



# **IFireSS 2017**

## **2<sup>nd</sup> International Fire Safety Symposium**

Napoli,  
*Giugno 7-9, 2017*

*Organizzato da:*

Università degli Studi di Napoli Federico II, Dipartimento di Strutture per l'Ingegneria e l'Architettura  
CIB (International Council for Research and Innovation in Building and Construction)

## INTRODUZIONE

Il 2<sup>nd</sup> International Fire Safety Symposium 2017 (IFireSS 2017) si terrà presso l'Università di Napoli Federico II nei giorni 7-9 Giugno 2017, nelle sale del Centro Congressi Federico II sito in via Parthenope a Napoli. Il Symposium è organizzato dal Di.St. - Dipartimento di Strutture per l'Ingegneria e l'Architettura dell'Università di Napoli Federico II e dal CIB (International Council for Research and Innovation in Building and Construction) e rappresenta la seconda edizione dell'International Fire Safety Symposium, la cui prima edizione si è tenuta a Coimbra (Portogallo) nel 2015. Il Presidente del Comitato Organizzatore è il Prof. Emidio Nigro del Di.St..

Il Symposium ha l'obiettivo di contribuire allo scambio di idee e conoscenze tra gli esperti internazionali e nazionali del settore della Sicurezza Antincendio e di raccogliere e divulgare i risultati più avanzati della ricerca scientifica, delle esperienze tecnico-professionali e dell'industria, delle attività normative e dei Vigili del Fuoco sul tema della Ingegneria della Sicurezza Antincendio. Il Symposium si tiene con il patrocinio di varie associazioni tecnico-scientifiche internazionali e nazionali e sotto gli auspici del Corpo Nazionale dei Vigili del Fuoco.

Gli argomenti principali del Symposium sono la *Fire Safety Engineering* (Ingegneria della Sicurezza Antincendio), il comportamento termomeccanico dei materiali, l'analisi termomeccanica delle strutture soggette ad incendio, la modellazione dell'incendio, la valutazione del rischio incendio, l'evoluzione delle costruzioni in tema di sicurezza antincendio, la progettazione antincendio e casi-studio, l'evoluzione delle normative tecniche specifiche, nonché gli aspetti fisico-chimici dell'incendio e la reazione al fuoco. Il Symposium è rivolto alla comunità scientifica internazionale e nazionale ed ai rappresentanti dell'industria, del mondo professionale, dei Vigili del Fuoco e di enti pubblici e privati, al fine di stimolare il dibattito sulle questioni critiche riguardanti la Sicurezza Antincendio delle Costruzioni.

Il Comitato Scientifico del Symposium annovera alcuni tra i principali esperti internazionali e nazionali della Sicurezza Antincendio.

La lingua ufficiale della conferenza è l'inglese.

## RICONOSCIMENTO CREDITI FORMATIVI

Il Consiglio Nazionale degli Ingegneri ha dato il proprio patrocinio all'evento e riconosce ai professionisti italiani 18 Crediti Formativi Professionali (CFP) per la partecipazione al convegno. Per gli interessati la quota di partecipazione è 250 € e comprende:

- Partecipazione alle sessioni scientifiche;
- Atti del convegno in formato digitale;
- Pranzi e coffee breaks

## ARGOMENTI DELLA CONFERENZA

Il Symposium sarà articolato in sessioni plenarie e parallele, sui seguenti argomenti:

- Session A - Fire safety engineering
- Session B - Fire safety of structures
- Session C - Thermo-mechanical properties of materials
- Session D - Numerical modelling of structures
- Session E - Fire chemistry, physics and combustion
- Session F - Computational fluid dynamics
- Session G - Smoke control, evacuation and firefighting
- Session H - Fire risk assessment
- Session I - Construction trends, practical application and case studies

## KEYNOTES

### **Keynotes 1- Strategies for mitigating fire hazards in transportation infrastructures**

Prof. Venkatesh Kodur, Professor and Director of Center on Structural Fire Engineering and Diagnostics, Dept. of Civil & Environmental Engineering, Michigan State University, USA.

### **Keynotes 2: Research perspective on structural fire safety - Fewer tests, more experiments**

Prof. Luke Bisby, Professor and Head of Institute for Infrastructure & Environment, School of Engineering, University of Edinburgh, Scotland, UK.

### **Keynotes 3: Travelling Fires for Structural Design**

Prof. Guillermo Rein, Professor at Department of Mechanical Engineering of Imperial College, London, UK.

## QUOTE DI PARTECIPAZIONE

	Quote
Regular	450 €
Full	600 €
Student	250 €
Social Dinner	100 €
Accompanying Person	250 €

Quota “Regular”: partecipazione a tutte le sessioni; atti in versione cartacea e digitale; light lunch, coffee break, social dinner.

Quota “Full”: rispetto alla “Regular” comprende programma sociale esteso (vedere sito web).

Quota “Student”: rispetto alla “Regular”: atti in sola versione digitale; non comprende la social dinner.

Quota Accompagnatori: social dinner e programma sociale esteso (vedere sito web).

