

RESEARCH in BUILDING ENGINEERING

EXCO'25

INVESTIGANDO en INGENIERÍA de EDIFICACIÓN EXCO'25

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

ETS de INGENIERÍA de EDIFICACIÓN



**UNIVERSITAT
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**ESCUELA TÉCNICA SUPERIOR
INGENIERÍA DE
EDIFICACIÓN**

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PRÓLOGO

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El año 2025 ha tenido un significado especial para la Escuela Técnica Superior de Ingeniería de Edificación de la Universitat Politècnica de València. Hemos celebrado 53 años de trayectoria académica, una etapa suficientemente larga como para mirar atrás con respeto, pero, sobre todo, para reafirmar con convicción el camino que queremos seguir construyendo hacia el futuro.

En ese recorrido, EXCO, el Salón Tecnológico de la Construcción, ha sido y sigue siendo un hilo conductor esencial. Durante décadas ha unido universidad, empresa e innovación, actuando como un espacio de encuentro que nos ha permitido compartir conocimiento, anticipar retos y ensanchar horizontes. EXCO no es solo un evento; es una expresión coherente de nuestra manera de entender la edificación como disciplina técnica, científica y social.

Han sido muchos años de trabajo sostenido, de esfuerzo colectivo y de compromiso compartido. Personas y equipos que, edición tras edición, han sabido liderar este proyecto con rigor, entusiasmo y una clara orientación al servicio del sector. En las últimas convocatorias, gracias a la visión estratégica y a la dedicación constante del director de EXCO, el profesor José Ramón Albiol, este encuentro ha alcanzado una proyección internacional incuestionable, con resultados tan sólidos como estimulantes. EXCO 2025 ha vuelto a demostrarlo, superando nuevamente los objetivos marcados, incluso en un contexto complejo e incierto.

La Exposición de Investigación en Edificación constituye, en este sentido, uno de los pilares fundamentales del certamen. La selección, por parte de su comité científico internacional, de 138 pósteres de investigación y 53 comunicaciones científicas confirma la calidad, diversidad y rigor del trabajo presentado, y consolida a EXCO como un referente para la comunidad investigadora en edificación, tanto a nivel nacional como internacional. A ello se suma el alto nivel de las conferencias impartidas, la excelencia de los ponentes invitados y el notable interés de las actividades desarrolladas a lo largo del evento.

Uno de nuestros principales objetivos ha sido reforzar su dimensión internacional. La participación de 63 universidades, que han podido mostrar sus líneas de investigación a través de los pósteres y comunicaciones seleccionados, es una muestra clara de ello. A lo largo del presente año, esta exposición tendrá además carácter itinerante, visitando algunas de estas instituciones internacionales y ampliando así su impacto académico y científico.

Quiero finalizar trasladando, en nombre de la Escuela Técnica Superior de Ingeniería de Edificación de la Universitat Politècnica de València, nuestro sincero agradecimiento a CEVISAMA por su apoyo continuado a este evento, así como el reconocimiento al profesor José Ramón Albiol Ibáñez y a todo su equipo, cuyo trabajo riguroso y comprometido ha hecho posible una nueva edición de éxito.

Miramos ya hacia EXCO 2026 con la misma convicción que nos ha traído hasta aquí: la de seguir mejorando, creciendo y compartiendo conocimiento. Estoy convencido de que

volverá a superar las expectativas y de que, una vez más, será un punto de encuentro imprescindible para todos los que creemos en la edificación como motor de innovación, progreso y servicio a la sociedad.

FOREWORD

Director of the School of Building Engineering

The year 2025 has held particular significance for the School of Building Engineering of the Universitat Politècnica de València. We have celebrated 53 years of academic trajectory, a period long enough to look back with respect, but above all to reaffirm with conviction the path we intend to continue building towards the future.

Along this journey, EXCO, the Technological Trade Fair for the Construction Sector, has been and continues to be an essential guiding thread. For decades, it has brought together academia, industry and innovation, serving as a meeting point that has enabled us to share knowledge, anticipate challenges and broaden horizons. EXCO is not merely an event; it is a coherent expression of our understanding of building engineering as a technical, scientific and social discipline.

These have been many years of sustained effort, collective dedication and shared commitment. Individuals and teams who, edition after edition, have led this project with rigour, enthusiasm and a clear service-oriented vision for the sector. In recent editions, thanks to the strategic vision and constant dedication of the EXCO Director, Professor José Ramón Albiol, this event has achieved an unquestionable international projection, with results that are both solid and highly encouraging. EXCO 2025 has once again demonstrated this, exceeding the objectives set, even within a complex and uncertain context.

The Building Research Exhibition represents, in this regard, one of the core pillars of the event. The selection by its international scientific committee of 138 research posters and 53 scientific communications confirms the quality, diversity and rigour of the work presented, and consolidates EXCO as a benchmark for the building engineering research community, both nationally and internationally. This is further reinforced by the high standard of the keynote lectures delivered, the excellence of the invited speakers, and the strong level of interest generated by the activities developed throughout the event.

One of our main objectives has been to strengthen its international dimension. The participation of 63 universities, which have been able to showcase their research lines through the selected posters and communications, clearly reflects this commitment. Throughout the present year, this exhibition will also take on an itinerant character, visiting several of these international institutions and thereby expanding its academic and scientific impact.

I would like to conclude by expressing, on behalf of the School of Building Engineering of the Universitat Politècnica de València, our sincere gratitude to CEVISAMA for its continued support of this event, as well as our recognition of Professor José Ramón Albiol

Ibáñez and his entire team, whose rigorous and committed work has made this successful edition possible.

We now look ahead to EXCO 2026 with the same conviction that has brought us this far: the commitment to continuous improvement, growth and the sharing of knowledge. I am confident that it will once again exceed expectations and, once more, serve as an essential meeting point for all those who believe in building engineering as a driver of innovation, progress and service to society.

FOREWORD DIRECTOR EXCO'25

The Faculty of Building Engineering of the UNIVERSITAT POLITÈCNICA DE VALÈNCIA - SPAIN, organized on February 24th to 28th, 2025, "The XXXIX Construction Technology Exhibition" EXCO'25 and the International Itinerant Exhibition "Research in Building Engineering" along year, at CEVISAMA - International Fair of Valencia - SPAIN.

Conferences are scheduled in UNIVERSITAT POLITÈCNICA DE VALÈNCIA - SPAIN, 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'25 promotes the entrepreneurship of the young UPV generations, participation in conferences.

The International Itinerant Research Exhibition EXCO'25 has the collaboration of 63 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 63 International Universities; It has the participation of 9 departments and 8 research institutes of the UPV in EXCO'25.

The participating entities are:

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*
61. *Tecnológico de Monterrey. México.*
62. *MIT Massachusetts Institute of Technology. USA.*
63. *Gdańsk University of Technology, Poland.*

Thank you all for making EXCO possible.

All the best for EXCO'26!

Best Regards

Dr. José R. Albiol-Ibáñez

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