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CATALOGUE • RESEARCH in BUILDING ENGINEERING  
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INTERNATIONAL ITINERANT EXHIBITION  
EXPOSICIÓN ITINERANTE INTERNACIONAL

RESEARCH in BUILDING ENGINEERING  
INVESTIGANDO en INGENIERÍA de EDIFICACIÓN

EXCO'20



UNIVERSITAT  
POLITECNICA  
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ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA DE EDIFICACIÓN



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***en INGENIERÍA de EDIFICACIÓN EXCO'20***

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# INDEX

EDITOR	0
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INTERNATIONAL SCIENTIFIC COMMITTEE	1
INTERNATIONAL ORGANIZATION COMMITTEE	5
CHAPTER INDEX	7
PROLOGUE	15

## **CHAPTER 1 ECONOMY** 19

<b>1.1.- ORGANIZATIONAL AND TECHNOLOGICAL OPTIMIZATION OF TRANSPORT FACILITIES CONSTRUCTION ENTERPRISES MANAGEMENT</b> <i>Aleksandr Menejjuk / Aleksey Nikiforov / Ivan Menejjuk</i>	20
<b>1.2.- DIGITIZATION IN REAL ESTATE BROKERAGE: PROPTECH'S RELATIONSHIP WITH THE INTERNET AND SOCIAL MEDIA</b> <i>Juan Carlos Asensio-Soto / Elena Navarro-Astor</i>	22
<b>1.3.- PRICE AND PROFITABILITY OF HOUSING RENTAL MARKET IN THE CITY OF VALENCIA, AN ANALYSIS BY NEIGHBORHOODS</b> <i>Alicia Llorca Ponce / Andrés Cózar Lizandra</i>	24
<b>1.4.- INFLUENCE OF EXTERNAL VARIABLES ON RENTAL PRICES IN THE CITY OF BARCELONA</b> <i>Adrián González Jiménez / Alicia Llorca Ponce</i>	26
<b>1.5.- DESIGN OF AN INFORMATION SYSTEM TO CREATE A DYNAMIC MODEL OF THE COLOMBIAN REAL ESTATE MARKET</b> <i>Nathalia González Fernández / Camilo Blanco Vargas / Igor Fernández Plazaola</i>	28
<b>1.6.- CONSTRUCTION &amp; DEMOLITION WASTE MANAGEMENT POLICIES FOR IMPROVED RESOURCE EFFICIENCY (CONDEREFF)</b> <i>Javier Cárcel-Carrasco / Elisa Peñalvo-López / José R. Albiol-Ibáñez / Jaime Llinares-Millán</i>	30
<b>1.7.- EVALUATION OF REAL ESTATE DEVELOPMENT COMPANY'S ALTERNATIVE DEVELOPMENT STRATEGIES AND MODEL OF STRATEGY IMPLEMENTATION</b> <i>Jūratė Šliogerienė / Tatjana Vilutienė / Artūras Kaklauskas</i>	32
<b>1.8.- BUSINESS PROCESS REENGINEERING IN DIGITAL ASSET MANAGEMENT INNOVATION</b> <i>Nicola Moretti / Fulvio Re Cecconi / Mario Claudio Dejacó</i>	34
<b>1.9.- FORMULATION FOR VALUATION OF HISTORIC-ARTISTIC PROPERTIES</b> <i>Raquel Amselem Moryoussef / Dr. María Luisa Collado López / Dr. Pedro Gerardo Salinas Martínez</i>	36
<b>1.10.- LEAN CONSTRUCTION, IS IT DEPLOYED IN THE DOMINICAN REPUBLIC?</b> <i>Edwin Pérez De Jesús / Elena Navarro Astor</i>	38

## **CHAPTER 2 ENVIRONMENT** 41

<b>2.1.- SOCIAL SUSTAINABILITY: A PROFESSIONALS' CRITICAL GLANCE TO ACCESSIBLE ARCHITECTURE</b>	42
<i>Guillermo Loblowitz / Elena Navarro-Astor</i>	
<b>2.2.- THE WINDOW AS COMPOSITION ELEMENT. FROM ARCHITECTURE TO SCENOGRAPHY</b>	44
<i>Quiteria Angulo Ibáñez / Francisco Bernal Meseguer</i>	
<b>2.3.- DYNAMIC AND PERFORMATIVE SURFACES. KINETIC SYSTEMS DESIGN</b>	46
<i>Mónica Val Fiel / Marina Puyuelo Cazorla / Lola Merino Sanjuán</i>	
<b>2.4.- UP-SKILLING CONSTRUCTION WORKERS IN WOOD CONSTRUCTION METHODS FOR ENERGY EFFICIENT BUILDINGS (UPWOOD)</b>	48
<i>Javier Cárcel-Carrasco / Elisa Peñalvo-López / Vicente López-Mateu / Consuelo Gómez-Gómez</i>	
<b>2.5.- RENEWABLE ENERGY DISTRIBUTION SYSTEM TO DIFFERENT ACCESSIBILITY CONDITIONS, THROUGH THE WEATHER CONDITIONS</b>	50
<i>Javier Cárcel-Carrasco / Elisa Peñalvo-López / Manuel Pascual-Guillamón / Luis Palmero-Iglesias</i>	
<b>2.6.- PRESENTATION OF THE UPWOOD EUROPEAN PROJECT</b>	52
<i>Javier Cárcel-Carrasco / Elisa Peñalvo-López / José R. Albiol-Ibáñez / Vicente Blanca-Giménez</i>	
<b>2.7.- MULTI-CRITERIA METHOD AIMED AT IMPROVEMENT OF HISTORICAL MASONRY ENERGY EFFICIENCY</b>	54
<i>Marianna Rotilio / Pierluigi De Berardinis / Luis Palmero Iglesias</i>	
<b>2.8.- ANALYSIS OF ENERGY AND CO2 CERTIFICATION OF A SAMPLE OF BUILDINGS IN THE VERA CAMPUS OF THE UNIVERSITAT POLITÈCNICA DE VALÈNCIA, SPAIN</b>	56
<i>Andrea Salandín</i>	

