Popis prijavljenih sažetaka

	Name	Institution	Title	Summary
1	Melanija Sherdenkovska, Penka Zafirova Trajkovska	Arhitektonski fakultet, Former Yugoslav Republic of Macedonia	**Potreba posebne zakonske regulative za regione sa nasljeđenom kulturnom baštinom**	Ono sto je neophodno, u ovom istoriskom momentu, u Makedoniji, je konzervacija naslegjene seoske tradicionalne arhitekure i razvoj alternativnog turizma. Megjutim, kako bi bili sigurni da ovi, za sad nerazvijeni regioni, ce se razvijati pravilno i bez zagagjenja prirodne sredine, neophodno je prvo postaviti strogu zakonsku regulativu. Planiramo da se svi ovi regioni proglse za specijalne zone i da se za njih postavi najstroza zakonska regulativa, po principima odrzljive arhitekture i energetske efikasnosti, tako da objekti i naselja budu kompletno energetski nezavisni i odrzljivi.
2	Francesco Simonetti	Studio Techné s.r.l., Italy	**Tenuta dello Scompiglio , a large utilization of renewable energy sources in the heart of Tuscany**	The “Scompiglio” estate is located half an hour away from Florence (www.delloscompiglio.org).□ The main Villa, built in the seventeenth century, is surrounded by a 35 hectares park with eight buildings.□ The property has been refurbished for residential settlement including the main residence, apartments for guests, wellness centre, a small theatre and a restaurant. □ The design has been developed using bio-architectural concepts and materials. □ Energy needs are minimized for each building. □ Renewable energy sources have been utilized for technological systems. □ A 300 sqm photovoltaic system supplies electrical energy. Thermal energy (280.000 kWh) for heating and hot water is produced by a centralized system using a biomass heater (160 kW). The energy cycle, fully supplied by the self-sufficient wood pruning, is C02-neutral.□
3	Ida Polzer		**Što se može promijeniti kad sve mora ostati kako jest: aktivna konzervacija i revitalizacija u povijesnoj jezgri Dubrovnika**	Osnovni cilj projekta je istražiti mogućnosti obnove građevina unutar Dubrovačke povijesne jezgre s ciljem smanjenja potrošnje energije i stvaranja ugodnijeg životnog prostora. Projekt je fokusiran na zgradu bivšeg zatvora na području Karmena, gdje predlaže održivi model energetske revitalizacije primjenjiv na ostale zaštićene građevine unutar zidina, te ujedno nudeći kumulativni izračun uštede energije na cijelom području povijesne jezgre u slučaju primjene dotičnog modela. Nadalje, projekt je usredotočen na socijalnu, kulturnu i infarstrukturalnu obnovu povijesnog Dubrovnika, uz energiju jednako važne aspekte održivog razvoja. Imajući na umu da revitalizacija povijesne jezgre zahtijeva opsežan holistički i interdisciplinarni trud, ovim se projektom predlaže rješenje za dio problema stvaranjem fleksibilnog programa osjetljivog na sezonski život Grada. Program je, kao model, primjenjiv na cijelo područje gradske jezgre.

