering the condition that the elastomeric isolators cannot bear any tensile forces. The main parameters in this case are a) mass, mass position and height-to-width aspect ratios of the superstructure, b) stiffness, damping and plan arrangement of the isolators and c) expected horizontal as well as vertical earthquake acceleration components. The results are presented as limit height-to-width aspect ratios of the structure obtained from the Eurocode 8 response spectra as well as from dynamic analyses of seven near-fault ground motion records. The inclusion of vertical accelerations in governing equations is extremely important because different horizontal and vertical seismic loading combinations might significantly influence the response of the system. The article concludes that the results from the response spectrum analysis are generally conservative.

BREBBIA, Carlos Alberto (ur.). Structural studies, repairs and maintenance of heritage architecture XI, (WIT transactions on the built environment, vol. 109). Southampton; Boston: WIT Press, 2009, str. 499-510, ilustr. [COBISS.SI-ID 2315396]

Simon Petrovič, Vojko Kilar
POTRESNA ANALIZA JEKLENE
KONSTRUKCIJE VISOKOREGALNEGA
SKLADIŠČA (VRS2)

31. zborovanje gradbenih konstruktorjev Slovenije
Slovensko društvo gradbenih konstruktorjev
8.-9. oktober 2009, Rogaška Slatina
<http://www.sdggk.si/index.php?id=18>

Na 31. zborovanju gradbenih konstruktorjev Slovenije v Rogaški Slatini je bilo predstavljenih 35 prispevkov s področja gradbenih konstrukcij, tako iz strokovne kot iz razvojno raziskovalne dejavnosti. Z vabljenimi predavanji so se predstavili trije eminentni strokovnjaki: inženir Andreas Keil, inženir Gorazd Humar in prof. dr. Darko Beg.

Izveček

V prispevku je prikazana seizmična analiza obnašanja obstoječe jeklene konstrukcije visokoregalnega skladišča (VRS2) podjetja Trimo d.d. v Trebnjem. Zaradi obsežnosti modela je bila potresna analiza izvedena z nelinearno statično analizo (N2 metodo). Rezultati kažejo, da je obnašanje simetrične konstrukcije pri projektni potresni obremenitvi ($a_g = 0,175g$) dobro. Preverili smo tudi primere nesimetrične obremenitve

skladišča, do katerih lahko pride ob različnih kombinacijah zasedenosti in ekscentričnosti skladiščne mase po tlorisu. Ugotovljeno je bilo, da lahko v tem primeru nastopijo tudi plastični členki ob vpetju stebrov v regalih na podajni strani konstrukcije. Pri močnejši potresni obremenitvi ($a_g = 0,25g$) bi lahko prišlo do neduktilnih poškodb in posledično do lokalnih nestabilnosti nekaterih regalov. Zato je bila analizirana in predlagana rešitev z uporabo potresne izolacije z elastomernimi ležišči, ki se je izkazala kot učinkovita in primerna.

LOPATIČ, Jože (ur.), SAJE, Franc (ur.), MARKELJ, Viktor (ur.). Zbornik 31. zborovanja gradbenih konstruktorjev, Rogaška Slatina, 8.-9. oktober 2009. Ljubljana: Slovensko društvo gradbenih konstruktorjev, 2009, str. 281-290, ilustr. [COBISS.SI-ID 2328964]

Lara Slivnik
ZAČASNI PAVILJONI GALERIJE SERPENTINE

31. zborovanje gradbenih konstruktorjev Slovenije,
kulturni center, Rogaška Slatina,
8.-9. oktober 2009,
<http://www.sdggk.si>

Vsakoletno zborovanje gradbenih konstruktorjev se je začelo s tremi uvodnimi predavanji. Sledili so prispevki, razdeljeni na pet tematskih skupin: o mostovih, o konstrukcijah in geotehniki, o gradbenih materialih, o eksperimentalnih in numeričnih analizah konstrukcij ter o potresnem inženirstvu.

Izveček

V prispevku je predstavljenih devet začasnih paviljonov, ki so jih zgradili ob galeriji Serpentine v Londonu. Ob Galeriji vsako poletje, od leta 2000, za tri mesece postavijo paviljon, ki ga načrtujejo znani arhitekti ob pomoči gradbenih konstruktorjev iz biroja Arup.