## **CHAPTER 3 NEURAL ENGINEERING** 59

<b>3.1.- VALIDATION OF A VIRTUAL CLASSROOM FOR ASSESSMENT OF COGNITIVE FUNCTIONING: USE OF NEUROPHYSIOLOGICAL METRICS WITHIN A REAL AND VIRTUAL SPACE</b>	60
<i>Juan Luis Higuera –Trujillo / Carmen Llinares Millán / Francisco Calabuig Valls</i>	
<b>3.2.- DOES THE TONE OF THE CLASSROOM (WARM vs. COLD) INFLUENCE THE STUDENT'S MEMORY? A PSYCHOPHYSIOLOGICAL ANALYSIS</b>	62
<i>Carmen Llinares Millán / Juan Luis Higuera-Trujillo / Juan Serra Lluch / Susana Iñarra Abad</i>	
<b>3.3.- NEUROPSYCHOPHYSIOLOGICAL EFFECTS OF CLASSROOM ILLUMINANCE ON HIGHER EDUCATION STUDENTS' ATTENTION</b>	64
<i>Carmen Llinares Millán / Juan Luis Higuera-Trujillo / Nuria Castilla Cabanes</i>	
<b>3.4.- IMPROVING STUDENT ATTENTION THROUGH THE HEIGHT OF THE CLASSROOM CEILING. AN APPLICATION OF NEUROARCHITECTURE</b>	66
<i>Carmen Llinares Millán / Jorge Torres Cueco / Juan Luis Higuera-Trujillo / Carla Sentieri Omarremertería / Antoni Montañana i Aviño</i>	

<b>CHAPTER 4</b>	<b>HERITAGE</b>	<b>69</b>
<b>4.1.- HOLOCAUST MUSEUM IN ODESSA. INTERIOR</b>		<b>70</b>
<i>Anatoliy Yeksarev / Kate Mykhailova</i>		
<b>4.2.- BUILDING OF THE MUSEUM OF THE HOLOCAUST IN ODESSA.</b>		<b>72</b>
<i>Anatoliy Yeksarev / Kate Mykhailova</i>		
<b>4.3.- LLOVERA FAMILY'S PANTHEON (GENERAL CEMETERY OF VALENCIA). STATE OF CONSERVATION AND CONSIDERATIONS FOR THE INTERVENTION OF STONE MATERIALS</b>		<b>74</b>
<i>C. Martínez-Costa / S. Kröner / J. Gurbés-Pérez / X. Mas-Barberà</i>		
<b>4.4.- THE ARCHITECT J.M.M. CORTINA PÉREZ. THE HOUSE OF THE DRAGONS OF CEUTA</b>		<b>76</b>
<i>Jorge Gurbés Pérez</i>		
<b>4.5.- CORTINA ARCHITECT AND THE HOUSE OF BARRACA. RECOVERING THE NOLLA TILE</b>		<b>78</b>
<i>Jorge Gurbés Pérez</i>		
<b>4.6.- CORTINA ARCHITECT AND THE HOUSE OF THE MILL. RECOVERING THE NOLLA TILE</b>		<b>80</b>
<i>Jorge Gurbés Pérez / Ana Estellés Álvarez</i>		
<b>4.7.- PREREQUISITES FOR THE EMERGENCE OF NEW TYPE OF HOUSE. THE DISTRICT OF PAVLOV'S BUILDINGS OF LOW-INCOME APARTMENTS, ODESSA, 1885-1895</b>		<b>82</b>
<i>Nadia Yeksareva / Vladimir Yeksarev</i>		
<b>4.8.- ARCHITECTURAL AND CONSTRUCTIVE ANALYSIS OF THE TRADITIONAL HOUSINGS OF THE VILLAGE OF CHARADU (INDIA)</b>		<b>84</b>
<i>María-Isabel Giner-García / Ángeles Rodrigo Molina / Gonzalo Trenor Yrizar</i>		
<b>4.9.- SUBLIME SPACES: LIGHT AS AN ENHANCER RESOURCE OF CHRISTIAN ARCHITECTURE</b>		<b>86</b>
<i>Quiteria Angulo Ibáñez / Ana Serrano Carrasco</i>		
<b>4.10.- RESTORATION OF THE OLD PRESBYTERY OF THE CHURCH OF SANTIAGO DE BENICALAF</b>		<b>88</b>
<i>Luis Cortés Meseguer / José Pardo Conejero / Sofía Martínez Hurtado</i>		
<b>4.11.- ANALYSIS AND RECONSTRUCTION OF THE VESTIGES OF THE RECONQUER CHURCH FOUND IN THE SUBSUELE OF THE COMMUNION CHAPEL OF ALGEMESÍ</b>		<b>90</b>
<i>Joaquina García Sentamans / Igor Fernández Plazaola / Jaime Llinares Millán / Pietro Becherini</i>		
<b>4.12.- THE TREATMENT IN THE ARCHITECTURAL HERITAGE: THE CHAPEL OF THE ALMO COLLEGIO BORROMEO DE PAVIA</b>		<b>92</b>
<i>Concepción López González</i>		
<b>4.13.- PROJECTIVE ANALYSIS OF THE MERIDIONAL COVER OF THE CHURCH OF SANTA MARÍA IN DAROCA</b>		<b>94</b>
<i>Concepción López González / Pablo Germes Valls</i>		
<b>4.14.- TYPOLOGICAL ANALYSIS OF VERNACLE ARCHITECTURE: THE CISTERN</b>		<b>96</b>
<i>José Fornieles López / Concepción López González</i>		
<b>4.15.- THE DESIGN OF URBAN QUALITY: INNOVATIVE COMMUNITY FACILITIES IN SUPPORT OF STRATEGIES OF URBAN RENEWAL. A METHODOLOGICAL PROPOSAL.</b>		<b>98</b>
<i>Gabriella Graziuso / Michele Grimaldi / Claudio Guarnaccia / Giacomo Di Ruocco</i>		
<b>4.16.- HOTEL CENOBIO IN MATERA, ITALY: KNOWLEDGE AND PROJECT OF REUSE. (SASSO BARISANO IN MATERA-ITALY) Poster 1</b>		<b>100</b>
<i>Giuseppe Andrisani</i>		