## COMITATO ORGANIZZATORE E SEGRETERIA ORGANIZZATIVA

Emidio Nigro (Chairman)\*

Antonio Bilotta (Co-Chairman)\*

Donatella de Silva\*

Anna Ferraro\*

Alberto Compagnone\*

Romeo Tomeo\*

\*Di.St., Università degli Studi di Napoli Federico II

Per qualsiasi altra informazione consultare il sito ufficiale della conferenza ([www.ifiress2017.unina.it](http://www.ifiress2017.unina.it)) o contattare la segreteria all'indirizzo: [ifiress2017@unina.it](mailto:ifiress2017@unina.it)

# Program at a glance

## IFireSS2017 Symposium

Naples 7-9th June 2017

University of Naples Federico II



Organized by:

University of Naples Federico II - DiSt - Department of Structures for Engineering and Architecture

CIB - International Council for Building

Wednesday - 7th June	8:00 - 9:00	Registration
	9:00 - 9:45	Opening Session
	9:45 - 10:30	Keynote - Prof. V. Kodur - Strategies for mitigating fire hazards in transportation infrastructures
	10:30 - 11:00	Coffee break
	11:00 - 13:00	Session A1
	13:00 - 13:15	Knauf (Fire protection systems for construction)
	13:15 - 14:30	Lunch
	14:30 - 16:00	Sessions A2, C1
	16:00 - 16:30	Coffee break
	16:30 - 18:00	Sessions B1, E1
	19:00-20:30	Napoli Sotterranea Tour
	20:30-23:30	Ice breaking with light dinner
	Thursday - 8th June	8:00 - 9:00
9:00 - 9:45		Keynote - Prof. L. Bisby - Research perspective on structural fire safety - Fewer tests, more experiments
9:45 - 10:45		Session B2
10:45 - 11:00		Mapei
11:00 - 11:05		Solido Consult (Design in fire situation)
11:05 - 11:30		Coffee break
11:30 - 13:00		Short Presentations - Sessions A3, B3, B4, C2, I1, F1
13:00 - 14:15		Lunch
14:30 - 16:00		Sessions B5, H1
16:00 - 16:30		Coffee break
16:30 - 18:00		Sessions D1,G1
20:00-23:30		Social Dinner
Friday - 9th June		8:00 - 9:00
	9:00 - 9:45	Keynote - Prof. G. Rein - Travelling Fires for Structural Design
	9:45 - 10:45	Session B6
	10:45 - 11:15	Coffee break
	11:15 - 13:00	Sessions D2, F2
	13:00 - 14:30	Lunch
	14:30 - 16:00	Session B7, I2
	16:00 - 16:30	Coffee break
	16:30 - 17:00	Session B8, I3
	17:00 - 17:30	Discussion on the Symposium outputs and Closing Ceremony

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Naples 7-9th June 2017

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Wednesday - 7th June

8:00 - 9:00	<b>Registration</b>			
9:00 - 9:45	<b>Opening Session</b> <i>Prof. Gaetano Manfredi, Rector of the University of Naples Federico II</i> <i>Prof. Raffaele Landolfo, Director of the Department of Structures for Engineering and Architecture, University of Naples Federico II</i> <i>Prof. George Hadjisophocleous, Chairman of the Commission W14-Fire Safety of the CIB</i> <i>Dr. Eng. Gioacchino Giomi, Head of the Italian National Fire Rescue and Service (Capo del Corpo Nazionale dei Vigili del Fuoco)</i> <i>Prof. Edoardo Cosenza, President of the Italian Committee of Structural Engineering UNI-CIS related to CEN/TC 250</i> <i>Prof. Antonio Occhiuzzi, Director of the Construction Technologies Institute of National Research Council (ITC-CNR)</i> <i>Dr. Eng. Roberto Orvieto, Italian National Council of Engineers</i> <i>Prof. Emidio Nigro, Chairman of IFireSS 2017 Symposium</i>			
9:45 - 10:30	<b>Keynote - Prof. V. Kodur - Strategies for mitigating fire hazards in transportation infrastructures</b>			
10:30 - 11:00	<b>Coffee break</b>			
11:00 - 13:00	<b>Session A1</b>			
	Time	Paper ID	Paper Title - Authors	Speaker
	11:00	A1.1	11 <b>Fire risk assessment of multi-story buildings based on fragility analysis</b> <i>Thomas Gernay, Negar Elhami Khorasani, Maria Garlock</i>	0
	11:12	A1.2	69 <b>Fire resistance assessment of a timber/RC warehouse exposed to real fire</b> <i>Seddik Sakaji, Gabriel Giovannelli, Hong-Hai Nguyen</i>	0
	11:24	A1.3	184 <b>Full-scale fire tests on a cold-formed steel framed building in fire following earthquakes</b> <i>Praveen Kamath, Brian J. Meacham, Xiang Wang, Tara C. Hutchinson</i>	0
	11:36	A1.4	8 <b>Structural fire design of EAR strengthened RC beams</b> <i>Stijn Matthys</i>	0
	11:48	A1.5	175 <b>A simplified model of travelling fire by the aid of HRR-parametric curves</b> <i>Kamila Cábová, František Wald</i>	0
	12:00	A1.6	114 <b>Fire behaviour of ETICS with organic insulation: the skin is all!</b> <i>Antonio Bonati, Annalisa Franco, Vittorio Galimberti</i>	0
	12:12	A1.7	141 <b>Fire safety design and fire performance test methods of building facades</b> <i>Lamberto Mazziotti, Piergiacomo Cancelliere, Sergio Schiaroli</i>	0
	12:24	A1.8	174 <b>A comparison of perceived and measured visibility in a smoke filled corridor</b> <i>Richard Emberley, Jeronimo Carrascal, Angus Law, Alexander Nicolaidis, Andrea Lawton, Michael Conway, José L. Torero</i>	0
	12:36	A1.9	200 <b>A probabilistic model for the prediction of the energy release rate from the combustion of electrical cables</b> <i>Tristan Hehnen, Lukas Arnold, Marco Andreini, Saverio La Mendola</i>	0
13:00 - 13:15	<b>Knauf (Fire protection systems for construction)</b>			
13:15 - 14:30	<b>Lunch</b>			