Vsi predstavljeni paviljoni imajo nekaj skupnih značilnosti: so začasni in zato demontažni, morajo biti funkcionalni, od naročila pri arhitektu do prve uporabe paviljona sme preteči največ šest mesecev, hkrati pa morajo paviljoni izražati arhitektovo siceršnje delo. Glavno vodilo vseh arhitektov pri načrtovanju paviljonov je eksperimentiranje s prostorom, zanimiv je povsem različen arhitekturni rezultat. Pri tem ima konstrukcija paviljona izreden vpliv na obliko paviljona in torej na njegov izgled. Trdimo torej lahko, da je konstrukcija teh paviljonov pravzaprav njegova oblika in zato tudi njegova arhitektura.

SLIVNIK, Lara. Začasni paviljoni galerije Serpentine = The Serpentine Gallery temporary pavilions. V: LOPATIČ, Jože (ur.), SAJE, Franc (ur.), MARKELJ, Viktor (ur.). Zbornik 31. zborovanja gradbenih konstruktorjev, Rogaška Slatina, 8.-9. oktober 2009. Ljubljana: Slovensko društvo gradbenih konstruktorjev, 2009, str. 127-136, ilustr. [COBISS.SI-ID 2329220]

Lara Slivnik
AN OVERVIEW OF MUSHROOM STRUCTURES
IN SLOVENE STRUCTURALISM

**Third International Congress on Construction History,
 Brandenburg University of Technology, Cottbus, Germany,
 20th - 24th May 2009,
<http://www.ch2009.de/>**

Mednarodni kongres prirejajo na tri leta in udeležijo se ga arhitekti, gradbeniki, umetnostni zgodovinarji in vsi tisti, ki se ukvarjajo z zgodovine gradnje od prvih človekovih začetkov do arhitekture moderne. Na kongresu je bilo predstavljenih šest uvodnih predavanj in preko 200 prispevkov. Referat o gobastih konstrukcijah v slovenskem strukturalizmu je bil predavan v sekciji "konstrukcije".

Izvleček

This paper is an overview of mushroom and umbrella structures in Slovenia. It starts with a brief introduction to the development of mushroom and umbrella structures. The main part of the paper describes five selected buildings in Slovenia which are all based upon the idea of a single central column supporting the roof. All of them were built between 1960 and 1971, a decade when Structuralism dominated Slovene architecture. The selection has been made according to their importance for Slovene architecture and therefore the analysis is made from the architectural point of view. At the end, various reasons for their sudden disappearance from Slovene architecture after 1970 are discussed.

SLIVNIK, Lara. An overview of mushroom structures in Slovene structuralism. V: KURRER, Karl-Eugen (ur.), LORENZ, Werner (ur.), WETZK, Volker (ur.). Proceedings of the Third International Congress on Construction History, Brandenburg University of Technology Cottbus, Germany 20th - 24th May 2009. Vol.3. Cottbus: Chair of Construction History and Structural Preservation of the Brandenburg University of Technology, cop. 2009, str. 1339-1346, ilustr. [COBISS.SI-ID 2294148]

Martina Zbašnik-Senegačnik
PASSIVE HOUSE IN SLOVENIA

**1st Alps-Adria Conference on Passive Houses, Pecs,
 Madžarska,
 4.-5. september 2009
http://www.matserv.pmmf.hu/passzivhaz/index_en.html**

Vabljen predavanje na mednarodni konferenci

Abstract

The environmental attitude has grown also in Slovenia, although not as fast as Austria, Germany and Switzerland. There is a growing interest for ecological materials, for very

low energy houses and in last year also for the passive houses. Large shifts occurred in 2008 in the introduction of passive houses into Slovenia. These shifts were undoubtedly the result of all the activities that had been carried out in previous years. We can divide these activities into two areas: promotional activities (Articles in the popular and professional reviews, The monograph 'The Passive House', Presentations of the passive house, Construction fairs in Ljubljana and Gornja Radgona, Professional trainings and seminars, Production of an educational film on the construction of a passive house, Media support, Activities towards the construction of a trial settlement of passive houses in Slovenia, Saint-Gobain Isover student competition) and concrete measures to introduce energy-efficiency standards into buildings (Subsidies for the construction of energy-efficient houses, The Passive House Consortium, Education and training for the planning of passive house construction, Rules on the Efficient Use of Energy in Buildings). In the article the activities in last year will be described.

Predavanje je kot članek objavljeno v: ZBAŠNIK-SENEGAČNIK, Martina. Passive house in Slovenia. V: 1st Alps-Adria Conference on Passive Houses, Pecs, 4-5 September 2009 : proceedings. Pecs: Alps-Adria Conference on Passive Houses, 2009, str. [1-6]. [COBISS.SI-ID 2324612]

Martina Zbašnik-Senegačnik
HOW MUCH DOES THE PASSIVE HOUSE
COST?