<b>4.17.- HOTEL CENOBIO IN MATERA, ITALY: KNOWLEDGE AND PROJECT OF REUSE. (SASSO BARISANO IN MATERA-ITALY) Poster 2</b>	<b>102</b>
<i>Giuseppe Andrisani</i>	
<b>4.18.- THE ROCK CHURCH OF SAN PIETRO DE MORRONE IN MATERA, ITALY: KNOWLEDGE AND USE PROJECT. Poster 1</b>	<b>104</b>
<i>Giuseppe Andrisani</i>	
<b>4.19.- THE ROCK CHURCH OF SAN PIETRO DE MORRONE IN MATERA, ITALY: KNOWLEDGE AND USE PROJECT. Poster 2</b>	<b>106</b>
<i>Giuseppe Andrisani</i>	
<b>4.20.- HBIM IN PROJECT OF LEGALIZATION AND SCENIC PROPOSAL OF THE ROMAN THEATER OF SAGUNTO</b>	<b>108</b>
<i>Emilia Hernández / Pier Federico Caliri / Fernando Cos-Gayón López</i>	
<b>4.21.- HBIM PROTOCOL FOR THE VIRTUAL RESTITUTION OF THE ROMAN FORUM OF SAGUNTO</b>	<b>110</b>
<i>Yira Linares Jáquez / Fernando Cos-Gayón López</i>	
<b>4.22.- HBIM METHODOLOGY FOR THE CHARACTERIZATION OF DIFFERENT INTERVENTIONS BY PERIODS IN THE ARCHITECTURAL HERITAGE: APPLICATION IN THE ROMAN THEATRE OF SAGUNTO</b>	<b>112</b>
<i>Lucas Nasif Sfeir / Fernando Cos-Gayón López</i>	
<b>4.23.- INTERVENTION FOR THE SAFEGUARD OF THE ARCHITECTURAL HERITAGE. THE MORABITO OF SIDI BOU GUERTIF IN EL KHORBAT (MOROCCO)</b>	<b>114</b>
<i>Teresa Gil-Piqueras / Pablo Rodríguez-Navarro</i>	
<b>4.24.- DIGITAL SURVEY FOR THE DOCUMENTATION OF THE BAIRÉN CASTLE, GANDÍA (SPAIN)</b>	<b>116</b>
<i>Pablo Rodríguez-Navarro / Teresa Gil-Piqueras</i>	
<b>4.25.- HIGH WATER TANKS IN INDIA. IMAGE AND CONSTRUCTION OF THE LANDSCAPE.</b>	<b>118</b>
<i>Marina Puyuelo Cazorla / Lola Merino Sanjuán / Mónica Val Fiel</i>	
<b>4.26.- THE TOLEDO STATION OF LINE 1 OF THE NAPLES UNDERGROUND ARCHITECTURAL AND INSTALLATION ASPECTS</b>	<b>120</b>
<i>Emanuele La Mantia / Francesco Maria La Mantia</i>	
<b>4.27.- A PROPOSAL FOR SOCIAL HOUSING REGENERATION: A CASE STUDY IN NAPLES AREA</b>	<b>122</b>
<i>Rosa Agliata / Luigi Mollo</i>	
<b>4.28.- VIEWSHEDS IN ARCHITECTURAL ANALYSIS: THE PERCEPTION OF VALUES IN MEDITERRANEAN VERNACULAR LANDSCAPES</b>	<b>124</b>
<i>Pablo Altaba Tena / Juan A. García-Esparza / Luis Palmero Iglesias</i>	
<b>4.29.- THE ABANDONED LANDSCAPE OF PENYAGOLOSA. CRAFTS AND CRAFTSMANS</b>	<b>126</b>
<i>Juan A. García-Esparza / Pablo Altaba Tena</i>	
<b>4.30.- THE ARTISAN PRODUCTION OF LIME. THE MORON LIME MORTAR</b>	<b>128</b>
<i>Graziella Bernardo / Luis Manuel Palmero- Iglesias / Isidoro Gordillo-Mesa</i>	
<b>4.31.- TABACALERA, THE OLD TOBACCO FACTORY-VALENCIA, SPAIN</b>	<b>130</b>
<i>Giulia Massari / Stefania De Gregorio / Luis Palmero Iglesias</i>	
<b>4.32.- MINOR INFRASTRUCTURE AND HOUSING ADDITIONS IN RURAL SETTINGS. A PEDAGOGICAL STRATEGY. CASO AMBALEMA, TOLIMA COLOMBIA</b>	<b>132</b>
<i>Eduardo Peñaloza-Kairuz / Jorge Olmedo-Montoya / César Velandia-Silva / Luis Palmero-Iglesias</i>	
<b>4.33.- PROMETHEUS. PROTOCOLS FOR INFORMATION MODELS LIBRARIES TESTED ON HERITAGE OF UPPER KAMA SITES, RUSSIA. Poster I</b>	<b>134</b>
<i>Luis Palmero-Iglesias / Fernando Cos-Gayón-López / María Isabel Giner-García / Giacomo Tortorella</i>	
<b>4.34.- PROMETHEUS. PROTOCOLS FOR INFORMATION MODELS LIBRARIES TESTED ON HERITAGE OF UPPER KAMA SITES, RUSSIA. Poster II</b>	<b>136</b>
<i>Luis Palmero-Iglesias / Fernando Cos-Gayón-López / María Isabel Giner-García / Giacomo Tortorella</i>	