Wednesday - 7th June

14:30 - 16:00	<b>Session A2</b>			
	Time	Paper ID	Paper Title - Authors	Speaker
	14:30	A2.1	108 <b>The new Italian fire code: a more performance based approach to fire safety design</b> <i>Piergiacomo Cancelliere, Luca Ponticelli, Giordana Gai, Emanuele Gissi, Mauro Caciolai</i>	0
	14:42	A2.2	32 <b>Thermo-fluid-dynamic and thermo-structural aspects for the application of Fire Safety Engineering to the Courthouse building of Naples</b> <i>Emidio Nigro, Nicola Bianco, Assunta Andreozzi, Giuseppe Cefarelli, Iolanda Del Prete, Anna Ferraro, Marilena Musto, Giuseppe Rotondo</i>	0
	14:54	A2.3	77 <b>Performance-based approach for complex structure design</b> <i>Paolo Setti, Lamberto Mazziotti, Piergiacomo Cancelliere, Samuele Sassi, Mauro Madeddu, Mehmet Yenisan</i>	0
	15:06	A2.4	203 <b>Application of Fire Safety Engineering to steel structures of industrial halls according to national regulations</b> <i>Sandro Pustorino, Paola Princi, Emidio Nigro, Anna Ferraro, Franco Bontempi, Chiara Crosi, Luca Ponticelli, Claudio Mastrogiuseppe</i>	0
	15:18	A2.5	95 <b>A BIM-based approach supporting Fire Engineering</b> <i>Giuseppe Gaspare Amaro, Antonella Raimondo, David Erba, Francesca Maria Ugliotti</i>	0
	15:30	A2.6	197 <b>Climatic changes and cultural heritage: the role of FSE in the STORM project</b> <i>Stefano Marsella, Giovanni Bosco Concetti, Nicolò Sciarretta</i>	0
	15:42	A2.7	74 <b>A comparison among different fire radiation calculation methods applied to building separation distances</b> <i>Vincenzo Cascioli, Michele Urbani, Lucia Marchetti</i>	0
	<b>Session C1</b>			
	Time	Paper ID	Paper Title - Authors	Speaker
	14:30	C1.1	46 <b>Enhancing thermal properties of fly-ash geopolymer by tailoring mix design and alkali cation type</b> <i>Mukund Lahoti, Wong Keng Khang, En-Hua Yang, Kang Hai Tan</i>	0
	14:42	C1.2	83 <b>Improved fire resistance by using different supplementary materials</b> <i>György L. Balázs, Katalin Kopecskó, Éva Lublőy</i>	0
	14:54	C1.3	91 <b>Hot dip galvanized steel constructions under fire exposure</b> <i>Christian Gaigl, Martin Mensinger</i>	0
	15:06	C1.4	124 <b>Novel test methods for studying the fire performance of thin intumescent coatings</b> <i>Andrea Lucherini, Cristian Maluk</i>	0

	15:18	C1.5	151	<b>Reinforced concrete under fire: thermal path reconstruction</b> <i>Paola Meloni, Fausto Mistretta, Flavio Stochino, Gianfranco Carcangiu</i>	0
	15:30	C1.6	170	<b>Effect of elevated temperatures on shear transfer strength of concrete: A review</b> <i>Salah R. Sarhat, Mark F. Green</i>	0
	15:42	C1.7	183	<b>Mitigation of concrete spalling in fire using recycled fibres from waste tyres</b> <i>Fabio Figueiredo, Shan-Shan Huang, Harris Angelakopoulos, Kypros Pilakoutas, Ian Burgess</i>	0
16:00 - 16:30		<b>Coffee break</b>			

