

FEATURE	Impactful data visualization and Project StaSIO		
SOFTWARE NEWS	from DesignBuilder and IES		
CALENDAR OF EVENTS	7 conferences for your diary, with an update about BS2025 in Brisbane, Australia		
plus	Ask A Modeler Q&A, and a list of the latest papers published in the Journal of Building Performace Simulation		

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The International Building Performance Simulation Association exists to advance and promote the science of building performance simulation in order to improve the design, construction, operation and maintenance of new and existing buildings worldwide.

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## President's message

Dear IBPSA Colleagues and Friends

2024 is behind us with yet another great set of affiliate conferences – ASim 2024 in Osaka, uSIM in Edinburgh, eSim in Edmonton, BauSim in Vienna, and SimBuild in Denver. Many of the papers from these regional events are already available on the IBPSA Publications website https://ibpsa.org/publications. Of course, we can look forward to CIBSE/IBPSA-England in London in April this year.

I'm particularly looking forward to our biennial Building Simulation conference in August in Brisbane, Australia. With almost 1,000 abstracts submitted, you will learn about some of the best and latest research and applications in building performance simulation. I hope to see many of you there.

A reminder of resources from IBPSA:

- Check out our website www.ibpsa.org updated and reorganized to make finding the information you're looking for easier. We welcome any feedback that you may have.
- IBPSA is now co-sponsoring multiple ASHRAE Standards relating to building performance simulation. More on this on page 26.
- Your IBPSA board meets regularly. Our first meeting of the association year was last October immediately following the Annual General Meeting. We welcomed the new members to the board and officers were elected. Dru Crawley (President), Pieter de Wilde (Vice President), Danielle Monfet (Secretary), and Wangda Zuo (Treasurer) were re-elected.
- The nomination period for the IBPSA Awards closed in February (https://ibpsa.org/awards). We will report on recipients in the next *ibpsa*NEWS.
- As mentioned in the previous *ibpsa*NEWS, the board has established a new Strategic Planning committee. If you are interested in participating, contact Pieter de Wilde (pieter.de\_wilde@ebd.lth.se).
- At our last meeting, the board approved creation of the IBPSA Women's Network (see more on page 25). For more information, contact Esther Borkowski (estbo@dtu.dk).
- IBPSA-Nordic is expanding! Baltic countries of Latvia, Estonia, and Lithuania are now included joining Norway, Sweden, Finland, and Denmark.

Membership and participation in our committees is open to all IBPSA members. If you are interested and can participate in regular committee meetings, please contact the appropriate committee chair (see the website https://ibpsa.org/about/contacts for specific contacts).

Are you a member of the IBPSA group on LinkedIn? If not, join the community of more than 12,000 people interested in building performance simulation to keep up with current information: www.linkedin.com/groups/75552.

#### President's message

Check out the forthcoming calendar of events on **page 12**. Also of note in this newsletter, a look into the best examples of data visualization from Project StasIO. Other useful items include software updates, book announcements, and the open call for submissions to the Journal of Building Performance Simulation.

I look forward to seeing you at Building Simulation 2025!

Dru Crawley President, IBPSA

## Best of 'Ask a Modeler': Digital Futures

Ask a Modeler' is an advice column for the building simulation community. Each month, members of the IBPSA-USA Research Committee pose a question submitted by an IBPSA member to recognized experts to get their unique perspectives. Through this column, we hope to expand communication and create a sense of community among practitioners, researchers and academics at all points in their building simulation careers. Below, we are reprinting some expert advice from the past few months. We hope that sharing these questions and insights will bring value to your work and possibly make you think about building performance modeling from a new point of view.

### How do you see the role of emerging technologies, like AI and machine learning, in streamlining and enhancing building energy modeling workflows across the industry? — Wondering About AI

#### Dear Wondering About AI,

Before the late 2000s, when machine learning (ML) and AI techniques began to gain traction, building energy modeling (BEM) was predominantly based on physics-driven methods, using tools like EnergyPlus to simulate complex thermodynamic and HVAC processes. As ML and AI technologies advanced, they expanded the scope of BEM to include advanced data-driven approaches.

Before the emergence of large language models (LLMs) in 2017, the integration of AI and ML into BEM primarily relied on smaller-scale techniques, including shallow ML methods like linear regression, support vector machines, and decision trees, as well as early deep learning algorithms such as Long Short-Term Memory (LSTM) networks, Convolutional Neural Networks (CNNs), and Recurrent Neural Networks (RNNs). Datadriven BEM emerged as a valuable complement to physics-based tools like EnergyPlus, capturing building behavior and energy output based on historical and operational data rather than simulating physical processes. This approach offered a practical alternative



Liang Zhang, Ph.D. Assistant Professor, University of Arizona

when physics-based modeling was too resource-intensive or impractical. It proved particularly effective for tasks requiring speed or simplified representations, such as anomaly detection, short-term load forecasting, and occupant behavior modeling, especially in cases with abundant data but limited physics or building-specific details. Nonetheless, these methods remained data-intensive, required substantial expertise to develop and validate, and struggled with scalability across diverse building portfolios. Their applications were often limited to "regression" and "classification" tasks, reflecting the structured nature of BEM data and constraining their capacity to tackle more unstructured challenges in building energy modeling.

The arrival of large language models signaled a paradigm shift in how BEM is conducted, fundamentally streamlining and standardizing key processes while making advanced modeling capabilities more accessible. On the user-facing side, LLMs function as "front ends" that process unstructured or "fuzzy" inputs—ranging from architectural descriptions and construction notes to occupant behavior patterns—and convert them into

structured, machine-readable formats. In many instances, they can even generate input files ready for physicsbased simulators like EnergyPlus (e.g., IDF files). This capability substantially reduces the time and manual labor associated with data preparation, allowing modelers to focus on higher-level analytical tasks instead of repetitive data gathering and formatting. By minimizing the risk of user error, LLM-powered tools also elevate the overall reliability of BEM workflows.

Meanwhile, on the "back end," LLMs serve as intelligent "brains" that replicate the decision-making processes typically handled by experienced practitioners. They can oversee tasks like preliminary model setup, calibration, and advanced analyses, striking a balance between standardized workflows and the unique conditions of individual projects. Moreover, LLMs can seamlessly integrate with structured data via code generation, automating iterative simulations, custom parametric studies, and comprehensive post-processing. These functionalities not only eliminate repetitive manual work but also open new possibilities for sophisticated modeling approaches.