4	Aitziber Egusquiza	Labein-Tecnalia, Derio (Bizkaia), Spain	**Energy efficiency strategies for the historic city**	LABEIN-Tecnalia develops a research line in Cultural Heritage based on the belief that furthermore ensuring the maintenance of historic buildings, urban policies should aim at improving quality of life in historic centres, facilitating the sustainable development and integrating citizens participation into planning processes. In order to protect our urban historic heritage we must focus on protecting not only the physical fabric but also the social context, recognizing the right of local residents to continue living in the area. The E2CH project arises from the concept that historical cities could be handled as a reference model for contemporary urban development. One of its main goals is to improve knowledge of energy performances within the historic centre as a system, studying the efficiency and adaptability of traditional buildings to the environment.
5	Adriana Bernardi	CNR-ISAC (Institute of Atmospheric Sciences and Climate (ISAC) of the Italian National Research Council (CNR)), Padova, Italy	**Adaptation of the new technologies developed in the EU project MESSIB to Cultural Heritage applications.**	The EU MESSIB project is the development, evaluation and demonstration of an affordable multi-source energy storage system (MESS) integrated in building, based on new materials, technologies and control systems, for significant reduction of its energy consumption and active management of the building energy demand. This new concept will reduce and manage smartly the electrical energy required from the grid favouring the wider use of renewable energy sources (RES).It will reduce raw material use for thermal performance and improve the indoor environment, the quality and security of energy supply at building, including Cultural Heritage. Furthermore, a significant reduction of the energy unit cost for end-users will be achieved.
6	Martin Miguel Angel, Ana Escobar, Margarita Arroba, Raul Segovia	IE University, Valladolid, Spain	**A MANAGEMENT PROCESS FOR THE ENDOWMENT OF URBAN SERVICES AND THE PROTECTION OF THE HISTORICAL HERITAGE**	The introduction of numerous services directed to the human comfort suppose conflicts and can generate an important affection to the urban landscape and the conservation of the historical heritage. This can be avoided by planning a unique public network of neighbourhood that guarantees the access to the building of different services simultaneously, minimizing the intervention in the building, organizing the different private infrastructure networks, reducing the occupation of the public soil with private servitude, an archaeological valuable good, and scanty in the narrow streets of our historical sets. The correct management must be imperative to preserve our historical heritage and to satisfy the increasing demand of comfort services of our society in the near future.

7	Ana Escobar, Margarita Arroba, Miguel Martin, Raul Segovia	S.T. Cultura J. Castilla y León; I.E. school of architecture, Segovia, Spain	**Three different approaches for patios in urban palaces and changes in thier hygrothermal perfomances**	Segovia (Spain) has been declared by UNESCO World Heritage Site,1985. The urban palaces built in Segovia, between the 14th and 16th centuries, are functionally distributed around interior patios with galleries on three or four sides. In view of the current purpose of the buildings, some modifications might be needed, this can be done in three different ways: Partial closure of the gallery with windows, new structures covering the whole patio or no modification at all (open patio). Discussion addressing the three different approaches and their implications regarding heritage and hygrothermal performance will be presented.
8	Duško Radulović, Marko Križanec	Energo, Croatia	**Sustainable energy for public building – example of the City of Rijeka**	Sustainable energy development becomes one of the crucial issues for every municipality. Reductions of fossil fuels which are used in public buildings together with grow of investments in energy efficiency and renewable energy creates strong challenge for local municipality government. Preservation of local cultural heritage and local architecture recognition could be in danger by non organized investments in ‘’green’’ technology. Simultaneously, overprotected and overregulated reconstruction of cultural heritage buildings usually do not lead to diminishment of energy consumption. Authors of this paper analyzed recent sustainable energy project in the city of Rijeka Municipality building, which was originally built in 1915. Although Municipality building is located in the center of the city and protected as cultural heritage, Conservatory department in Rijeka and Municipality, together with investor Energo Ltd. created solutions which have satisfied all included parties. In the year 2009 first photovoltaic power plant of 9.9 kWp has been installed and put in service Further analyses of those projects lead to con