<b>Wednesday - 7th June</b>	<b>Session B1</b>				
	Time		Paper ID	Paper Title - Authors	Speaker
	16:30	B1.1	26	<b>Experimental analysis on the behaviour of cold-formed steel columns with stiffeners subjected to fire</b> <i>João P. C. Rodrigues, Luis Laim</i>	0
	16:42	B1.2	112	<b>Advanced finite element thermal model developed for slim-floors</b> <i>Ana Espinós, Vicente Alberó, Manuel L. Romero, Antonio Hospitaler</i>	0
	16:54	B1.3	62	<b>Structural steel columns subjected to localised fires</b> <i>Felix Wiesner, Grant Peters, Luke Bisby, Rory Hadden</i>	0
	17:06	B1.4	1	<b>Investigation of the effect on the shear connection of composite beams under various fire exposure</b> <i>Samuel Pfenning, Sven Brunkhorst, Martin Mensinger, Jochen Zehfuß</i>	0
	17:18	B1.5	64	<b>Alternative designs to improve behavior of thin steel plates in pure shear under fire</b> <i>Maria E. Moreyra Garlock, José Alós-Moya, Ignacio Payá-Zaforteza</i>	0
	17:30	B1.6	82	<b>Comparing the behavior of circular concrete filled double-skin with inner ring hollow columns exposed to fire</b> <i>Aline Lopes Camargo, João P. C. Rodrigues, Ricardo Hallal Fakury, Tiago A. C. Pires</i>	0
	17:42	B1.7	18	<b>Effect of strength and confining reinforcement on fire performance of reinforced concrete columns</b> <i>Asif H. Shah, Umesh K. Sharma</i>	0
	<b>Session E1</b>				
Time		Paper ID	Paper Title - Authors	Speaker	
16:30	E1.1	50	<b>On transition from pool fires to fire whirls inside a large compartment</b> <i>Alexis Cantizano, Pablo Ayala, Cándido Gutiérrez-Montes</i>	0	
16:42	E1.2	204	<b>Effect of venting for mitigation of pool fire involving diathermic oil</b> <i>Almerinda Di Benedetto, Roberto Sachirico, Valeria Di Sarli</i>	0	
16:54	E1.3	84	<b>An experimental study of medium-scale compartment fire tests with exposed cross laminated timber</b> <i>Carmen Gorska, Juan P. Hidalgo, Jose L. Torero</i>	0	
17:06	E1.4	121	<b>Fire in hollow spaces: short circuit as ignition source and the role of ventilation</b> <i>Suet Kwan Koh, Martin Mensinger, Patrick Meyer, Peter Schaumann</i>	0	
17:18	E1.5	178	<b>Hazard distance for common structures in a hydrogen refuelling station</b> <i>Paola Russo, Damiano Salvati, Armando De Rosa, Michele Mazza, Luigi De Angelis</i>	0	
17:30	E1.6	202	<b>Temperature and laser Doppler velocimetry measurements of a spill plume in a small scale experiment with an electrical heat source</b> <i>Alexander Belt, Lukas Arnold, Leonie Rommeswinkel, Anna Tscherniewski</i>	0	
17:42	E1.7	172	<b>Fire safety of metal chimneys in real use in households</b> <i>Perttu Leppänen, Mikko Malaska</i>	0	
19.00-20.30	<b>Napoli Sottterranea Tour</b>				
20.30-23.30	<b>Ice breaking with light dinner</b>				

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Thursday - 8th June	8:00 - 9:00	<b>Registration</b>				
	9:00 - 9:45	<b>Keynote - Prof. L. Bisby - Research perspective on structural fire safety - Fewer tests, more experiments</b>				
	9:45 - 10:45	<b>Session B2</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		9:45	B2.1	147	<b>A contribution to the thermo-mechanical characterization of cement mortars at high temperature</b> <i>Patrick Bamonte, Pietro G. Gambarova</i>	0
		9:57	B2.2	6	<b>Experimental analysis on the effectiveness of intumescent coatings in fire</b> <i>Donatella de Silva, Antonio Bilotta, Emidio Nigro</i>	0
		10:09	B2.3	66	<b>Numerical and experimental investigation of the thermal behavior of coated cellular beams with intumescent coatings at elevated</b> <i>Hooman Atefi, Ali Nadjai, Faris Ali</i>	0
		10:21	B2.4	47	<b>Fire behavior of post-installed rebars: full scale experimentation on a cantilever concrete slab</b> <i>Mohamed Amine Lahouar, Nicolas Pinoteau, Jean-François Caron, Gilles Forêt</i>	0
	10:33	B2.5	133	<b>Test of high rise concrete wall in fire conditions</b> <i>Duc Toan Pham, Mingquan Yang, Patrick de Buhan, Nicolas Pinoteau, Philippe Rivillon, Romuald Avenel</i>	0	
	10:45 - 11:00	<b>Mapei</b>				
11:00 - 11:05	<b>Solido Consult (Design in fire situation)</b>					
11:05 - 11:30	<b>Coffee break</b>					

Thursday - 8th June	11:30 - 13:00	<b>Short Presentations</b>				
		<b>Session A3</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:30	A3.1	110	<b>An IT tool for assessing a risk of accidents in industrial facilities posing a threat outside their areas</b> <i>Dariusz Wróblewski, Dorota Rteger, Wojciech Klapsa, Magdalena Pokora</i>	0
		11:35	A3.2	128	<b>Fire in a large shopping centre</b> <i>Nenad Papić</i>	0
		<b>Session C2</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:30	C2.1	51	<b>Tailoring flyash geopolimer mix design to attain varigated thermal performance</b> <i>Mukund Lahoti, Kang Hai Tan, En-Hua Yang, Stephen Fransceda Wijaya</i>	0
		11:35	C2.2	4	<b>Combined effects on residual strenght of a high performance concrete exposed to fire</b> <i>Emmanuel Annerel, Luc Taerwe</i>	0
		11:40	C2.3	25	<b>Modelling heat conduction in a reinforced concrete element and sensitivity study</b> <i>José Manuel Urgel, Alexis Canizano, Pablo Ayala, Cristian Maluk</i>	0
11:45	C2.4	57	<b>Modelling of hygro-thermal behaviour of normal strength concrete at elevated temperatures</b> <i>Jin-Cheng Liu, Kang Hai Tan</i>	0		
11:50	C2.5	139	<b>Compressive strenght at high temperature of recycled tire aggregate concretes</b> <i>Cristina Calmeiro dos Santos, João Paulo C. Rodrigues</i>	0		