LLM agents (www.anthropic.com/research/building-effective-agents) take this a step further, orchestrating entire end-to-end workflows and effectively managing complex iterative processes. Whether performing hierarchical, sequential, or reasoning-based (ReAct) tasks, these agents can coordinate large-scale simulations, refine models dynamically, and incorporate ongoing decision-making. By automating such multifaceted operations, LLM agents help democratize advanced BEM capabilities, allowing more professionals to harness high-level modeling even if they lack deep domain expertise.

One of the major advantages these technologies offer is their reduced dependency on extensive training data. Unlike traditional machine learning methods that often require large datasets, LLMs frequently perform well in zero-shot or few-shot contexts, lowering the barrier to entry for organizations with limited data resources. Instead of starting from scratch to build new models, stakeholders can tap into the powerful, pretrained capabilities of LLMs and tailor them through prompt engineering, focusing on effective usage rather than timeconsuming development.

Looking ahead, this convergence of AI- and ML-driven approaches will radically streamline building energy modeling industry-wide. Novice users will be able to create BEM projects by conversationally interacting with an LLM—providing basic building information or uploading relevant files—and receiving accurate, actionable outputs. Seasoned practitioners will see their productivity skyrocket: LLMs can draft preliminary models, identify errors, offer debugging suggestions, and learn from past case studies. As a result, digital twins, continuous monitoring, and simulation-based optimizations are poised to become more prevalent, accelerating innovation in building design, operation, and sustainability.

In short, emerging AI and ML technologies are positioning the BEM field for unprecedented growth and efficiency. By simplifying data handling, automating complex tasks, and reducing the need for specialized expertise, they open the door for broader participation and higher-quality insights. This evolution not only saves time and money but ultimately advances our collective ability to design and operate buildings that meet ambitious energy and environmental goals.

Ask a Modeler is looking for volunteers! If you'd like to write for or edit our column, please email **askamodeler@ibpsa**. **us**. We also want to hear your interesting, entertaining, or just plain odd questions about life and building performance simulation. Send us your questions or read our past columns at https://ibpsa.us/ask-a-modeler. Note that questions requiring an immediate response should be submitted to the community of experts at unmethours.com.

## Impactful data visualization and Project StaSIO

#### Introduction by Eleonora Brembilla

Data are not neutral. The way we analyse and communicate data already shapes the end story and the goals we want to achieve with them. In this lies the power of data visualisation, a powerful medium to communicate a clear message from technical experts to non-technical audiences.

While participating at the Living Data Conference, I recently discovered the fantastic work of Sarah Williams, who taps into data visualisation strategies to spark emotions and feelings of empathy in stakeholders, from high-profile decision making figures to the general population. Her work includes projects that describe dangerous migration routes and highlight the riskiest stopovers where international aid is needed, and projects that ask citizens to play the role of immigrants who need to make ends meet with limited resources and recognition. Dr Williams and her team constantly question themselves on how data can be used to serve society and to avoid harming individuals, in a delicate balance that needs continuous rediscussion.

I know for a fact that many people in our BPS community value data visualisation and go to great lengths to come up with beautiful and effective graphs. Project StaSIO (STAndard SImulation Outputs) is one of the best examples of such efforts. In this article, Guanzhou Ji and collaborators explain how Project StaSIO works and how it benefits industry and research related to building performance simulation data and, ultimately, to climate change mitigation. You can find more information about, and examples from, Project StaSIO in ibpsaNEWS 28-1 (2018) and 34-1 (2024),

#### What is Project StaSIO?

For energy analysts, one of the most difficult challenges is condensing a great deal of data into a format so architects can understand. For architects, one of the challenges in working with analysts is not knowing what performance-related questions can be asked and answered. What exactly is 'Early Energy Modeling', what does it entail, and what types of questions can it answer? Project StaSIO aims to provide supporting content on inputs, outputs, and case studies around the first three 'modeling cycles' defined by the building standard. The goal is to expand and populate the diagram below with crowd-sourced content from national and international simulation communities.





As an initiative of IBPSA-USA's Research Committee, Project StaSIO is a web-based crowd-sourced repository of simulation graphics and case studies organized around the ASHRAE 209 framework. Project StaSIO is envisioned as a resource for building performance simulators to look for ways that can graphically communicate their simulation outputs in a clear and compelling manner, empowering them to make a real impact on the performance of a future building.

#### **Annual Competition**

Project StaSIO is dedicated to organizing seasonal and annual competitions for professionals, practitioners, and students worldwide. The competition focuses on answering the key question: What is the impact of <design variable> on <metric>? The graphic submission requires participants to take advantage of how the human eye normally reads, interprets, and correlates information to ensure your story lands effectively. Each submission narratives its building simulation story on a single graphic. The criteria for the competition are Clarity (the ability to convey complex information concisely), Innovation (uniqueness of the graphic), Insightfulness (the effectiveness with which it is answering the question it was designed for), and Aesthetic Design (composition of the graphic).





The competition welcomes digital graphic submissions representing all aspects of the design and building performance simulation in the built environment. Submissions will first undergo a rigorous internal administrative review for fundamental formalization, followed by a peer review conducted by experts in sustainable design, engineering, and academia. So far, seven competitions have been held since 2018, with 34 winning graphics selected from hundreds of submissions, including overall winner, student winner, and honorable mentions. 'The most exciting part is seeing the different submissions address complex design problems and illustrate the results in an intuitive way,' said Guanzhou Ji, competition manager. Submissions from previous competitions are featured on the Project StaSIO website: https://projectstasio.com. Currently, the Project StaSIO team is preparing for the 2025 Annual Competition, which is scheduled to launch at the end of March 2025, and the winners are expected to be announced in the summer of 2025.