**1st Alps-Adria Conference on Passive Houses, Pecs, Madžarska,
 4.-5. september 2009
http://www.matserv.pmmf.hu/passzivhaz/index_en.html**

Abstract

Lately, the term "passive house" has been gaining ground in Slovenia, representing the most favourable cost-benefit ratio – energy saving – to date. A passive house uses less than 15 kWh/(m²a) in heating energy. There still remains the conviction among laymen, as well as among experts, that passive houses are expensive. This paper describes a high-quality low-energy family house in the vicinity of Ljubljana and outlines a comparison of the actual cost of its construction and a cost estimate for the construction of a passive house.

The analysis of approximate costs of the construction of a passive house, therefore, shows that in Slovenia the price should not exceed the price of a high-quality, thoroughly designed and built low-energy house by more than 10 %.

ZBAŠNIK-SENEGAČNIK, Martina. How much does the passive house cost?. V: 1st Alps-Adria Conference on Passive Houses, Pecs, 4-5 September 2009 : proceedings. Pecs: Alps-Adria Conference on Passive Houses, 2009, str. 1-6, ilustr. [COBISS.SI-ID 2324868]

Martina Zbašnik-Senegačnik, Andrej Senegačnik
ARGUMENTS FOR CHOOSING A PASSIVE
HOUSE

18. Mednarodno posvetovanje Komunalna energetika, Maribor, Slovenija
12. do 14. maj 2009
<http://www.uni-mb.si>

Abstract

Passive house is momentary an optimum solution between the house construction costs and the overall house energy demand. In the article some basic parameters of passive house are introduced. The choosing arguments for the passive house are discussed. The comparison of the construction costs for the low energy and passive house are made. During the three days test living in the passive house the parameters of the living comfort - air quality was measured and evaluated. The government money subventions and the "Consortium Passive House" are introduced, which are assigned to stimulate the erection of the low energy and passive houses in Slovenia.

ZBAŠNIK-SENEGAČNIK, Martina, SENEGAČNIK, Andrej. Argumenti za izbiro pasivne hiše = Arguments for choosing a passive house. V: VORŠIČ, Jože (ur.). 18. Mednarodno posvetovanje Komunalna energetika, 12. do 14. maj 2009, Maribor, Slovenija. Zbornik. Maribor: Fakulteta za elektrotehniko, računalništvo in informatiko, 2009, [9] str. [COBISS.SI-ID 11030811]

Strokovno izpopolnjevanje arhitektov Pasivna hiša, realnost tudi v Sloveniji
5. junij 2009

Na Fakulteti za arhitekturo se je 5. junija 2009 že šestič odvijalo strokovno izpopolnjevanje arhitektov. To je enodnevni dogodek, na katerega so vabljeni predavatelji iz izobraževalnih ustanov in strokovnjaki iz prakse. Sodelujejo tudi podjetja, ki s svojo dejavnostjo ali komponentami omogočajo gradnje pasivne hiše. Omenjenega strokovnega izpopolnjevanja se je udeležilo več kot 100 arhitektov, strokovnjakov iz podjetij in študentov arhitekture in 19 podjetij.

Vsebina:

- **Prikaz stanja na področju pasivnih hiš v Sloveniji** (izr. prof.dr. Martina Zbašnik-Senegačnik, u.d.i.a., UL Fakulteta za arhitekturo)
- **Programski paket Multi Comfort House Designer za enostavno izračunavanje toplotne bilance pasivnih hiš** (Matthias Uhl, Avstrija)
- **Primerjava programa PHPP 07 in zahtev novega Pravilnika** (mag. Miha Praznik, u.d.i.s., mag. Silvija Kovič, u.d.i.a., GI-ZRMK)
- **Temeljenje pasivni hiš** (mag. Edo Wallner, u.d.i.g., UL Fakulteta za arhitekturo)
- **Sončne celice – pot do plusenergijske hiše** (Jure Kurnik, u.d.i.e., UL Fakulteta za elektrotehniko)
- **Ogrevanje, hlajenje in prezračevanje pasivnih hiš – izku-**

- **šnje in napotki** (Bojan Grobovšek, i.d.i.s.)
- **Gradnja pasivni hiš – izkušnje izvajalcev**

(organizacija in vodenje:izr. prof.dr. Martina Zbašnik-Senegačnik)



Slika 1: Člani konzorcija na srečanju na Veliki Preski nad Litijo.



Slika 2: Slušatelji med predavanjem.