Thursday - 8th June	11:30 - 13:00	<b>Session B3</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:55	B3.1	180	<b>Numerical and experimental investigation of the structural behavior of perforated beams at elevated temperatures</b> <i>Hooman Atefi, Ali Nadjai, Faris Ali</i>	0
		12:00	B3.2	37	<b>Fire resistance of linear joint seals with movement capability – result comparison</b> <i>Bartłomiej Sędlak, Paweł Roszkowski, Paweł Sulik</i>	0
		12:05	B3.3	161	<b>Embedment strength of nailed timber joints at high temperatures</b> <i>Poliana D. de Moraes, João P. C. Rodrigues, Patrícia A. R. da Silva</i>	0
		12:15	B3.5	31	<b>Behaviours of thin plate shear connections modeled by component based method at elevated temperature</b> <i>Tugba Özdemir Maçlum</i>	0
		12:20	B3.6	103	<b>Novel approach to assessment of steel silo in external fire conditions</b> <i>Paweł Roszkowski, Paweł Sulik, Marek Lukowski, Piotr Turkowski</i>	0
		<b>Session I1</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:55	I1.1	192	<b>Side effect of green retrofitting on building fire risk</b> <i>Erminia Attaianesi, Antonio Bilotta, Donatella De Silva</i>	0
		12:00	I1.2	104	<b>Fire resistance of spandrels in aluminium glazed curtain walls</b> <i>Paweł Sulik, Grzegorz Kimbar, Bartłomiej Sędlak</i>	0
		12:05	I1.3	60	<b>Coded survey in the fire investigation activity</b> <i>Marcello Mangione, Francesco Saverio Ciani, Franco Bontempi</i>	0
		12:10	I1.4	185	<b>Fire safe installation of metal chimneys through plastic-based insulation materials</b> <i>Mikko Malaska, Perttu Leppänen</i>	0
		12:15	I1.5	48	<b>External walls claddings - study on impact of fixing methods in case of fire</b> <i>Jacek Kinowski, Bartłomiej Sędlak, Paweł Sulik</i>	0
12:20	I1.6	111	<b>A new feature for fire protection: Oxygen Reduction Systems</b> <i>Andrea Casu</i>	0		

Thursday - 8th June	11:30 - 13:00	<b>Session B4</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		12:25	B4.1	153	<b>Case study of a reinforced concrete industrial warehouse exposed to fire: post fire investigation and retrofitting</b> <i>Fausto Mistretta, Flavio Stochino</i>	0
		12:30	B4.2	27	<b>Parametric numerical analyses of cold-formed steel beams under fire conditions</b> <i>Luís Laím, João Paulo C. Rodrigues</i>	0
		12:35	B4.3	136	<b>Load bearing capacity of anchors in thermally-damaged reinforced concrete</b> <i>Hlavička Viktor, Éva Lublóy, Lajos Gábor Takács</i>	0
		12:40	B4.4	107	<b>Fire in high-rise building under construction involving non combustible ACP (aluminium composite panels)</b> <i>Michele Maria Laveglia</i>	0
		12:45	B4.5	118	<b>Global fire behaviour of steel structures – numerical modelling</b> <i>Hugo Nunes, José Correia, António Correia, Pedro Tavares</i>	0
		12:50	B4.6	88	<b>Performance of steel-concrete composite bridges in fire</b> <i>Sandro Mautone, Antonio Bilotta, Emidio Nigro</i>	0
		<b>Session F1</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		12:30	F1.2	30	<b>Contribution to the definition of best practices for taking wind into account in fire safety engineering studies regarding smoke control</b> <i>Anne Thiry-Muller, Aurélien Thiry-Muller</i>	0
		12:35	F1.3	13	<b>The principles of computing the water delivery time in sprinkler installations and in dry hydrants networks</b> <i>Alberto Tinaburri, Fabio Alaimo Ponziani, Valter Ricci</i>	0
		12:40	F1.4	56	<b>Fire doors in tunnels emergency exits – smoke control and fire resistance tests</b> <i>Daniel Izdorczyk, Bartłomiej Sędlak, Paweł Sulik</i>	0
		12:45	F1.5	132	<b>Radiation from vertical rectangular skew fire opening to boundary</b> <i>Lim Eng Soon, Lim Tse Jean</i>	0
		13:00 - 14:15	<b>Lunch</b>			