#### Solar Availability

#### Table Interation ranges of surface azimuth and tilt.



Fig 3: What is the impact of surface's tilt and orientation on solar availability at 40 N? (2024 Annual Competition Honorable Mention - Innovation, Qi Zhang)

#### **Educational Webinar and Workshop**

Alongside the competition, Project StaSIO regularly hosts a series of online webinars highlighting simulation results as a key tool for design thinking and ideation. These sessions explore cutting-edge trends relevant to designers, engineers, and educators. On October 31, 2024, Jesse Walton delved into the complexities of visualizing net-zero energy. While the AIA 2030 Commitment and the Design Data Exchange (DDx) have revolutionized how architecture firms track energy and carbon metrics, they have yet to provide a clear platform for visually interpreting these data points. Walton's discussion explored this gap and potential solutions. On February 6, 2025, Shanta Tucker and Junko Nakagawa presented The Business Case for Engaging Environmental Graphics and discussed how impactful environmental visuals can shape design decisions. Most recently, on March 20, 2025, Kjell Anderson led a session titled What's Your Lead? Storytelling in Building Performance. The talk focused on how simulation-driven decision-making influences design outcomes and best practices for determining this triage and communicating with clients. These webinars received generous sponsorship from the industry, such as AIRLIT Studio and A2 Efficiency.

To promote standardized simulation output, a series of workshops and seminars have been organized in professional venues. Workshops include "Crafting Your Story with Building Performance Simulation Data" at ASHRAE BPAC 2019 and "Impactful Data Visualization" at SimBuild 2024. The Net Zero Energy Building (NZEB) Knowledge Series Seminar, "How to Tell Your High-Performance Building Story," took place in January 2020. Additionally, the seminar "Say it Graphically: Making Simulation Outputs Accessible to Our Audience" was held at BuildEnergy 2019.

#### **Data Visualization in Professional Practice**

Data visualization plays a crucial role in professional practice. Project StaSIO is setting the standard for effective communication. Kate Bren, a performance consultant at Cyclone Energy Group and the winner of the 2023 and 2024 annual competitions, recognizes its significance in the industry. After attending a Project StaSIO webinar in 2022, Kate was inspired to submit her work to the incoming annual competition. Reflecting on her experience, she shares, "Project StaSIO celebrates and validates my passion and talent for creating compelling visual graphics for communication. In our day-to-day work as engineers, we deal with a lot of numbers and data, and it is paramount that we understand the story of our analyses and effectively communicate them to a wide variety of audiences."

While our industry used to turn to architects and graphic designers to produce compelling visualizations, we're now seeing the standard evolving to include building performance simulators. Building performance simulators are now playing a more prominent role in this space. Kate feels 'energy modelers will continue to bring performance metrics into the spotlight through data visualization, stating, We are the translators of building performance data, and how well we do it directly impacts how well our buildings perform and therefore the carbon emissions they're responsible for.'



#### Road to Electrification for a Cold Climate Multi-Family High Rise

Fig 4: What is the impact of geothermal heat exchange, air source heat pumps, and sanitary heat exchange on a cold climate multi-family high rise electrification while keeping costs low? (2023 Annual Competiton Winner, Kate Bren)

#### 1960s to Net Zero: Identifying Retrofit Energy + Cost Savings



Fig 5: What is the impact of envelope, lighting, and mechanical upgrades on cost and energy efficiency of 1960s commercial high rise building? (2024 Annual Competiton Winner, Kate Bren)

#### Outlook

Data visualization in building performance analysis will continue to evolve with emerging technologies. To maximize the impact of building performance simulations in the early design stage, the industry will shift toward more intuitive, visually compelling, and interactive ways of presenting data. Clear and concise communication will not only ensure accurate analysis but also become an integral part of the design process.

# **Forthcoming events**

Date(s)	Event	Further information	
2025			
24-25 April 2025	CIBSE IBPSA England Technical Symposium 2025 London, UK	https://ibpsa-england.org	
04-06 June 2025	CLIMA World Congress 2025 Milan, Italy	www.climaworldcongress.org	
21-25 June 2025	ASHRAE Annual Conference Phoenix, Arizona, USA	www.ashrae.org/conferences/2025-annual- conference-phoenix	
24-27 August 2025	BS 2025 18th IBPSA International Conference & Exhibition <i>Carbon and Climate Responsive</i> Brisbane, Australia	www.BS2025.org	
27-29 August 2025	International Radiance Workshop Lausanne, Switzerland	https://discourse.radiance-online.org/t/ radiance-workshop-2025-epfl-lausanne/6806	
2026			
20-22 May 2026	SimBuild Minneapolis, Minnesota, USA	https://simbuild.ibpsa.us	
19-21 August 2026	BuildSim Nordic Conference Umeå, Sweden	https://buildsimnordic2026.ibpsa-nordic.org	

Note that the dates in this calendar may, but do not necessarily, include pre and/or post-conference workshop days

04-06 June 2025 Milan, Italy www. climaworldcongress.org

CLIMA 2025: Decarbonized, healthy and energy conscious buildings in future climates

### CLIMA 2025: Buildings for the climate of the future

The REHVA HVAC World Congress CLIMA is a leading event for professionals, academics, and companies in the HVAC sector. CLIMA 2025 will take place in Milan, Italy, from 04-06 June 2025. The theme this time is *Decarbonized, healthy, and energy-conscious buildings in future climates*, a topic highlighting the multi-aspect importance of HVAC.

Decarbonizing the European building stock by 2050 will require deep energy renovation of buildings and neighbourhoods without compromising health. We need to improve our design approach to reduce the carbon footprint of buildings, to take account of health and threats such as COVID-19, and to take advantage of digitization and sensors to optimize the design, operation, and indoor environmental quality of new and refurbished buildings. Advanced sensor-based measurement and control pose numerous challenges. We know the climate is changing. Will more cooling or heating capacity be needed? What energy conservation technologies will work best?

For updates on the programme, paper submission, venue, delegate registration and more visit www.climaworldcongress.org

24-27 August 2025 Brisbane, Australia www.bs2025.org



### BS 2025: the latest news

#### Key upcoming dates

- Early-bird pricing for conference registration ends at 11:59pm, 31 May 2025 (AEST)
- Student Competition entries also close on 31 May 2025.

#### Papers

- **4**44 papers have been submitted for review across the following topics:.
  - Climate Change Mitigation and Adaptation
  - Energy Efficiency and Sustainability
  - Innovative Design Exploration and Industry Transformation
  - Urban Planning and Smart Cities
  - Indoor Environmental Quality (IEQ).