<b>4.35.- STUDY ABOUT ORTHODOX CHURCHES PROMETHEUS PROJECT - RUSSIA</b>	<b>138</b>
<i>Luis Palmero-Iglesias / Fernando Cos-Gayón-López / María-Isabel Giner-García / Giacomo Tortorella</i>	
<b>4.36.- MATERIALS AND LANDSCAPE: FROM EARTH TO HEAVEN</b>	<b>140</b>
<i>Luis M. Palmero Iglesias / Graziella Bernardo / Luis Manuel Palmero Iglesias / Nicola Ciccarelli / Edoardo Francesco Pati / Rocco Domenico Ruina / Donato Turco</i>	
<b>4.37.- A WORKSHOP FOR THE COMPARISON OF CULTURES. Part 1</b>	<b>142</b>
<i>Antonella Guida / Graziella Bernardo / Giuseppe Andrisani</i>	
<b>4.38.- A WORKSHOP FOR THE COMPARISON OF CULTURES. Part 2</b>	<b>144</b>
<i>Antonella Guida / Graziella Bernardo / Giuseppe Andrisani</i>	
<b>4.39.- WORKSHOP MAKING MUSEUMS: ROYAL ARTILLERY FACTORY SEVILLE. Part 1</b>	<b>146</b>
<i>Antonella Guida / Antonio Conte / Graziella Bernardo / Giuseppe Andrisani</i>	
<b>4.40.- WORKSHOP MAKING MUSEUMS: ROYAL ARTILLERY FACTORY SEVILLE. Part 2</b>	<b>148</b>
<i>Antonella Guida / Antonio Conte / Graziella Bernardo / Giuseppe Andrisani</i>	
<b>CHAPTER 5 <i>TECHNOLOGY</i></b>	<b>151</b>
<b>5.1.- ANALYTICAL, EXPERIMENTAL AND COMPUTER STUDIES OF ROD SYSTEMS, PLANES AND SHELLS MADE FROM STEEL-FIBER CONCRETE</b>	<b>152</b>
<i>Николай Сурьянинов / Степан Неутов / Ирина Корнеева / Марина Выгнанец</i>	
<b>5.2.- DIRECT INTEGRATION METHOD</b>	<b>154</b>
<i>Yurii Krutii / Mykola Surianinov / Anna Karnaukhova / Victor Vandynskyi</i>	
<b>5.3.- ALUMINOSIS: BEHIND HIS HISTORY AND EXAMPLES OF INTERVENTION IN VALENCIA</b>	<b>156</b>
<i>Francisco Reyes Vázquez</i>	
<b>5.4.- SEISMIC VULNERABILITY OF A GROUP OF 880 SOCIAL HOUSING UNITS IN VALENCIA</b>	<b>158</b>
<i>Luisa Basset-Salom / Arianna Guardiola-Villora</i>	
<b>5.5.- THE DAMAGED REINFORCED CONCRETE COLUMNS OF VARIOUS FLEXIBILITY</b>	<b>160</b>
<i>Zeljko Kos / Yevhenii Klymenko / Iryna Grynyova / Mykola Surianinov</i>	
<b>5.6.- THE DESIGN OF PLASTER MORTARS FOR HIGH-RISE BUILDING</b>	<b>162</b>
<i>Valentyn Paruta / Olha Gnyv / Leonid Lavrenyuk / Iryna Grynyova</i>	
<b>5.7.- THERMAL DEFORMATION IN HETEROGENEOUS MATERIALS</b>	<b>164</b>
<i>Vadym Zhukovsky / Aleksandr Gokhman / Mykhailo Zavaloka / Iryna Grynyova</i>	
<b>5.8.- EVALUATION OF THERMAL PROPERTIES AND CHARACTERIZATION OF INTERNAL DEFECTS IN CONCRETE THROUGH THE USE OF ACTIVE INFRARED THERMOGRAPHY</b>	<b>166</b>
<i>Ana Martínez Ibernón / Rafael Royo Pastor</i>	
<b>5.9.- METHODOLOGY TEST INFLUENCE ON THE CALCULATION OF THE CHLORIDE DIFFUSION COEFFICIENT IN CONCRETE ACCORDING TO THE prCEN/TS 12390-11 TEST METHOD</b>	<b>168</b>
<i>Josep Ramon Lliso Ferrando / Manuel Valcuende Payá / Isabel Gasch Molina / Rafael Calabuig Pastor</i>	