9	Michaela Hoppe, Volker Huckemann, Lars Klemm, Sven Steinbach / Anke Schenk, Heiko Werdin	Technische Universistät München, Technische Universtät Braunschweig, Fraunhofer-Institut für Bauphysik, Bauhaus-Universität Weimar, ITG Institut für Technische Gebäudeausrüstung Dresden Forschung und Anwendung GmbH, Germany	**SUSTAINABLE REFURBISHMENT OF MUSEUMS**	A group of researchers from 5 German universities, along with several German museums, works on the development of retrofitting strategies for museum buildings. The overall aim is to provide the necessary indoor climate, as required due to preventive conservation, with a minimum energy demand. The German Maritime Museum in Bremerhaven serves as the first scheme project for the implementation and validation of their ideas. □ □ In Germany a multitude of museum buildings need to be retrofitted within the next years. The complexity of these projects lies within the necessity of meeting the requirements of various disciplines: How to provide a steady indoor climate, necessary for preventive conservation reasons, against the background of fluctuating numbers of visitors and the aim of lowering the energy demand, in order to cut both, costs and carbon emissions, in a, almost certainly, listed building? □ To answer questions like this, engineers from 6 major German universities formed a research group, funded by the Federal Ministry of Economics and Technology. The group's overall intension is to escort museums throug
10	Aleksandar Terer	profine Croatia - profine Group GmbH, Croatia	**The Past has a Future**	The paper deals with the analysis of specific projects, in the realization of which profine Group has taken part, with emphasis on quality windows and doors. Cases regarding buildings under the protection of UNESCO and old city centers will be examined, including best practices, case studies and energy eficiency, as well as a comparative analysis of legislation and work practices in some countries of the EU and Croatia.□ High quality windows and doors built from new materials are not a taboo anymore in cultural heritage protection projects, and with good reason: they feature extraordinary heat insulation, longevity, economy and ease of maintenance. Their design does not disturb the style and appearance of historic buildings and significantly contributes to their preservation.

11	Milenko Stanković, Srđan Stanković	Arhitektonsko-građevinski fakulteta u Banjoj Luci, Bosnia and Herzegovina	**NEW EDUCATIONAL DEVELOPER PROFILES IN BANJA LUKA - AFFIRMED CONSTRUCTION SCHOOL OF PRINCIPLES OF PASSIVE AND INTELLIGENT BUILDING**	Work affirms long-term effort,"school builder" in Banja Luka to profile new profile of modern engineering and make building worthy of time and space, on principle of "passive and intelligent." Mission and vision are clear identity of school to improve energy efficient systems and renewable energy sources and sound technologies,but according to climate and culture of the area. Asked comfort and modest sensory experience in architecture today, are a challenge for architects and designers, but also call for a step forward,with the support of innovative,clever and practical solutions. Modern man needs to initiate incorporating architecture and life, ie.humane,integrative and sensual space. Sensory architecture and intelligence installations connect space,matter and time into a single dimension, ie.foster "a sense of" comfort and sensuality.Imperative is to create innovative and sensual school space,which combines the experience of artistic identity and senses,ie. with body and being encouraged students to creativity, research and experimentation.
12	Radmila Tomovska, Mirjana Miletić	Arhitektonski fakultet u Beogradu, Republic of Serbia	**Karakteristike vernakularne arhitekture ohridske kuće relevantne za energetsku efikasnost**	Vernakularna arhitektura podrazumeva metode građenja korišćenjem lokalnog raspoloživog materijala i tradicionalnog iskustva. Predstavlja zbir okruženja, kulturnog i istorijskog konteksta koji se stvarao i modifikovao kroz vekove. Rad se bavi energetskom efikasnočću ohridske kuće i karakteristikama vernakuralne arhitekture u tom pogledu. Karakteristike vernakularne arhitekture relevantne za energetsku efikasnost posmatraju se kroz dispoziciju objekta, morfologiju, materijale i način održavanja objekta. Tipološka klasifikacija koja je proizašla iz ovako određenih ključnih karakteristika ohridske vernakularne arhitekrure značajih za energetsku efikasnost, omogućila je definisanje tri prototipa ohridskih kuća: ribraski tip, visoka kuća u nizu i slobodnostojeća visoka kuća.