#### Workshops/Panels

- Panel Session: Building Simulation Educating the next generation of BPS professionals—What are the gaps?
- NABERS lessons to take back home



#### **Student Competition**

- 26 teams have registered from 15 different countries
- RFIs are coming in and being answered

#### Keynote speakers - confirmed

Associate Professor Jen Martin

Jen Martin (j.martin1@unimelb.edu.au) is Associate Professor in Science Communication at the University of Melbourne. After many years working as a field ecologist she decided the most useful thing she could contribute as a scientist was to teach other scientists how to be effective and engaging communicators. Jen founded and leads the University's Science Communication Teaching Program, has been talking about science each week on 3RRR radio for 20 years, writes for a variety of publications, and hosts the Let's Talk SciComm podcast.



#### Winitha Bonney OAM

Born in London, raised in Australia, and of Sri Lankan Tamil heritage, Winitha has a background as a professional dancer and C-Suite executive working in North America and Australia leading organisationwide transformation projects and managing billions of dollars.. Today, she is a globally recognised and award-winning leader and speaker.



#### Dr Ashak Nathwani AM

Ashak Nathwani has extensive experience as an energy and greenhouse gas minimisation strategist. His role involves actively promoting and fostering best practices in both the design and operation of buildings. He is dedicated to catalysing meaningful and transformative change, ensuring that people are empowered to make environmentally sustainable choices and contribute to the preservation of our planet.



Pieter de Wilde is a full professor at LTH in Sweden, and visiting professor at Strathclyde in Scotland. He is well-known in IBPSA, having won the IBPSA Young Contributor Award in 2003, having held various roles in IBPSA-England between 2006 and 2022, and through various activities on the Board of IBPSA since 2014.





#### Partner Tours

- Tangalooma Island Resort Tour
- Brisbane City Highlights Tour
- Australia Zoo Tour
- Tamborine Mountain Tour



Kgbo - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index. php?curid=92233284

#### **Current Confirmed Sponsors (in no particular order)**

Aurecon, Team Catalyst, DoE via IBPSA USA, Design Builder, Speckel, IES, Tian

#### ED&I

Working with the IBPSA ED&I Committee we have integrated various equality, diversity, and inclusion initiatives into the conference:

- Starting from the registration process, participants are asked about their preferred pronouns, communication preferences, and sharing accessibility needs
- Although the conference will not offer childminding services, recommendations for nearby facilities participants will be available on arrival at the venue
- Masks will be distributed, and the venue also has a COVID plan in place
- Facilities and main presenting platforms are wheelchair accessible
- As has been the custom in opening meetings and speeches in Australia, the conference will begin with an acknowledgement of country as a way to recognise the traditional owners of the land and pay respect to First Nations people of Australia
- Some of the presentations in the main conference room will be live streamed to provide access to presenters that cannot attend in person
- Alternative food options (vegetarian and vegan) will be available
- At the end of the last day of this conference, a 30-minute session will mark the launch of IBPSA's women's network
- A breakfast session geared towards equality, diversity, and inclusion engagement is also planned to be hosted by the ED&I committee of IBPSA World. This breakfast event will be a paid event.

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#### 27-29 August 2025 Lausanne, Switzerland

https://discourse. radiance-online. org/t/radianceworkshop-2025-epfllausanne/6806

### Radiance Workshop 2025 + HDR Workshop & Tutorial



This year's Radiance Workshop on 27-28 August 2025 is being combined with an HDR Workshop & Tutorial on 29 August.

The **Radiance Workshop** will be based on attendee presentations – any Radiance-related topics are welcome!

The **HDR Workshop & Tutorial** will have 2 invited presentations in the morning, followed by 5-6 attendee presentations – all HDR-imaging-related topics are welcome! In the afternoon there will be 2-3 tutorial presentations and a measurement & evaluation session. A calibrated reference high-contrast light source will be set up, allowing attendees to bring their own HDR cameras and test/evaluate their image processing workflows with expert guidance.

Both events will be hosted by the LIPID lab on the EPFL campus in Lausanne, allowing registration prices to be attractive (despite Switzerland's reputation for being expensive!)

Lausanne is a fantastic place to visit in late August! The EPFL campus is just a 10-minute walk from Lake Geneva, which is perfect for a refreshing swim. The weather is typically warm and pleasant at that time of the year—not too hot. It's a plus that the lake is surrounded by breathtaking mountains, offering all kinds of outdoor activities. Whether you're into sightseeing, hiking, climbing, or even paragliding. There's something for everyone!

Some details and the budget are still being finalised as this *ibpsa*NEWS goes to press, but registration should open in early April, with accommodation suggestions.

Please send any questions about the Workshop to co-organiser Jan Wienold at jan. wienold@epfl.ch .

To learn more about Radiance, visit **www.radiance-online.org**.

20-22 May 2026 Minneapolis, USA https://simbuild.ibpsa. us



## From Models to Reality: Bridging Simulation and Operational Performance

SimBuild is the preeminent event for building performance simulation in the US. It provides a forum for sharing and publishing scientific work, announcing breakthroughs in research and software development, informing policymakers, and bridging research and practice. It is a place where building performance simulation practitioners, researchers, and students can network with peers, clients, and employers. IBPSA-USA will host the SimBuild 2026 conference May 20th to 22nd, 2026, in Minneapolis.

The venue is the Hyatt Regency Minneapolis, with some of the city's top attractions, including Loring Park, Target Center, the Orpheum Theatre, and a vibrant dining and entertainment scene all just a short walk away.

#### Dates:

SimBuild:	May 20—22, 2026
HackSimBuild:	May 18—19, 2026
Workshops and Tours:	May 19, 2026

#### **Key Dates:**

Paper Abstract Submission Opens:	July 2025
Presentation Submission Opens:	September 2025
Registration Opens:	November 2025

Join the **IBPSA-USA mailing list** for news about SimBuild 2026

*ibpsa*NEWS

19-21 August 2026 Umeå, Sweden https:// buildsimnordic2026. ibpsa-nordic.org

### **BuildSim Nordic 2026**



BuildSim Nordic is the biennial conference of IBPSA Nordic. The 2026 conference will take place at Umeå, Sweden, from 19 to 21 August. We warmly welcome members of IBPSA-Nordic, the wider IBPSA world community, and others with an interest in building simulation to join us for this exciting opportunity to be updated on the newest ideas and research. The title of the conference is Smart and Sustainable Buildings and Cities in the Nordic Countries and specific themes this time are Energy Resilience of Buildings in Cold Climate and Smart and Climate Neutral Buildings, Districts and Cities.