<b>5.10.- CHLORIDE DETECTION THROUGH VOLTAMMETRIC SENSORS IN HARDENED CONCRETE</b>	<b>170</b>
<i>Ana Martínez Ibernón / Boris Andrés Mendez Baez / Ramon Elías Acosta Mora / Juan Soto Camino</i>	
<b>5.11.- ANALYSIS OF THE ACOUSTIC BEHAVIOUR OF TRADITIONAL BARRIERS IN RELATION TO SOUND CRYSTALS BARRIERS, IN SANDY ENVIRONMENTS</b>	<b>172</b>
<i>Alejandro Almazán Romero / María Pilar Peiró Torres / José María Bravo Plana-Sala / Fernando Buchón Moragues / Javier Redondo Pastor / Marcelino Ferri García / Juan Vicente Sánchez Pérez</i>	
<b>5.12.- ON THE EVALUATION OF ACOUSTIC COMFORT PROVIDED BY NOISE BARRIERS</b>	<b>174</b>
<i>J. Redondo / M.P. Peiró-Torres / J. M. Bravo / M. Ferri / J.V. Sánchez-Perez / C. Llinares</i>	
<b>5.13.- NEW RESONATOR DESIGN TO INTEGRATE ON SCATTERERS OF SONIC CRYSTALS ACOUSTIC SCREENS (RESON-CS)</b>	<b>176</b>
<i>Sergio Castiñeira-Ibáñez / María Pilar Peiró-Torres / Javier Redondo Pastor / José María Bravo Plana-Sala / Juan Vicente Sánchez-Pérez</i>	
<b>5.14.- A COMPARISON OF CORROSION ASSESSMENT STRATEGIES FOR REINFORCED CONCRETE</b>	<b>178</b>
<i>José-Enrique Ramón / José-Manuel Gandía-Romero / Román Bataller / Isabel Martínez / Ángel Castillo</i>	
<b>5.15.-LAND PROTECTION NETWORKS APPLIED TO BUILDING. SYSTEMS OF INSTALLATION AND PATHOLOGIES</b>	<b>180</b>
<i>Juan Manuel Sánchez-Rodríguez / Javier Cárcel-Carrasco</i>	
<b>5.16.- INTERACTIVE IMMERSIVE ARCHITECTURAL MANAGEMENT SYSTEMS: STUDY OF THE ROMAN THEATRE OF SAGUNTO</b>	<b>182</b>
<i>Joan Cordón Llácer / Fernando Cos-Gayón López</i>	
<b>5.17.- USE OF SEWAGE SLUDGE IN CONSTRUCTION ENGINEERING</b>	<b>184</b>
<i>Klaudia Szala / Monika Cichon / Anna Wilde / Klaudia Sobczak / Magdalena Stefanko / Magdalena Knap / Rafał Krzywoń / Grzegorz Cema / Aleksandra Ziemińska-Buczyńska / Piotr Banaszek</i>	
<b>5.18.- GUIDE TO DESIGN CONCRETE STRUCTURES ACCORDING TO BIM METHODOLOGY</b>	<b>186</b>
<i>Javier Pereiro-Barceló / José Luis Bonet Senach / Benjamín González</i>	
<b>5.19.- RESOURCES TO TEACH BIM METHODOLOGY</b>	<b>188</b>
<i>Javier Pereiro-Barceló / José Luis Bonet Senach / Benjamín González</i>	
<b>5.20.- HISTORICAL MASONRY AND EARTHQUAKE: COGNITIVE INVESTIGATIONS ON A MIXED STRUCTURE L'AQUILA, ITALY</b>	<b>190</b>
<i>Giulia Massari / Mariangela De Vita / Pierluigi De Berardinis</i>	
<b>5.21.- MATERIALS AND LANDSCAPE - PHOTOCATALYTIC NANOMATERIALS TO THE REGENERATION OF TAMBURI DISTRICT IN TARANTO (ITALY)</b>	<b>192</b>
<i>Graziella Bernardo / Luis Manuel Palmero Iglesias / Raffaella Albrizio / Angela Chiurazzi / Maria Cristalli / Caterina Colombino</i>	
<b>5.22.- EXPERIENCES OF SUSTAINABILITY AND STRENGTH OF MATERIALS HOUSING CONSTRUCTION IN WIRRÁRIKAS COMMUNITIES, JALISCO; MEXICO</b>	<b>194</b>
<i>Fabiola Colmenero Fonseca / Ana Rosa Olivera Bonilla / Ailed P. Albarrán-Franco / Alejandro Guzmán Ramírez / Luis Manuel Palmero Iglesias / José Antonio Guzmán Salas</i>	
<b>5.23.- MULTIROTOR UAV FOR STRUCTURAL DIAGNOSTICS</b>	<b>196</b>
<i>Roman Czyba / Marcin Górski / Jarosław Domin / Eryk Goldmann / Krzysztof Ponikiewski / Radostaw Rosiek / Piotr Żyro / Kamil Sputo / Tomasz Szuwala / Wach Paweł</i>	
<b>5.24.- EXECUTION OF THE ASYMMETRICAL HPC TRUSS MADE USING THE 3D PRINTING METHOD</b>	<b>198</b>
<i>Marcin Górski / José R. Albiol-Ibáñez / Karol Kempki / Aleksandra Kodzis</i>	
<b>5.25.- SITUATION OF THE NATURAL STONE IN ARCHITECTURE AND CONSERVATION SUGGESTIONS</b>	<b>200</b>
<i>E. Sibel Onat Hattap</i>	