Martina Zbašnik-Senegačnik
KONZORCIJ PASIVNA HIŠA

13. marec 2009,
sestaneč članov Konzorcija pasivna hiša
21. september 2009,
izobraževanje članov Konzorcija pasivna hiša

V marcu 2008 je bil pod okriljem Fakultete za arhitekturo ustanovljen Konzorcij pasivna hiša. Ustanovni člani so poleg Fakultete za arhitekturo in Gradbenega inštituta ZRMK še podjetja, ki s svojo dejavnostjo nudijo možnost gradnje pasivne hiše, ali pa bodo to nudila v bližnji prihodnosti. Konzorcij pasivna hiša združuje vsa znanja in ponudbo za gradnjo in prenovo pasivnih hiš v Sloveniji. Člani Konzorcija pasivna hiša

so proizvajalci montažnih hiš, gradbena podjetja, ponudniki kakovostnih materialov, izdelkov in sodobnih tehnologij za izvedbo pasivnih hiš: toplotnoizolativna gradiva in sistemi gradnje, ekološka gradiva in izdelki, stavbno pohištvo in zasteklitve, prezračevalne naprave, ogrevalne naprave, sončni sistemi ipd., s svojo ponudbo sta vključeni tudi dve slovenski banki. Konzorcij pasivna hiša je imel v letu 2009 29 članov. Predstavlja se na spletni strani www.fa.uni-lj.si/konzorcijph.

13. marca 2009 so se člani Konzorcija pasivna hiša zbrali na sestanku na Veliki Preski nad Litijo. Med drugim so se seznanili s projektom izgradnje naselja pasivnih hiš za poskusno bivanje v neposredni bližini, saj so vabljeni k sodelovanju. 21. septembra smo organizirali izobraževanje članov Konzorcija pasivna hiša. Poznavanje pasivne hiše v celoti je za vsakega ponudnika komponent ali storitev namreč nujno potrebno.

(ustanovitev in vodenje: izr. prof.dr. Martina Zbašnik-Senegačnik)

Projektno izobraževanje arhitektov na temo pasivna hiša September 2008 – marec 2009

Fakulteta za arhitekturo je organizirala projektno izobraževanje arhitektov na konkretnem projektu pasivne hiše. 7 arhitektov je najprej izdelalo idejni načrt enodružinske pasivne hiše. Mentorji so s PHPP preverili energijski bilanco zgradbe, na podlagi rezultatov so arhitekti nato izboljševali arhitekturno zasnovo. Pod vodstvom mentorjev so nato pričeli z načrtovanjem detajlov za preprečevanje pojava toplotnih mostov in zagotavljanje zrakotesnosti zgradb. Izobraževanje je bilo podprto z dvodnevni strokovni seminarjem, konzultacijami številnih strokovnjakov ter obiskoma dveh pasivnih hiš v različnih fazah gradnje. Zaključeni projekti, ki so bili izdelani v okviru šestmesečnega izobraževanja, so predstavljeni na spletni strani Konzorcija pasivna hiša.

(organizacija in vodenje: izr. prof.dr. Martina Zbašnik-Senegačnik)

David Koren SEISMIC ASSESSMENT OF BASE ISOLATED STRUCTURES USING N2 METHOD

COMPADYN 2009-ECCOMAS Thematic Conf. on Comput. Methods in Struct. Dynamics and Earthq. Engineering
European Community on Computational Methods in Applied Sciences (ECCOMAS)
Rhodes Island, Greece
22.-24.junij 2009
<http://www.compadyn2009.org/>

Na konferenci o računskih metodah za dinamično in seizmično analizo konstrukcij, ki je bila organizirana vzporedno z 2. JV evropsko konferenco o računski mehaniki (SEECCM 2009), je

bilo predstavljenih preko 500 prispevkov različnih problematik. Naš prispevek je bil predstavljen v okviru redne sekcije z naslovom "Seismic Isolation".

Izvešček

In the paper a simplified nonlinear method (N2 method) is applied for analysis of base isolated structures. In the first part of the paper a new three-linear idealization of the capacity curve for a base isolated structure is proposed where the initial stiffness of the capacity curve is defined based on the first yielding point in the superstructure. A parametric study of idealized SDOF systems with different hardening slopes and periods has been performed first. The results of nonlinear dynamic analyses confirmed that the equal displacement rule could be assumed also for such systems. In the second part of the paper the proposed three-linear idealization is used for the seismic analysis of base isolated symmetric RC frame building. The results are presented in terms of top and base displacements, as well as damage patterns of the superstructure. Comparisons of the results of nonlinear static (pushover) with the results of nonlinear dynamic analyses have shown a very good agreement.