The conference programme will include presentations of scientific papers, keynote sessions and workshops. Topics include: Building acoustics; Building Information Modelling (BIM); Building physics; CFD and air flow; Commissioning; Daylighting, fenestration and lighting; Digital twins; Demand-side flexibility; Developments in simulation; Education in building performance simulation; Renewable energy and energy storage; Human behaviour in simulation; Hybrid systems; Indoor Environmental Quality (IEQ); Developments in software; System optimization; Urban-scale simulation; Smart buildings; Validation, calibration and uncertainty; Weather data & Climate adaptation; Zero Energy Buildings (ZEB); and Emissions and Life Cycle Analysis.

For updates regarding the conference program and additional details, please visit our conference website at https://buildsimnordic2026.ibpsa-nordic.org.

Please do not hesitate to contact us at **buildsimnordic-2026@ibpsa-nordic.org** We hope to see you at BuildSim Nordic 2026!

# **News from IBPSA Affiliates**

### **IBPSA-Japan**

A successful ASim2024 in Osaka, Japan: IBPSA's largest Asian regional conference



The IBPSA Asian regional conference, ASim2024, was successfully held in Osaka, Japan, from December 8 to 10, 2024. With over 300 registered participants, ASim2024 became the largest conference in the history of ASim. We would like to express our sincere gratitude to all those who contributed to the conference, including referees, organizers, and participants.

We are also pleased to announce that the next ASim conference is scheduled to be held in Singapore in 2026. We look forward to seeing you there!

#### **Presentations**

ASim2024 featured 189 papers, including 165 oral presentations and 24 poster presentations, alongside two plenary sessions and ten informal sessions. All presentations are now available on the IBPSA website (https:// publications.ibpsa.org/conference/?id=asim2024). Please take a look to explore the presented works. The informal sessions were a notable feature, designed to provide an opportunity for researchers to share information, present emerging topics, and engage in open discussions over the course of one to two hours.

#### **Plenary Sessions**

#### 1. Perspectives of Japan's Academic Leaders

Speakers:

- Professor Yoshiyuki Shimoda, Osaka University
- Professor Emeritus Masaya Okumiya, Nagoya University
- Professor Yasunori Akashi, The University of Tokyo

In this session, the speakers — each of whom has made significant contributions to fields such as future metropolis

simulation, performance-driven design, smart building systems, modeling for the digital world, and humancentered simulation/design — shared their insights on the challenges facing the global and Japanese architectural communities. They also discussed the need for fundamental shifts in architectural systems to address these challenges.

#### 2. Challenges and Perspectives for the Future

Moderator: Professor Yohei Yamaguchi (IBPSA-Japan, Osaka University)

Affiliate Representatives:

- Dr Masato Miyata (National Institute for Land and Infrastructure Management, IBPSA-Japan)
- Professor Da Yan (Tsinghua University, IBPSA-China)
- Professor Cheol-Soo Park (Seoul National University, IBPSA-Korea)
- Professor Adrian Chong (National University of Singapore, IBPSA-Singapore)
- Professor Rizki Armanto Mangkuto (Institut Teknologi Bandung, IBPSA-Indonesia)
- Professor Vishal Garg (Plaksha University, IBPSA-India)

Reflections:

- Dr Tianzhen Hong (Lawrence Berkeley National Laboratory, IBPSA-USA)
- Professor Ruchi Choudhary (University of Cambridge, IBPSA-England)

This session gathered representatives from the IBPSA affiliates in Japan, China, Korea, Singapore, Indonesia, and India, who each gave five-minute presentations on the role of building performance simulation in addressing national and global social issues.



Following these presentations, representatives from the United States and England offered reflections and comments, leading to a highly engaging and international dialogue.

#### **Technical Tour**

A technical tour of Kobe Suma Sea World, one of Japan's newest and most advanced aquariums, was organized as part of the conference.

Participants received an overview of the project from the commissioning provider and the HVAC (MEP) / facility designer, followed by a presentation from a construction engineer on how simulation tools were utilized during the commissioning process. The tour was led by the MEP's designer, allowing participants to engage in direct dialogue and exchange technical questions and insights.

#### **Banquet and Networking**

ASim2024 provided numerous opportunities for active discussions among researchers and students. The welcome reception and banquet were particularly successful in fostering open communication. As the evening progressed, participants mingled freely, exchanging ideas and discussing ongoing and future collaborations. The banquet not only served to strengthen the research community but also offered young researchers valuable experience in networking and professional exchange, creating a vibrant and memorable scene of international camaraderie.



Chair Yohei Yamaguchi (Osaka University, IBPSA-Japan President) Co-Chair Shohei Miyata (The University of Tokyo, IBPSA-Japan Vice President) Co-Chair: Makiko Ukai (Nagoya University) Scientific Chair: Genku Kayo (Tokyo City University)

## Software & other news

DesignBuilder

#### **DesignBuilder Climate Analytics: new release**



For many energy modelling projects, it is appropriate to use generic typical year weather data. However, for projects with unique location, timeframe, or design considerations, weather data must be tailored to the specific project requirements.

The DesignBuilder Climate Analytics platform provides access to a vast repository of high-quality hourly weather data through a user-friendly web interface. It includes various analysis tools to help users find and access the most suitable data for their projects, along with the capability to easily create custom weather files for any location. Key enhancements introduced recently include:

- Latest future climate data: Account for future climate change based on the most recent IPCC CMIP6 Shared Socioeconomic Pathways (SSP) and associated Representative Concentration Pathway (RCP) data
- **Continually updated data**: Includes the latest 2024 Design Year database and Actual Year data through January 2025
- **Enhanced search**: Quickly find weather data using the new Station List tool, enabling you to search by location, country, or region
- **Improved navigation**: The map now automatically zooms to your location on loading, and station markers scale with zoom levels
- Latest Climate.Onebuilding.org data: Includes the latest data from the climate. onebuilding.org website with over 17k locations globally and over 75k files.

Modellers new to Climate Analytics are invited to visit the **webpage**, watch the **overview webinar**, or register for a **trial account** to test the platform firsthand.