		Session B5			
Time	Paper ID	Paper ID	Paper Title - Authors	Speaker	
14:30	B5.1	54	<b>Effect of incomplete expansion of intumescent coating on mechanical response of steel frame in fire</b> <i>Anita Ogrin, Miran Saje, Tomaž Hozjan</i>	0	
14:42	B5.2	35	<b>Effect of heating rates in natural fires on the thermal performance of a solvent-borne intumescent coating</b> <i>Peter Schumann, Waldemar Weisheim</i>	0	
14:54	B5.3	68	<b>Bond shear stress-slip relationships for FRP-NSM system at elevated temperature</b> <i>Alessandro Proia, Stijn Matthys</i>	0	
15:06	B5.4	52	<b>Performance of GFRP stay-in-place formwork after real and simulated fire damage</b> <i>Benjamin Nicoletta, Joshua Woods, John Gales, Amir Fam</i>	0	
15:30	B5.5	10	<b>Structural performance of FRP-RC Slabs after two-hour fire exposure</b> <i>Guillermo Claure, Francisco De Caso y Basalo, Antonio Nanni</i>	0	
15:18	B5.6	189	<b>Effect of high temperature on the bond between TRM and FRP to concrete substrates</b> <i>Saad Raoof, Dionysios Bournas</i>	0	
15:42	B5.7	7	<b>Experimental investigation on the flexural behavior of RC beams strengthened with CFRP laminate strips subjected to fire</b> <i>Thiago B. Carlos, João P. C. Rodrigues, Rogério C. A. de Lima, Dhionis Dhima</i>	0	
		Session H1			
Time	Paper ID	Paper ID	Paper Title - Authors	Speaker	
14:30	H1.1	125	<b>An innovative approach assuring the successful repair of fire-damaged reinforced concrete structures</b> <i>Thomas Kline</i>	0	
14:42	H1.2	65	<b>Derivation of practical reliability-based post-fire assessment tools for structural elements</b> <i>Ruben Van Coile, Robby Caspeele, Luc Taerwe</i>	0	
14:54	H1.3	100	<b>Maintenance of PV systems: how to reduce fire risk and enhance the overall reliability of PV systems</b> <i>Piergiacomo Cancelliere, Claudio Licioni</i>	0	
15:06	H1.4	93	<b>Fire resistance evaluation through fragility curves</b> <i>Alberto Compagnone, Antonio Bilotta, Emidio Nigro</i>	0	
15:18	H1.5	92	<b>Probabilistic thermo-mechanical analysis of a concrete tunnel lining subject to fire</b> <i>Roberto Souza, Francesco Rosignuolo, Marco Andreini, Saverio La Mendola, Christian Knaust</i>	0	
15:30	H1.6	44	<b>Mitigating post-earthquake fire risks</b> <i>Geoff Thomas</i>	0	
15:42	H1.7	113	<b>Fire risk assessment in old urban areas – Coimbra Old Town</b> <i>Cristina Santos, José Correia, António Correia, Susana Meneses, Pedro Tavares</i>	0	
16:00 - 16:30	<b>Coffee break</b>				

		Session D1			
Time	Paper ID	Paper ID	Paper Title - Authors	Speaker	
16:30	D1.1	5	<b>A co-rotational nonlinear two dimensional beam element for the analysis of steel structures subjected to fire loading</b> <i>Andrea Morbioli, Jean-Marc Battini, Nicola Tondini</i>	0	
16:42	D1.2	21	<b>Effect of severe temperatures on behaviour of oval steel columns</b> <i>Faris Ali, Ali Nadjai</i>	0	
16:54	D1.3	177	<b>Fire resistance of RC structures designed according to different design codes</b> <i>Milivoje Milanović, Meri Cvetkovska, Cvetanka Chifliganec, Petar Knežević</i>	0	
17:06	D1.4	39	<b>Fire resistance of concrete slabs acting in compressive membrane reaction</b> <i>Tom Molken, Thomas Gernay, Robby Caspeele</i>	0	
17:18	D1.5	45	<b>Relationships between redundancy and collapse modes for steel frames at fire in case of considering variations in steel strength</b> <i>Taiyu Sato, Fuminobu Ozaki</i>	0	
17:30	D1.6	101	<b>Behaviour of timber-concrete beams exposed to natural fire</b> <i>Johan Pyykkö, Anita Ogrin, Tomaž Hozjan</i>	0	
17:42	D1.7	115	<b>Comparative analysis on performance and fire resistance of RC frame structure in case of different fire scenarios</b> <i>Cvetanka Chifliganec, Meri Cvetkovska, Milivoje Milanovic</i>	0	
		Session G1			
Time	Paper ID	Paper ID	Paper Title - Authors	Speaker	
16:30	G1.1	3	<b>Evacuation of bedridden occupants: experimental research outcomes</b> <i>Niels Strating, Ruud van Herpen, Wim Zeiler</i>	0	
16:42	G1.2	9	<b>Tuning procedure for evacuation models based on egress drills</b> <i>Giordana Gai, Piergiacomo Cancelliere, Michele Mazzaro, Enzo Cartapati</i>	0	
16:54	G1.3	42	<b>Corridor compartmentation using air barriers in case of fire</b> <i>Grzegorz Krajewski, Wojciech Węgrzynski, Paweł Sulik</i>	0	
17:06	G1.4	116	<b>Modelling the egress in higher education buildings – Old Buildings of University of Coimbra</b> <i>Claude Almeida, José Correia, António Correia, Pedro Tavares</i>	0	
17:18	G1.5	157	<b>Numerical evaluation of RSET for road tunnels</b> <i>Giordana Gai, Piergiacomo Cancelliere, Elisabeta Carattin, Enzo Cartapati</i>	0	
17:30	G1.6	182	<b>Infrared active illumination enables clear vision through fire</b> <i>Teresa Cacace, Vittorio Bianco, Melania Paturzo, Pietro Ferraro</i>	0	
20.00-23.30	<b>Social Dinner</b>				

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Thursday - 8th June

# IFireSS2017 Symposium

Naples 7-9th June 2017

University of Naples Federico II



**Organized by:**

University of Naples Federico II - DiSt - Department of Structures for Engineering and Architecture  
CIB - International Council for Building