PAPADRAKAKIS, Manolis (ur.). *Computational Methods in Structural Dynamics and Earthquake Engineering : COMPADYN 2009 : 2nd Int. Thematic Conf. Athens: Institute of Struct. Analysis & Seismic Research: National Tech. University: European Community on Comput. Methods in Applied Sciences, 2009, str. 1-17, ilustr. [COBISS.SI-ID 2314372]*

NAGRADA JABOLKO KAKOVOSTI

Nacionalno PRIZNANJE kakovosti za projekte partnerstev v programu Vseživljenjsko učenje 2009 ('Jabolka kakovosti' in 'nacionalna priznanja' podeljujeta RS, Ministrstvo za šolstvo in šport in Center RS za mobilnost in evropske programe izobraževanja in usposabljanja)

Objava nagrade: http://www.cmepius.si/files/cmepius/userfiles/jabolka_k/2009/brosuraJK_2009.pdf

DIVE, Designing and Inhabiting Virtual Environments: Humanization of Virtual Environments

Program: Erasmus IP, 2008-5557-Erasmus IP
financer: EU
1.9.2008-31.8.2009

organizacija prijaviteljica: University of Ljubljana, Faculty of Architecture,
vodja projekta na UL-FA kot nosilni instituciji: Tadeja Zupančič

vodje skupin in predavatelji 2009: Jose Pinto Duarte, Goncalo Castro Henriques (Tehniška univerza v Lisboni), Tadeja Zupančič, Matevž Juvančič in Špela Verovšek (UL-FA), Jochen Hoog (Tehniška Univerza na Dunaju)

Izveček

Virtualni prostori in njihovo oblikovanje so postali ne le akademsko, temveč tudi gospodarsko pomemben del današnje družbe. Ker gre prav tako za prostore in njihovo oblikovanje, se za tradicionalne sooblikovalce prostora – arhitekta – v tem pogledu kažejo nove priložnosti za ustvarjanje in zaposlitev. Zato je bil cilj Intenzivnega programa z naslovom DIVE – Designing and Inhabiting Virtual Environments: Humanization of Virtual Environments pokazati bodočim študentom arhitekture in drugim soustvarjalcem digitalnih okolij tehnološke zmožnosti, ponuditi dodatna

znanja, ki niso vključena v trenutne študijske programe, ustvariti okolje za eksperimentiranje in odpreti teoretsko razpravo okoli prepleta fizičnih in digitalnih prostorov, ob tem pa ne pozabiti na njihovo občutljivost, ranljivost oz. celo krhkost.

Erasmus intenzivni programi nam ponujajo fleksibilnost nasproti bolj rigidnemu učnemu načrtu, možnost zgoščene, intenzivnega mednarodnega sodelovanja in izmenjave izkušenj, ne nazadnje tudi sredstva, ki jih v siceršnjem učnem procesu za naprednejše in dražje tehnologije in procese primanjkuje. Projekt je nasledil in dodatno razvil del e-learning VIPA projekta, utrdil in razširil mednarodna partnerstva in njegova dognanja preizkusil v praksi.

DIVE je na eni strani glasnik novih tehnologij in vsega, kar lahko arhitektura v povezavi s tehnologijo ustvari, istočasno pa se loteva občutljivih prostorov, v katerih je potrebno preudarno delovanje in občutljiv arhitektov odziv. V tej konfrontaciji se poraja široka paleta rešitev in eksperimentiranja (DIVE kot inkubator idej), katerih rezultati so tako pozitivni vzori kot tudi svarila pred slepo zaverovanostjo v tehnologijo. Vsekakor pa je DIVE kot takšen izjemen 'učni pripomoček' in svojevrstno igrišče za bodoče oblikovalce prostorov v mednarodni zasedbi. V projektu so sodelovali partnerji iz Slovenije, Avstrije, Velike Britanije, s Portugalske, Češke in Danske.

Spletna stran projekta:

<http://predmet.fa.uni-lj.si/dive/dive09/index.htm>

Objava projekta:

ZUPANČIČ, Tadeja, JUVANČIČ, Matevž. *DIVE - Designing and inhabiting virtual environments. V: "Ustvarjalnost in kreativnost v programu Vseživljenjsko učenje" : valorizacijska konferenca, [Ljubljana], 8. december 2009. [Ljubljana]: CMEPIUS, 2009, str. [1-7], ilustr.*



Fakulteta za arhitekturo
Inštitut za arhitekturo in prostor
Ljubljana 2010