### Beyond brute force with DesignBuilder's Parametric Toolset

DesignBuilder's parametric tools bring highly capable strategy, scalability, and flexibility to your simulations. Three important points that distinguish the toolkit are:

- Strategy: Beyond brute force parametric testing, Design Builder's Sensitivity Analysis identifies the highest-impact variables, while its Optimisation feature uses genetic algorithms to learn from previous simulations. This enables users to confidently and efficiently explore a very wide range of data
- Scalability: Users can run parallel simulations with no limit on the number of local machine or server cores, fully utilising their available computing resources under a single DesignBuilder licence
- Flexibility: Users can target design variables precisely according to the zones, surfaces or openings of interest not just all or nothing. For example, surfaces can easily be filtered based on facade orientation. Additionally, KPIs can be selected from the full range of EnergyPlus output metrics, from basic energy and carbon costs to detailed unmet load hours and more, with options for seamless custom API integration.



The parametric webinar recording is available **here**, and there is more information on the DesignBuilder website about the **simulation flexibility**, **scalability** and **strategy** options.



#### IES release IESVE 2024 Feature Pack 1

IESVE 2024 provides increased flexibility to users and continues to aid the drive for decarbonisation and electrification. New features include:

#### **Passivent Navigator now includes all Roof Terminals**

IES has added additional products to the existing Passivent Roof Terminals Navigator and component library in the newly-released VE 2024 Feature Pack 1.

The VE now supports Passivent Airscoop® Roof Terminal units (with and without low-level inlets) and Passivent Airstract®, Passivent Airstract® iAT, Passivent Hybrid Plus Airstract®, Passivent Litevent Airstract® units (all with low-level inlets).

The dedicated VE Navigator guides users through the step-by-step process, from importing the products into models, configuring their operation, preparing, and applying to rooms, thermal simulation and compliance analysis.

More information is available at <a href="https://www.iesve.com/software/virtual-environment/">www.iesve.com/software/virtual-environment/</a> passivent-roof-terminals .

#### New APX products added to the Monodraught HVR Hybrid Navigator

Feature Pack 1 adds new and more efficient APX products to the existing Monodraught HVR Hybrid Navigator component library.

IES believe HVR Zero sets a new benchmark for the future generation of low energy hybrid ventilation systems that integrate heat exchange ventilation strategies. It provides natural ventilation, hybrid mixing ventilation and low energy mechanical heat recovery ventilation in one compact unit.

HVR Zero is the first hybrid heat recovery system of its kind with zero embodied carbon, which is achieved by careful material selection and through a carbon offset programme.

More information is available at www.iesve.com/software/virtual-environment/ monodraught-hvr-zero.

#### **IES Events**

IES will be exhibiting at several events this year in north America:

- Passive House Canada Conference, May 5-7 in Ottowa at booth #21
- **AIA25**, June 4-7 in Boston at booth #2471

and the UK:

- **Footprint+**, 14-15 May in London at booth #C13
- **Digital Construction Week**, 4th June in London at stand #D250.

(The event names are web links for more information.)

#### **IES Technical Articles**

#### CFD in IESVE: Enhancing Building Performance with MicroFlo-CFD

Computational Fluid Dynamics (CFD) has long been a critical tool for optimizing airflow, heat transfer, and thermal comfort in buildings. Traditionally, implementing CFD analysis required advanced expertise and standalone software, making it an intimidating prospect for many engineers. MicroFlo-CFD, embedded within IESVE, aims to bridge this gap by providing a user-friendly yet powerful solution for airflow analysis within the VE environment.

This article explores the fundamentals of CFD, its practical applications in building performance modeling, and how MicroFlo-CFD enhances the value of IESVE to users by streamlining airflow simulations.

#### Fundamentals of ApacheHVAC Airside Controllers

Understanding the intricate workings of HVAC systems is essential for achieving accurate building performance simulation. In IESVE software, ApacheHVAC airside controllers play a crucial role in the simulated operation of the HVAC system. Given their significance, understanding and mastering the functionality of these controllers is vital for any user. This article is available **here**.

## The IBPSA Women's Network is Here – Join Us!

We are excited to announce the launch of the IBPSA Women's Network, an initiative under the IBPSA Equality, Diversity and Inclusion (ED&I) Committee!

This network is designed to connect and empower women who are active in building performance simulation through workshops, networking, awards and mentorship. Our goal is to support women at all career stages to become experts, innovators and leaders in the field to ensure their contributions shape the future of building simulation.

The official launch will take place at the Building Simulation 2025

Conference in Brisbane this September, so stay tuned for more details! In the meantime, whether you are an earlycareer researcher, industry professional or experienced leader, we welcome everyone – women, trans women and allies alike – to be part of this growing community. If you are interested in getting involved, feel free to reach out.



Let's build a stronger, more inclusive IBPSA together!

Contact: Esther Borkowski, estbo@dtu.dk

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# **IBPSA Standards Committee**

The IBPSA Standards Committee was formed in 2022 to provide input from IBPSA on cosponsored building performance simulation-related standards. Initially, this includes the six ASHRAE standards described below. If you know of other building performance simulation standards under development or are interested in participating on the Standards committee, contact Dru Crawley (dbcrawley@gmail.com).

ASHRAE uses an open, consensus-based development process. All standards undergo public review. Anyone can participate in standards development, whether a voting member or not. You may apply for membership in any committee here: www.ashrae.org/technical-resources/standards-and-guidelines/how-to-join-project-committees

ASHRAE standards with active IBPSA involvement are:

**ANSI/ASHRAE/IBPSA Standard 140-2023** - Method of Test for Evaluating Building Performance Simulation Software

**Purpose**: This standard specifies test procedures for evaluating the technical capabilities and ranges of applicability of software that simulates the performance of buildings and their systems.

**Scope**: These standard test procedures apply to software that simulates the performance of a building and its systems. While these standard test procedures cannot test all algorithms within building performance simulation software, they can be used to indicate major flaws or limitations in capabilities.

Under continuous maintenance and updating.