## **CHAPTER 6**      **TOWN PLANNING** 203

- 6.1.- URBAN REGENERATION AREAS IN THE VALENCIAN REGION FOR THE PERIOD 2020-2025** 204  
*Jorge Hervás Más*
- 6.2.- SEISMIC VULNERABILITY AND DAMAGE SCENARIOS IN CIUTAT VELLA, VALENCIA** 206  
*Arianna Guardiola-Villora / Luisa Basset-Salom*
- 6.3.- URBAN SUSTAINABILITY ANALYSIS BASED ON BUILDING TYPOLOGIES** 208  
*Javier Orozco-Messana / Milagro Iborra-Lucas / Raimon Calabuig-Moreno*
- 6.4.- CONSTRUCTING AN INCLUSIVE PUBLIC SPACE WITH GENDER PERSPECTIVE** 210  
*Lola Merino Sanjuán / Mónica Val Fiel / Marina Puyuelo Cazorla*
- 6.5.- TOWARD SUSTAINABLE SETTLEMENTS. A MODEL FOR CERTIFICATION OF QUALITY URBAN PLANNING** 212  
*Isidoro Fasolino / Michele Grimaldi / Francesca Coppola / Giacomo Di Ruocco*
- 6.6.- METROPOLITANA URBAN SAFETY. A RISK BASED METHODOLOGY TO SUPPORT METROPOLITAN PLANNING TOOLS** 214  
*Francesca Coppola / Isidoro Fasolino / Michele Grimaldi / Giacomo Di Ruocco*
- 6.7.- TREATMENT OF THE DETERMINING URBAN PARAMETERS IN THE BUILDING IN THE VALENCIAN COMMUNITY** 216  
*M<sup>ra</sup> Emilia Casar Furió / M<sup>ra</sup> Jesús Romero Aloy*
- 6.8.- THE AFRAGOLA-NAPLES AV STATION OF ZAHA HADID SYNTHESIS OF ARCHITECTURAL INSPIRATION AND ENGINEERING SCIENCE** 218  
*Emanuele La Mantia / Francesco Maria La Mantia*

## **CHAPTER 7**      **HUMAN RESOURCES** 221

- 7.1.- TEMPORARY AND PERMANENT SETTLEMENT. SHIMELBA REFUGEE CAMP CASE** 222  
*Quiteria Angulo Ibáñez / Marta Cotillas Mena*
- 7.2.- GENDER (IN)EQUALITY: CHALLENGING GENDER NORMS IN SUB-SAHARAN AFRICA'S HOUSEHOLDS AND BUILT ENVIRONMENT : WOMEN BUILDING THEIR OWN HOMES IN RURAL AND URBAN ENVIRONMENTS** 224  
*Ann-Marie Ellmann / Karen Le Jeune*
- 7.3.- METHODOLOGICAL PROPOSAL TO IMPROVE MANGEMENT IN ARCHITECTURAL OFFICES** 226  
*Ximena Jacqueline Camino Criollo / Ricardo Moya Barberá / Igor Fernández Plazaola / Antoni Montañana i Aviñó*
- 7.4.- CONDAP EUROPEAN PROJECT FOR IMPROVING DIGITAL SKILLS IN THE CONSTRUCTION SECTOR** 228  
*Javier Cárcel-Carrasco / Elisa Peñalvo-López / José R. Albiol-Ibáñez / José Antonio Cárcel-Carrasco*
- 7.5.- ITALIAN DIASPORA EDGARDO CONTINI, ITALIAN ENGINEER IN UNITED STATES** 230  
*Olimpia Niglio*





## **PRÓLOGO DIRECTOR ETS de INGENIERÍA de EDIFICACIÓN**

Finalizado el Salón Tecnológico de la Construcción -EXCO 2020- y al analizar los resultados del mismo, podemos concluir que, una vez más, hemos superado con creces los objetivos marcados.

Por lo que respecta a la "Exposición de Tecnología e Investigación en Edificación", su comité científico internacional, seleccionó un total de 100 paneles y 40 artículos, por lo que nadie pone en duda de que estamos ante un certamen que es referente para los investigadores del sector de la edificación, tanto nacionales como de otros países. Una de nuestras principales aspiraciones ha sido su internacionalización y que todas las 60 universidades participantes pudieran mostrar sus investigaciones en la exposición, por lo que, a lo largo de este año, será itinerante por diversas universidades participantes.

Asimismo quiero resaltar la calidad de las conferencias impartidas, el alto nivel de los conferenciantes y el interés de las actividades desarrolladas.

Por último, quiero transmitir, en nombre de la Escuela Técnica Superior de Ingeniería de Edificación de la Universitat Politècnica de València el agradecimiento a CEVISAMA por el apoyo a este evento, al profesor José Ramón Albiol Ibáñez, director de EXCO 2020 y a todo su equipo que, con su trabajo y dedicación, lo han hecho posible.

¡¡Exco 2021 nos espera!!

Dr. Francisco Javier Medina Ramón  
Director de la Escuela Técnica Superior de Ingeniería de Edificación

## ***PROLOGUE DIRECTOR ETS of BUILDING ENGINEERING***

*After finishing the Technological Fair of Construction-Exco 2020- and analyzing the results of it, we can conclude that, once again, we have far exceeded the objectives set.*

*With regard to the "Exhibition of Technology and Research in Building", its international scientific committee, selected a total of 100 panels and 40 articles, so no one doubts we are facing a contest that is a reference for researchers in the building sector, both national and other countries. One of our main aspirations has been its internationalization and that all 60 participating universities could show their research in the exhibition, so, throughout this year, it will be traveling by several participating universities.*

*I also want to highlight the quality of the lectures given, the high level of the speakers and the interest of the activities developed.*

*Finally, I would like to convey, on behalf of the Technical School of Building Engineering of the Universitat Politècnica de València, the thanks to CEVISAMA for the support of this event, to Professor José Ramón Albiol Ibáñez, director of Exco 2020 and to all his team, with their work and dedication, they have made it possible.*

*Exco 2021 awaits us !!*

*Dr. Francisco Javier Medina Ramón  
Director of the Superior Technical School of Building Engineering*