<b>Friday - 9th June</b>	8:00 - 9:00	<b>Registration</b>				
	9:00 - 9:45	<b>Keynote - Prof. G. Rein - Travelling Fires for Structural Design</b>				
	9:45 - 10:45	<b>Session B6</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		9:45	B6.1	33	<b>Response to fire of CFRP prestressed high strength concrete slabs after eight years of curing</b> <i>Abdulrahman Zaben, Ieuan Rickard, Luke Bisby, Giovanni Terrasi</i>	0
		9:57	B6.2	145	<b>Behaviour of high strength concretes containing recycled coarse aggregates subjected to high temperature</b> <i>P. Pliya, D. Cree, A-L. Beaucour, H. Hajiloo, M.F. Green, A. Noumowe</i>	0
		10:09	B6.3	34	<b>Experimental analysis of axially restrained reinforced concrete beams subjected to fire</b> <i>Gabriela B. M. L. Albuquerque, Augusto O. B. Silva, João P. C. Rodrigues, Valdir P. Silva</i>	0
10:21	B6.4	188	<b>Effectiveness of TRM versus FRP jacketing at high temperature on shear strengthening of RC beams</b> <i>Tetta Zoi, Bourmas Dionysios</i>	0		
10:32	B6.5	160	<b>Fire safety of structures collapse load multipliers of masonry barrel vault exposed to fire</b> <i>Federico Carannante, Luca Ponticelli, Mauro Caciolai</i>	0		
10:45 - 11:15	<b>Coffee break</b>					

<b>Friday - 9th June</b>	11:15 - 13:00	<b>Session D2</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:15	D2.1	49	<b>Modelling reinforced concrete slabs in furnace tests: validation &amp; sensitivity to input parameters</b> <i>Emran Baharudin, Ieuan Rickard, Luke Bisby, Tim Stratford</i>	0
		11:27	D2.2	163	<b>On the extension of a plastic-damage model to high temperature and fire</b> <i>Lomonte, Kalaba, Bamonte</i>	0
		11:39	D2.3	20	<b>Fire safety assessment of concrete lining of a railway tunnel</b> <i>Donatella de Silva, Eduardo di Marino, Agostino Viglione, Emidio nigro, Maurizio Pedicini</i>	0
		11:51	D2.4	194	<b>NLFEA of tunnel lining under fire conditions</b> <i>Patrizia Bernardi, Roberto Cerioni, Elena Michelini, Alice Sirico</i>	0
		12:03	D2.5	123	<b>Case studies of structural fire response simulation using OpenSees-SIFBuilder</b> <i>Liming Jiang, Mian Zhou, Asif Usmani</i>	0
		12:15	D2.6	43	<b>FE modelling for response of slim floor systems in fire and effects of intumescent coating</b> <i>Naveed Alam, Donatella de Silva, Ali Nadjai, Emidio Nigro</i>	0
		12:27	D2.7	134	<b>Adaptive analysis for performance-based fire protection of bridges</b> <i>Jenny Sideri, Pierre Ghisbain, Reza Imani, Luciana Balsamo, Ali Ashrafi</i>	0
		12:39	D2.8	196	<b>Numerical simulation of prestressed concrete bridges exposed to potential bushfire</b> <i>X. Q. Wu, F. T. K. Au</i>	0
		<b>Session F2</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		11:15	F2.1	70	<b>Temperature distribution in a large-area shopping hall in the case of a localized fire</b> <i>Mariusz Maslak, Michal Pazdanowski, Piotr Wozniczka</i>	0
		11:27	F2.2	38	<b>Comparison of longitudinal and transversal ventilation strategy of an underground metro station</b> <i>Wojciech Węgrzynski, Grzegorz Krajewski, Pawel Sulik</i>	0
		11:39	F2.3	78	<b>Post fire analyses of a long span roof structure</b> <i>Paolo Setti, Mauro Madeddu, Samuele Sassi, Giorgio Corbella, Marco Grigoletto</i>	0
		11:51	F2.4	191	<b>Compartment high-rise fire propagation dynamics and BIM implementation</b> <i>Timothy Onyenobi</i>	0
	12:03	F2.5	126	<b>Fire on prestressed reinforced concrete: CFD and FE thermo-mechanical simulation</b> <i>Fausto Mistretta, Alessio Serra, Flavio Stochino</i>	0	
12:15	F2.6	137	<b>Experimental and analytical investigation of steel high column subjected to localized pool fires.</b> <i>Walid Nadjai</i>	0		
12:27	F2.7	127	<b>Structural response of warehouse loadbearing structure to fire action</b> <i>Miljenko Mužević, Bernardin Peroš, Marija Jelčić Rukavina, Miodrag Drakulić</i>	0		
12:39	F2.8	155	<b>Control and suppression of sauna fires by water-mist systems</b> <i>Paolo E. Santangelo, Luca Tarozzi, Paolo Tartarini</i>	0		
13:00 - 14:30	<b>Lunch</b>					