#### ANSI/ASHRAE Standard 169-2021 - Climatic Data for Building Design Standards

**Purpose**: This standard provides recognized climatic data for use in building design and related equipment standards.

**Scope**: This standard covers climatic data used in ASHRAE standards, including dry-bulb, dewpoint, and wet-bulb temperatures, enthalpy, humidity ratio, wind conditions, solar irradiation, latitude, longitude, and elevation for locations worldwide. This standard also includes statistical data such as mean temperatures, average temperatures, mean/median annual extremes, daily ranges, heating and cooling degree days and degree hours, and hours and seasonal percentages within ranges of temperatures as well as bins.

Under continuous maintenance and updating.

## **ANSI/ASHRAE/IBPSA Standard 205-2023** - Representation of Equipment Performance Data for HVAC&R and Other Facility Equipment

**Purpose**: To facilitate automated sharing of equipment performance characteristics by defining data models and data serialization formats.

**Scope**: This standard applies to performance data for any HVAC&R or other facility system, equipment, or component.

Under continuous maintenance and updating.

#### ANSI/ASHRAE/IBPSA Standard 209-2024 - Building Performance Simulation Process

**Purpose**: To establish minimum requirements for the process of using simulation to evaluate building performance and inform decision-making.

**Scope**: This standard applies to the use of building performance simulation, including energy modeling, during the design, construction, and operation of new buildings or major renovations of, or additions to, existing buildings.

Under continuous maintenance and updating.

**Proposed ANSI/ASHRAE/IBPSA Standard 229P** - Protocols for Evaluating Ruleset Application in Building Performance Models

**Purpose**: This standard establishes tests and acceptance criteria for application of rulesets and related reporting for building performance models.

**Scope**: This standard applies to evaluating the implementation of rulesets associated with new or existing buildings, their systems, controls, sites, and other aspects described by the ruleset. It establishes requirements for:

- building performance modeling software
- software that evaluates building performance models and associated information to check the application of a ruleset

Proposed Standard 229P is currently under development.

#### ANSI/ASHRAE/IBPSA Standard 232-2024 - Common Content and Specifications for Building Data Schemas

**Purpose**: This standard defines metaschemas (such as data types, data elements, naming conventions, and formats) to specify and validate other standard schemas for data exchange among building performance and HVAC&R software.

**Scope**: This standard applies to data models and schemas specified in other standards for the design, operation, and performance of buildings.

Under continuous maintenance and updating.

A related effort is the **IBPSA-USA Building Data Exchange Committee**. The BDE Committee provides an inclusive forum to support the development of tool-agnostic consensus-based data models for building design, analysis, and operational performance. See https://bde.ibpsa.us.

As public review drafts for these standards become available, we will send out email messages to the IBPSA community and post on our LinkedIn group page.

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# **Books by IBPSA Fellows**

### **Building Performance Analysis (Wiley, 2018)**

*Building Performance Analysis* is the go-to resource for those who want to have a deep understanding of what building performance is. The book is endorsed by IBPSA.

Offering a comprehensive and systematic overview of the concept of building performance analysis, *Building Performance Analysis* brings together many existing notions and ideas in one title. A substantial book, it has 11 chapters, 600 pages, and cites over 1600 references. Part I deals with the foundations of building performance, Part II deals with performance assessment, and Part III with the impact of applying of building performance analysis throughout the building life cycle. The book concludes with an epilogue that presents an emerging theory of building performance analysis.



Written for the building science community, it aims to make the following contributions to the field:

- 1 It reviews the significant body of knowledge on building performance that already exists.
- 2 It emphasizes that building performance has many aspects, and challenges the community to address those that get less prominence in the literature.
- **3** Going beyond simulation as a tool for building performance analysis, it also discusses physical measurement approaches, expert judgment, and stakeholder evaluation. It offers a review of the many analysis approaches available in each of these categories.
- 4 The emergent theory in the epilogue is intended as a key resource for researchers seeking to develop questions and hypothesis. This is intended as matter for discussion, debate, and deeper exploration.

### **Building Performance Basics (Amazon KDP, 2022)**



*Building Performance Basics* is a short book intended as an introductory text for students at BSc and MSc level, a primer for those entering the industry, and a refresher for those who are already in practice but want to sharpen their view. As *Building Performance Analysis* (above) is rather encyclopaedic, this booklet has been written with a different tone and set-up: short and cheerful, published with Amazon KDP in order to be quick to market, brief and to the point, and more persuasive in order to champion the importance and role of building performance.

*Building Performance Basics* deals with core questions about building performance: Why is it important? What exactly is it? Where does it play a role? Who should champion building performance? How do we quantify it? And how much performance should we aim for?

*Building Performance Basics* aims to provide a solid foundation for further professional development and learning about building performance, and for claiming leadership about building performance in practice. In academic courses, it provides context to modules that introduce students to hands-on performance quantification efforts using simulation, measurement and occupant surveys. In industry, this book can be used at any time where there is a wish to refresh a role as building performance champion.

### Announcing the second edition of the IBPSA-endorsed book, Fundamentals of Building Performance Simulation

The second edition incorporates many of the ideas and helpful suggestions provided by colleagues throughout the world following publication of the first edition in 2020.

The content of all chapters has been updated and expanded. This includes many new simulation exercises and several new readings.

The most significant enhancement is in the treatment of HVAC systems. Part V of the book now includes five chapters that progress from idealized methods to the explicit representation of HVAC components and their control.

Another area of major expansion is to the culminating trials that integrate the learnings of the earlier parts of the book. There are now three culminating trials to progress from the simplest case of a free floating building to one conditioned with an air-based HVAC system. Measured data for these trials are now provided within the book and more detailed guidance is given on diagnosing possible causes for disagreement between simulation predictions and these measurements.

The second edition will be available from the publisher's website (www.routledge.com/Fundamentals-of-Building-Performance-Simulation/Beausoleil-Morrison/p/book/9781032724782) in late April 2025.



Apr 2025: 432pp 105 Color illustrations Pb: 978-1-032-72478-2 **\$105 \$84** Hb: 978-1-032-79589-8 **\$170 \$136** For more information visit: www.routledge.com/9781032724782

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## Fundamentals of Building Performance Simulation

#### Ian Beausoleil-Morrison

Fundamentals of Building Performance Simulation, 2nd Edition compares the theory and practice of a multi-disciplinary field to the essentials for classroom learning and real-world applications. This textbook equips students and emerging and established professionals in engineering and architecture to predict and optimize buildings' energy use. The textbook will be accompanied by student and instructor digital resources including chapter introduction videos by the author, software and simulation walkthrough videos, weather data, photographs, drawings and measured data to support the culminating trials.