13	Johannes Sima	Federal Office for the Protection of Monuments, Austria	**Historical Buildings between Thermic Renovation and Conservation**	The austrian monument conservation authorities are facing up to the social responsibility to reduce energy consumption. This means that ways and means have to be found to adapt the monuments in an acceptable manner to the new requirements. However, the measures used most often such as external insulation and replacing windows are very seldom compatible with the guidelines on preserving the traditional historical appearance of a monument. For it is the readability of the historicity and the skills in the building trade in the various ages which generate the diversity and the value of historic urban fabric and of settlement ares. A solution can only lie in increasing energy efficiency in a manner compatible to the status of monuments, whereby the individual measures, and there are many of them, shall be applied in a sensitive and circumspect way to the respective objects. Guidelines have been developped by the Federal Office for the Protection of Austrian Monuments which lead the owners, architcts but also the authorities to increase energy efficiency of a listed monument but als

14	Margarita Arroba and others	IE UNIVERSITY, SEGOVIA (SPAIN)	**HEATING AND CONDENSATION IN BUILDINGS WHICH WALLS PRESENT SOME TYPE OF PATRIMONIAL PROTECTION**	It's obvious that comfort standards in the present are not even similar to those that ruled in the years of construction of the buildings that today present some sort of patrimonial protection. Therefore, there have been thermal installations introduced in most of them.□ Most of these buildings present constructive and aesthetic characteristics that had made difficult the insertion of complete air conditioning systems, so these installations are, in most of the cases, essentially heating ones, acting on operating temperatures - in its dry temperature factor or in the mean radiant one-, without acting simultaneously over other comfort variables such as relative humidity.□ Additionally it has been attempted to lessen the energy expenditure, without stop improving the thermal conditions, acting on some of the building walls. If the attention is focused in properties which opaque facings present any characteristic that have made them worthy of protection: murals, intarsias, coffered, etc. There hadn't been any action on them, but improving carpentry and widows crystals. □ The incorporation of heat in properties usually The present communication presents the pos
15		Studio Techné s.r.l., Italy	**The "Scompiglio Estate" renovation**	The "Scompiglio" estate is located near Lucca, 70 Km away from Florence. The property is composed by the main Villa, dating from the sixteenth century, a 5 hectares park with 8 more buildings and a 160 hectares land with olives, vineyards, vegetables and fruits fields, woodland. The main Villa is classified as Cultural Heritage building according to Italian laws. The all property is subordinate to laws for natural and built environment protection. The property was in an extremely bad maintenance state when it has been bought, in 2003, by the actual owner. The objective of the new owner was to transform the estate in a research project with conservation and rehabilitation of the ancient agricultural uses and restoration of the buildings for residential use and as set for a Company who promote arts (theatre, sculpture and paintings, visual arts). The Villa has been refurbished for residential settlement, the others buildings have been renovated as apartments for guests, wellness centre, a small theatre and a restaurant.

16	Maurizio Milan	Favero e Milan ingegneria. Spa, Italy	**Restoration of Palladian Basilica**	1) Masterpiece of Palladio - The Basilica in Vicenza; 2) An ancient space for today's activities; 3) The restoration and requalification works.
17	Maurizio Milan	Favero e Milan ingegneria. Spa, Italy	**SIEEB Sino_ Italian Ecological and Energy efficient building**	1) Design concept; 2) Building's energy demand; 3) Why a new building in Chinese heritage.
18	Maurizio Milan	Favero e Milan ingegneria. Spa, Italy	**Spazio Emilio Vedova at Ex Magazzini del Sale in Venice**	1) A great project for a small exhibition area; 2) High technology in Venice ancient tradition.
19	G.Cacozza, M. Gusso, B.Gentili, E.Sermasi	Studio Techné s.r.l., Italy	**Restauration of St. Claire's former Convent in Gorizia, Italy**	Scope of the work was the restauration, reconstruction and completion of the St. Claire's former Convent, with an overall budget of 5,000,000 euro within the Program for the Thousand-year-celebration of the city of Gorizia. Main activities regarded the overall convent facility restauration, the reconstruction of the electrical and mechanical systems, the sismic and functional adaptations. The new building use addresses to University courses and Research activities for Cultural Heritage Operators of the Liberal Arts School of Udine, for the Librarianship Preservation Laboratory and for Translators Schools. The paper highlights the integration between the restauration works and the HVAC systems used to meet the best energy effiencies and savings.
20	Giovanni Cafiero	Telos s.r.l. Territory Environment Legislation for Open Society, Italy	**Legislative framework, role and education of Conservation departments, rules and planning experiences in Italy for historical centers and rural settlments**	1) Legislative framework and policies in Italy for urban energetic efficiency: general overview; 2) Urban plannig for historical centres and cultural heritage: the case of Ravenna; 3) Energy management and rules for small settlements and farms in rural and protected areas: the case of the National Park of Alta Murgia in Puglia.