Friday - 9th June	14:30 - 16:00	<b>Session B7</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		14:30	B7.1	81	<b>Critical analysis of normative development of the technical specification for interoperability of the rail system in the European Union concerning to the fire resistance of tunnels</b> <i>Teresa Alberini, Mauro Caciolai, Enzo Cartapati</i>	0
		14:42	B7.2	181	<b>Engineering the long-span roof of the new Bristol Arena for fire</b> <i>Iolanda Del Prete, Florian Block</i>	0
		14:54	B7.3	90	<b>Parametric analyses of fire resistance of steel columns subjected to car park fire scenarios</b> <i>Marion Charlier, François Hanus, Olivier Vassart</i>	0
		15:06	B7.4	173	<b>Single storey steel buildings exposed to localised fires</b> <i>Naveed Iqbal, Jovan Fodor, Joakim Sandström, Tim Heistermann, Milan Veljkovic</i>	0
		15:18	B7.5	162	<b>Full scale tests on the performance of timber-steel connections in real fires</b> <i>Samuel Bright Amankwah Boadi, George Hadjisophocleous</i>	0
		15:30	B7.6	97	<b>Masonry vaults made by calcareous stone under fire conditions</b> <i>Marianovella Leone, Maria Antonietta Aiello</i>	0
		15:42	B7.7	122	<b>Experimental research on structural concrete masonry walls subjected to fire</b> <i>Rúben F. R. Lopes, João P. C. Rodrigues, João M. Pereira, Paulo B. Lourenço</i>	0
		<b>Session I2</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		14:30	I2.1	2	<b>The effect of triple glazing of nearly Zero Energy buildings on their fire safety</b> <i>Ronald Huizinga, Ruud van Herpen, Wim Zeiler</i>	0
		14:42	I2.2	53	<b>Study on critical places for maximum temperature rise on unexposed surface of walls with butt jointed glazing test specimens</b> <i>Pawel Sulik, Bartomiej Sędlak, Jacek Kinowski</i>	0
		14:54	I2.3	165	<b>A review of the photovoltaic module and panel fire tests</b> <i>Piergiacomo Cancelliere, Giovanni Manzini, Michele Mazza</i>	0
		15:06	I2.4	67	<b>A performance based approach in Fire Engineering supports architects' creativity</b> <i>Giuseppe Gaspare Amaro, Michele Fronterre</i>	0
15:18	I2.5	98	<b>Impact of the ventilated air gap on fire propagation along wooden façade – An experimental study</b> <i>Mathieu Duny, Lars Boström, Dhionis Dhima, Jean Pierre Garo, Hai-Ying Wang</i>	0		
15:30	I2.6	130	<b>A case study on the evacuation of deep mega underground development in Singapore</b> <i>Yan Hao Ng, Minh Phuong Nguyen, Kang Hai Tan, Kian Wee Ng</i>	0		
15:42	I2.7	158	<b>A new test protocol for the evaluation of fire behaviour of external thermal insulation composite system for façade</b> <i>Lamberto Mazziotti, Sergio Schiaroli, Michele Castore, Silvio Messa, Maddalena Pezzani</i>	0		
16:00 - 16:30	<b>Coffee break</b>					

Friday - 9th June	16.30 - 17.00	<b>Session B8</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		16:30	B8.1	28	<b>Feasibility and usefulness of the simplified analytical approach to fire design of masonry structures</b> <i>F.Sciarretta</i>	0
		16:42	B8.2	17	<b>Influence of masonry infill on fire performance of an earthquake damaged RC frame.</b> <i>Asif H. Shah, Umesh K. Sharma</i>	0
		16:54	B8.3	96	<b>Optimal load resolution in fire resistance tests of orthotropic plates</b> <i>Grzegorz Kimbar, Pawel Roszkowski, Pawel Sulik</i>	0
		<b>Session I3</b>				
		Time	Paper ID	Paper Title - Authors	Speaker	
		16:30	I3.1	190	<b>Behavior of concrete structures in fire</b> <i>Éva Lublőy, Balázs L. György, Oliver Czoboly, Hlavička Viktor, Takács Lajos</i>	0
		16:42	I3.2	201	<b>Experimental and theoretical study on the arc bead by short circuit in fire scene</b> <i>Seungwoo Woo, Byungsun Moon, Youngjin Cho, Hongkuen Ji, Jungwoo Nam, Jinpyo Kim, Jaemo Ko, Namkyu Park</i>	0
		16:54	I3.3	59	<b>A comprehensive computerized investigative protocol for confined Fire Investigations (Stru.F.I.S.)</b> <i>Marcello Mangione, Franco Bontempi, Alessandro Marasco</i>	0
17:00 - 17:30	<b>Discussion on the Symposium outputs and Closing Ceremony</b>					

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	<b>TOPIC</b>
<b>Session A</b>	Fire safety engineering
<b>Session B</b>	Fire safety of structures
<b>Session C</b>	Thermomechanical properties of materials
<b>Session D</b>	Numerical modelling of structures
<b>Session E</b>	Fire chemistry, physics and combustion
<b>Session F</b>	Computational fluid dynamics
<b>Session G</b>	Smoke control, evacuation and firefighting
<b>Session H</b>	Fire risk assessment
<b>Session I</b>	Construction trends, practical application and case studies

**NOTES:**

1) The presentations of the papers are 10 minutes + 2 minutes for questions. The authors are warmly invited to prepare a poster for exposition in the poster room and participation in poster competition.

2) Short presentations are 5 minutes without questions. The authors should prepare a poster for exposition in the poster room and participation in poster competition. Discussion of the papers will be held during lunches and coffee breaks.