Integrated building design is paramount to highly energy efficient buildings. Building simulation is fundamental in this process. Prof. Beausoleil-Morrison brings us the second edition of this fantastic textbook, based on his experiential teaching method, that helps us to develop the critical view so necessary in a building simulation professional. It will become a 'must have' for all universities with courses in this area.

Roberto Lamberts, Laboratory for Energy Efficiency in Buildings, Federal University of Santa Catarina, Brazil

Especially in the current era of BIG DATA and AI, physics-based models are very important. They are crucial in realizing the necessary transition to a carbon-neutral society. Ian Beausoleil-Morrison teaches better than anyone what matters in Building Performance Simulation.

Helsen Lieve, KU Leuven, Belgium

Did you ever wonder what the strengths and limitations of the models in building performance simulators are? This book explains in a rigorous and approachable way the major models for building performance simulation. As building operation becomes more dynamic to facilitate renewable integration, and their energy system architectures evolve to improve grid-responsive operation, the information added in this 2nd edition about HVAC and controls is of increased importance to train simulation users. This is recommended reading for anyone who needs to be competent in building performance simulations.

Michael Wetter, Lawrence Berkeley National Laboratory, USA

**Building Performance** Simulation for Design and Operation Edited by Jan L.M. Hensen and **Roberto Lamberts** R **Table of Contents** 1. Introduction to building performance simulation, Jan Hensen and Roberto Lamberts 2. The role of simulation in performance based building, Godfried Augenbroe 3. Weather data for building performance simulation, Charles Barnaby and Drury Crawley 4. People in building performance simulation, Ardeshir Mahdavi and Farhang Tahmasebi 5. Thermal load and energy performance prediction, Jeffrey Spitler 6. Ventilation performance prediction, Jelena Srebric 7. Indoor thermal quality performance prediction, Christoph van Treeck and Daniel Wölki 8. Computational modeling in architectural acoustics, Ardeshir Mahdavi 9. Daylight performance predictions, Christoph Reinhart 10. Moisture modeling and durability assessment of building envelopes: recent advances, Aytaç Kubilay, Xiaohai Zhou, Dominique Derome and Jan Carmeliet 11. HVAC systems performance prediction, 12. Micro-cogeneration system performance prediction, lan Beausoleil-Morrison 13. Building simulation for practical operational optimization, David Claridge and Mitchell Paulus 14. Modelling and simulation in building automation systems, Gregor Henze 15. Integrated resource flow modelling of the urban built environment, Darren Robinson 16. Building simulation for policy support, Drury Crawley 17. A view on future building system modelling and simulation, **Michael Wetter** 18. BIM and BPS: A case study of integration cost metrics and design options, Timothy Hemsath, Matthew Goldsberry and Joel Yow 19. Modelling and simulation of building grid interaction, Wangda Zuo 20. Modelling HVAC and renewable energy plant and control, Christopher Underwood and Simon Rees 21. Urban building energy modelling, Christoph Reinhart 22. Urban physics modelling and simulation, Bert Blocken

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### Building Performance Simulation for Design and Operation 2ND EDITION

Edited by Jan L.M. Hensen, Technical University of Eindhoven, the Netherlands and **Roberto Lamberts**, Federal University of Santa Catarina, Brazil

This new edition provides a unique and comprehensive overview of building performance simulation for the complete building life-cycle from conception to demolition, and from a single building to district level. It contains new chapters on building information modelling, occupant behaviour modelling, urban physics modelling, urban building energy modelling, and renewable energy systems modelling. This new edition keeps the same chapter structure throughout including learning objectives, chapter summaries and assignments. It is primarily intended for building and systems designers and operators,

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For additional information about IBPSA, please visit the Association's web site at https://ibpsa.org. *For information on joining*, contact your nearest regional affiliate.

Members can subscribe to the IBPSA mail list (and, if desired, unsubscribe or edit) via a web interface which is available at http://lists.onebuilding.org/listinfo.cgi/bldg-sim-onebuilding.org. Note that this mailing list is solely for IBPSA-related notices and to ensure that you receive future important IBPSA updates (including the election process and announcements of IBPSA News releases).

For any other purposes, please use the BLDG-SIM list. BLDG-SIM is a mailing list for users of building energy simulation programs worldwide, including weather data and other software support resources. BLDG-SIM is intended to foster the development of a community of those users. Experienced and inexperienced users of building energy simulation programs are welcome and are expected to share their questions and insights about these programs.

If you have any questions with respect to the BLDG-SIM, please contact the list owner Jason Glazer at **jglazer**@ **gard.com** or +1 847 698 5686. This list is made possible courtesy of GARD Analytics, Inc., Ridge Park, IL, USA. For further information about this list server, see the web page located at http://lists.onebuilding.org/listinfo. cgi/bldg-sim-onebuilding.org.

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# **IBPSA** on social media

IBPSA has several internet presences on social media in addition to its main web site, its webinars, and affiliates' sites. Thanks to Mike Barker for collating the list below:

Main IBPSA web site	https://ibpsa.org
There is a wealth of material on the main web site,	
including past editions of ibpsaNEWS back to 1988	
and links to affiliates' web sites at:	https://ibpsa.org/about/affiliates

in Linkedin:	
IBPSA	www.linkedin.com/company/ibpsaworld
IBPSA Group	www.linkedin.com/groups/75552
IBPSA - Daylighting & BIPV & Fenestration	www.linkedin.com/groups/78517
IBPSA - EnergyPlus + Modelica	www.linkedin.com/groups/2085105
JBPS	www.linkedin.com/company/journal-of-building-performance- simulation
JBPS	www.linkedin.com/company/journal-of-building-performance simulation

YouTube (IBPSA University)	www.youtube.com/@IBPSAUniversity

## Journal of Building Performance Simulation

Official journal of the International Building Performance Simulation Association (IBPSA)

#### **EDITORS:**

#### Ian Beausoleil-Morrison, Carleton University, Canada Jan Hensen, Eindhoven University of Technology, The Netherlands







New content	Special Issues	Open access	Most read	Most cited
alerts		articles	articles	articles

#### Current calls for papers:

### Recently published articles (since previous IBPSA News)

access

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