21	Giovanni Cafiero	Telos s.r.l. Territory Environment Legislation for Open Society, Italy	**Energy management in cultural heritage sites, coastal landscapes and protected areas: opportunities and guidelines for sustainable local development**	1) Cultural heritage and landscape as a "strategic economic and social resource"; 2) Context analysis for historical centres, protected landscapes, coastal zones and parks; 3) Sustainable building renovation: barriers and drivers to energy efficient refurbishment of historical buildings and settlements. Empirical evidence from Italian case-studies in a historical context; 4) European Landscape Convention, participatory planning and creative policies: role and education of Conservation departments and e
22	Didier Repellin, Francesca Brancaccio	RTP Croci Repellin (Prof. Ing. Giorgio Croci - Arch. Didier Repellin), France and Italy	**Best practice in improving energy efficiency in a cultural heritage urban scale building: The Real Albergo dei Poveri in Naples**	The Real Albergo dei Poveri (Naples) is one of the hugest XVIII century hospice in Europe. Its owner, the Municipality, is restoring it as an “Ecobuilding”. An European team was charged to restore it, using environmental management, in order to make it energy efficient. The priorities: - Respect the ancient building - Employ traditional techniques and materials. The goals: - Natural lighting (passive solar design) - Water recovery (underground rainwater storage) - Thermal mass consideration - Reduction of consumptions in lighting, heating and cooling systems (high performance technologies) - Natural ventilation (manual devices) - Integration of renewable energies (rebuilding the roof with semi-transparent PV modules) The project was considered by the UNESCO delegation as “best practice”.

23	G. Landi	TechneProgetti S.r.l., Italy	**Energy efficiency in public lighting systems**	The public lighting systems sector and generally speaking the external lighting, is at the beginning of important technological changes, due to economical and environmental sustainability reasons. It is a sector where it is quite easy to operate, thanks to a considerable installation uniformity. It is than a programmable sector, where the public decison makers have to make choices involving energy and maintanance savings, environmental sustainability, public security and safety, aesthetic improvement of the cities, relationships with citizens. The main technical operations are the light source choice (efficient lamps and modern LED) and the use of automatic light control systems. The implementation can be retro-fitted on the existing installations. It is easy to reach the necessary compromise between the conservation requirements of historical urban sections and the sustainable development.
24	Andrea Bondi	Thetis Sp, Italy	**Energy efficient and environmental friendly solutions in the renovation of the Historical Arsenal of the City of Venice**	The redevelopment of the northern part of the historic Venice Arsenal (covering an area of 20 hectares) required respect for the value of this extraordinarily important architectural complex as a historic monument, while ensuring high level s of efficiency and flexibility for the strategic activities that the area will host. This paper discusses re-use of buildings dating from the sixteenth to nineteenth century, including the restoration of the original edifices and the installation of new interior infrastructure for offices, laboratories and control rooms; particular attention is given to energy efficiency and environmental sustainability. Furthermore, technical solutions for the central plant that serves the entire area, which makes use of energy from renewable sources such as lagoon water, will be presented.