## PROLOGUE DIRECTOR EXCO'20

*The Faculty of Building Engineering of the UNIVERSITAT POLITÈCNICA DE VALÈNCIA - SPAIN, organized from February 3rd to 7th, 2020, "The XXXIV Construction Technology Exhibition" EXCO'20 and the International Itinerant Exhibition "Investigating in Building Engineering" within of the activities planned for the CEVISAMA International Exhibition, at the Feria Valencia site.*

*Conferences are scheduled at the Feria Valencia Events Center, the speakers are national and international of recognized prestige from Europe, Asia and America. These conferences are aimed at professionals and students of the UPV to broaden their knowledge and experiences.*

*EXCO'20 promotes the entrepreneurship of the young UPV generations, at the Fair Stand and with participation in conferences.*

*The International Itinerant Research Exhibition EXCO'20 has the collaboration of 60 Universities from America, Europe, Africa, Asia and Oceania. Promoting collaboration between institutions and professors at the international level.*

*It fosters interdisciplinary collaboration of the professor staff within the UPV with 57 International Universities; It has the participation of 9 departments and 8 research institutes of the UPV in EXCO'20.*

*The participating entities are:*

### **Universities:**

1. *Universitat Politècnica de València, España.*
2. *Politecnico di Milano, Italia.*
3. *Mimar Sinan Fines Arts University, Istanbul, Turkey.*
4. *Nottingham Business School, England.*
5. *Vilnius Gediminas Technical University, Vilnius, Lithuania.*
6. *Universidad de Costa Rica*
7. *Università degli Studi di Basilicata, Matera, Italia.*
8. *Universidad Tecnológica de La Habana José Antonio Echeverría, Cuba.*
9. *Università degli Studi Firenze, Italia*
10. *Università di Pavia, Italia.*
11. *Odessa State Academy of Civil Engineering & Architecture, Odessa, Ukraine*
12. *Università di Salerno, Italia.*
13. *Silesian University of Technology, Politechnika Śląska, Gliwice, Poland.*
14. *University of British Columbia, Vancouver, Canada.*
15. *Universidad de Alcalá de Henares, Madrid, España.*
16. *Florida A&M University, Florida, USA.*
17. *Universidad Mayor de San Andrés, La Paz, Bolivia.*
18. *Universidad de la República (UdelaR) de Uruguay.*
19. *Universidad John F. Kennedy, Argentina.*
20. *Universidad de Castilla-La Mancha, España.*
21. *Universidad de Granada, España.*
22. *Università degli Studi della Campania "Luigi Vanvitelli", Napoli.*
23. *Politecnico di Bari, Italia.*
24. *Università degli Studi di Roma "Tor Vergata", Italia.*
25. *Hanze University of Applied Sciences, Groningen. Nederland.*
26. *Jade Hochschule Wilhelmshaven/Oldenburg, Germany.*
27. *New York University, Tandon School of Engineering. USA.*
28. *McGill University, Canada*
29. *Nanyang Technological University, Singapore.*

30. *University of New South Wales, Sydney, Australia.*
31. *Università di Pisa, Italia.*
32. *Universidad de Ibagué, Colombia.*
33. *Beijing Yong Shan Media Co., Ltd. Pekin*
34. *Università degli Studi dell'Aquila, Italia.*
35. *Universitat Jaume I, Castellón, España.*
36. *University of Applied Sciences and Arts of Southern Switzerland*
37. *Institut für Bau- und Infrastrukturmanagement /ETH Zürich*
38. *University North, Varaždin, Croacia*
39. *South Ukrainian National Pedagogical University, Odessa, Ukraine.*
40. *Kharkiv National University of Civil Engineering and Architecture, Ukraine.*
41. *Universitat de València, Spain.*
42. *Perm National Research Polytechnic University, Perm, Russia*
43. *University of Cape Town, South Africa.*
44. *National University of Singapore.*
45. *TU Delft, The Netherlands.*
46. *Politecnico di Torino, Italy.*
47. *Wuhan University, Wuhan, China.*
48. *University of Oregon, USA.*
49. *City-University of Hong Kong.*
50. *Shenzhen University School of Architecture, Shenzhen, China.*
51. *Hokkaido University, Sapporo, Japan*
52. *Universidad de la Salle, Bogotá, Colombia.*
53. *Universidad de los Andes, Bogotá, Colombia.*
54. *Universidad Católica de Valencia. España.*
55. *Universidad UTE. Quito. Ecuador.*
56. *Universidad de Napoles Federico II, Napoles, Italy.*
57. *Telematic University Pegaso, Italy.*
58. *University of Guanajuato, México.*
59. *University of La Salle Bajío, México*
60. *Universidad Jesuita de Guadalajara, ITESO, México*

*I wish to convey my sincere thanks to all of you who make possible EXCO, projecting in an international event such as CEVISAMA, the technological and human greatness of our Faculty.*

*Thank you all for making EXCO possible.*

*All the best for EXCO'21!*

*Best Regards*

**Dr. José R. Albiol-Ibáñez**

*Vice Dean International Relations, Exchange Programs, Communication & Entrepreneurship.*

*Director EXCO'20*

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**CHAPTER 4**

# ***HERITAGE***

**CAPÍTULO 4 PATRIMONIO**

## UN TALLER DE COMPARACIÓN DE CULTURAS

### A WORKSHOP FOR THE COMPARISON OF CULTURES. Part 1

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#### Abstract

The workshop is consistent with the objectives of Master Programme 'Architecture, Heritage, Sustainability (DEM AHD) and is linked to the seminars, studios of the DEM and also to the research themes of LAURE.

The aim of this international workshop is to provide an opportunity to students to analyse vernacular architecture of a protected site abroad and observe the restoration and transformation technics and projects that have been realised by using existing vernacular architecture in order to reply today's social, cultural and economic needs of the territory. The students will be able to experiment a transformation project (both renovation and proposition of contemporary extension) on a selected site in international and multicultural working groups by taking into consideration the local needs, availability of construction materials and reflecting local traditions, design skills and tradition of local builders. They will be challenged by: different influences on vernacular architecture such as culture, human behaviour and environment, micro climate of the area and local materials, difficulties of communication and design process in an international working team.

This workshop is the first in year 2019, it will take place in Uçhisar Village in Göreme National Park and the Rock Sites of Cappadocia in Central Anatolia, Turkey, registered in 'Unesco World Heritage Center' list since 1985 thanks to its spectacular landscape entirely sculpted by erosion, its rock-hewn sanctuaries providing unique evidence of Byzantine art in the post-iconoclastic period, its dwellings, troglodyte villages and underground cities. The Uçhisar village is one of the important sites in the region where the vernacular architecture is still present, protected and reused by transformation projects respecting the existing architectural heritage and local architectural identity.

#### Keywords

Cultural Heritage, Re-Use, Restoration, Enhancement, Tourism.

**XXXV SALÓN TECNOLÓGICO DE LA CONSTRUCCIÓN EXCO 2020**  
**INTERNATIONAL ITINERANT EXHIBITION "RESEARCH IN BUILDING ENGINEERING – EXCO'20"**

**"EREDITA' E ARCHITETTURA VERNACOLARE" (POSTER 1)**  
**UCHISAR, CAPPADOCIA**  
**"HERITAGE AND VERNACULAR ARCHITECTURE" (POSTER 1)**  
**UCHISAR, CAPPADOCIA**



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 Giuseppe Teto\_Valerio Sorice\_Giuseppe De-benedictis\_Francesco Di Pece\_Antonio Mancini\_Alice Mastroviti\_Emilia Signorile

**INQUADRAMENTO TERRITORIALE/TERRITORIAL FRAMEWORK**

L'area di progetto nel villaggio di Uchisar di ridotta estensione ha avuto bisogno di un notevole impegno; nello studio dei vari aspetti della cultura rocciosa e del vivere nel sotterraneo, sono stati coinvolti studenti che, con i loro studi mirati hanno consentito di guardare alle architetture scavate sotto diversi aspetti, dalla decorazione e dagli apparati pittorici, alla comprensione degli ambienti, la loro organizzazione e dell'uso fino alla lettura di un esteso sistema abitativo e produttivo proprio dell'area e che ha creato un paesaggio varientemente antropizzato e complesso.



Area di progetto/Project area

**INQUADRAMENTO URBANISTICO/URBANISTIC FRAMEWORK**

È dunque emersa con decisione la capacità dei popoli che hanno abitato queste aree, di adattarsi all'ambiente in cui hanno vissuto ma trasformando questo sito a creare insediamenti perfettamente organizzati, dotati di tutte le attrezzature indispensabili per una vita funzionale, capace di soddisfare le esigenze del vivere; una funzionalità che ritroviamo anche negli ambienti di culto, realizzati con capacità e gusto, a volte finemente scolpiti e decorati, riprendendo schemi, tipologie impianti e modelli delle architetture "sub divo".



Area di progetto/Project area

**SUDDIVISIONE AREE/AREA BREAKDOWN**

L'area da preservare e trasformare durante il seminario fa parte di un quartiere sulle pendici orientali del villaggio di Uchisar. La superficie dei 14 blocchi, la maggior parte dei casi adiacenti, è di circa 1600 mq, non incluse nell'area le parti scavate rupestri sotterranee.



Area di progetto/Project area

**SUDDIVISIONE AREE/AREA BREAKDOWN**

L'analisi morfologica definirà le caratteristiche degli spazi e degli edifici scavati nella roccia esistenti e la loro connessione tra loro nel sito del progetto e il layout del villaggio di Uchisar mettendo in evidenza le caratteristiche topografiche, i vari sistemi e strutture che costituiscono le aree di insediamento nel sito di progetto nel villaggio.



Area di progetto/Project area

**AREA 1 "WIYANAWANDA"**

Il gruppo "WIYANAWANDA" ha realizzato un progetto partendo dalla "Cappadocia" che appare essere una terra arida e abbandonata, ma il suo paesaggio è temperato ed ha un'importante cultura contadina. Il territorio ha una grande importanza per la viticoltura. Per questa ragione il progetto è stato chiamato "wiyawanda" che significa il paese del vino. Già nel 1400 a.C. il vino era un prodotto importante per consumo e commercio. Oggi il vino è coltivato tra Kayseri e Urgüp.



**AREA 2 "EXCAVEBITION"**

Il gruppo "EXCAVEBITION" ha come scopo progettuale il recupero e la rifunzionizzazione dell'area d'intervento. Sono stati previsti degli spazi espositivi e progettuali tramite l'installazione di una pavimentazione sospesa con annessa climatizzazione mista naturale-forzata. Inoltre è stata prevista la sostituzione del solaio preesistente in calcestruzzo armato con un solaio in vetro strutturale e travi di acciaio.



**AREA 3 "UCHISAR BE-CULTURE"**

Il gruppo "UCHISAR BE-CULTURE" ha iniziato con l'analisi del sito evidenziando l'aumento del numero di turisti che visitano la Cappadocia ed il divario tra residenti e turisti è aumentato enormemente. Tenendo presente questo contesto, è necessario uno spazio in cui residenti, turisti e ricercatori possano interagire. Diventa uno spazio rilassante e libero per l'interazione socio-culturale che permette a chiunque di godere delle viste spettacolari della Cappadocia e dei servizi offerti da Be-Culture.







CATALOGUE  
CATÁLOGO

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