25	Marko Križanec, Marko Bačić	Caesar Association, Croatia	**Lighting of protected historic city centers**	All cities are different, but when it comes to the lighting of their protected historic centers, with its cultural and historical sites, such as monuments, city walls, cathedrals and other valuable objects, their needs and wishes are similar. They all seek for lighting solutions which contribute to visual identity of the city and make their citizens proud, but at the same time preserve protected cultural heritage and environment. When implemented correctly, such lighting solutions provide distinctive night appearance of the city and help its touristic promotion. These solutions are quite different from usual lighting techniques used for roads. Criteria which designers should follow are: creation or improvement of city center's visual identity, emphasis of historic amenities, temperature of light, appearance of light source, reduced maintenance possibilities, energy efficiency and lighting pollution. Authors of this paper presented theoretical aspects of all mentioned criteria. Afterwards, they analyzed them through practical examples of lighting in Croatia and abroad: main pedestrian area - Korzo in Rijeka, historic city New technologies available at the market ena
26	Žarko Španiček	Ministry of Culture, Croatia	**Povijesna ili suvremena stolarija na zaštićenim spomenicima kulture – problemi i rješenja iz konzervatorske prakse**	U Izlaganju bih prodiskutirao probleme od primjene stolarije s izo-staklima na povijesnim zgradama pri čemu drveni profili nastoje oponašati povijesne oblike stolarije sve do primjene suvremene aluminijsko-drvene stolarije s jednostrukim i dvostrukim izolacijskim komorama na zaštićenim spomenicima. Sve bih potkrijepio primjerima iz vlastite konzervatorske prakse. Prikaz bi se kretao od konzervatorskih dilema koje su se otvorile zahtjevima investitora za suvremenom stolarijom na kojoj su inzistirali, između ostalog, i zbog energetske učinkovitosti moderne stolarije, pa do prikaza konkretnih rješenja na nekoliko različitih primjera iz Požege i Lipika.
27	Željka Perković	Ministry of Culture, Croatia	**Reconciling the past and the future**	Dotakla bi se „ „Reconciling the past and the future“ sa primjerima obnovljenih zgrada u Tvrđavi Brod, a u izradi su projekti u tvrđavama Brod i Stara Gradiška za koje se može primjenjivati načelo energetske učinkovitosti u službi zaštite.

28	Sanda Zenko	Croatia	**Energy audits of cultural heritage buildings and the application of new materials in the restoration of cultural heritage buildings**	
29	Goran Rako	Radionica ahitekture d.o.o., Croatia	**Pregled radova i primjene gospodarenja energijom na tri projekta muzeja**	
30	Blanda Matica	Ministry of Culture, Croatia	**Referat na primjeru Palasa u dvoru Veliki Tabor u Humu Košničkom**	
31	Nada Duić Kowalski	Croatia	**Kulturna baština – primjena /implementacija energetske učinkovitosti u sustav zaštitnih mjera**	
32	Marino Grozdek	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia	REFURBISHMENT OF FMENA BUILDING IN ZAGREB – TECHNO-ECONOMIC FEASIBILITY STUDY	Techno-economic feasibility study on refurbishment of FMENA building in Zagreb (Faculty of Mechanical Engineering and Naval Architecture building) is made in order to find economically acceptable measures which would allow reduction of annual energy consumption from the present level of 200 kWh to an acceptable level of 90 kWh. Retrofitting of the building envelope, heating, cooling and lighting systems were considered. All of considered systems were mathematically modelled while their behaviour was simulated through-out the year. The results of this study show that refurbishment of existing building envelope and a replacement of a heating system control present the most important energy saving measures.

33	Marino Grozdek	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Croatia	TECHNO-ECONOMIC FEASIBILITY STUDY ON APPLICATION OF HEAT PUMP SYSTEMS IN CULTURAL HERITAGE BUILDINGS	Heat pump systems with renewable energy sources are increasingly more applied for the purpose of cooling and heating of buildings. Lower running costs and emission of greenhouse gases favours application of the heat pump technology over conventional heating systems (electric boilers, oil or gas fired furnaces). In this study application of heat pump systems with respect to techno-economic aspects is given. Three typical heat pump system arrangements are considered; air to water (with air as a heat source), ground water to water (with ground water as a heat source) and ground coupled heat pump systems with borehole heat exchangers.