

# International Seminar on Earthquake / Wind Resilience in Buildings and Bridges with Vibration Control — Base Isolation and Dampers

14 – 15 September 2018 | CSOI, Vinay Marg Chanakyapuri, New Delhi - 110021



Organized by  
**Indian Association of Structural Engineers**

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## About the Seminar

Resilience of structures after a major Earthquake has increasingly become the buzz word around the world and is also being quantified—thus improving upon the concept of "Performance Based Design". To achieve "best" (Platinum) Resilience, defined as less than 72 hour down-time & less than 2.5% direct financial loss should be computed & with no injury being expected. Thus in terms of Performance Based Design "true" "Continuous Operation" should be achieved, except that the probability of failure/ financial loss & down time is now quantified in terms of Resilience. Lower levels of Resilience are likewise reported with definite quantification of losses with Gold or Silver tags—so society is aware of compromises being made.

Achieving high Resilience becomes an expensive proposition with conventional design methods. From this emerged the thought of Vibration Control. Base Isolation and supplementary damping systems are tools to achieve Vibration Control. Vibration control can be used for new construction or as a retrofit technique for buildings & bridges. It limits earthquake impact so significantly that even ductile detailing may become redundant.

One of the major barriers to use seismic isolation and vibration control in structures on a large scale is that fact that isolation is a significant departure from conventional seismic design and one that is not routinely taught in university degree courses. So many designers are not familiar with the approach and uncomfortable using the technique, despite the potential for significant benefits. With international interaction, though even with limited local projects, this concept is slowly becoming popular in India. Several important buildings are now being constructed using

base isolation. However knowledge on these devices and design intricacies is still very limited to the Indian Engineers and the Codes of Practice are still in formative stage.

In light of the above, IAStructE thought it prudent to organize this international seminar on this topic. International experts on the subject are invited from Japan and USA for this purpose of capacity building as well as to give important inputs for the Indian Codes being developed. Also Indian experts who are familiar with the subject are invited to share their experience. These experts will shed light on the latest technologies and trends in building earthquake resilience through vibration control. Further the Association has also signed a landmark MOU with Japan Society of Seismic Isolation (JSSI) which has been gracious in coordinating with the speakers from Japan.

The seminar provides a golden opportunity for all delegates to not only gain knowledge by listening to the International experts on this relatively new subject, but also to get the benefit of interacting with these experts to share insights and to use this business opportunities for addressing various issues of their current projects. Special details required of Architectural & MEP equipment in Vibration Controlled environment will also be discussed. Delegates will surely leave the seminar with exposure to the latest technology on Vibration Control Devices using Vibration Isolation, Dampers and Tuned Mass Dampers etc. with its application to Bridges, High-rise and Low-rise Buildings and miscellaneous structures including dealing with Non-Structural Architectural & MEP elements. **There will be important take-aways for all stakeholders in the Construction Industry--Engineers, Architects, Builders, Developers, Govt and Private Departments.**

## About IAStructE

Indian Association of Structural Engineers (IAStructE) is national apex body of structural engineers in India established with the objective to cater to the overall professional needs of structural engineers. The Association has become the source of expertise and information concerning all issues that involve structural engineering and public safety within the built environment. It has no commercial objective. IAStructE has signed an MoU with IStructE (Institution of Structural Engineers) of UK and JSSI (Japan Society of Seismic Isolation) for exchange of information and promotion of Structural Engineering profession

IAStructE is purely a professional learned society with the prime objective of supporting and protecting the profession of structural engineering by upholding professional standards and acting as a mouthpiece for structural engineers in India.

IAStructE endeavors to ensure that it's members develop the necessary skill in structural engineering and work to the highest standards by maintaining a commitment to professional ethics and standards within structural engineering.

IAStructE strives for continued technical excellence; advancing safety and innovation across the built environment. It also strives

to make available to the Government, Public Sector and Private Sector - a credible source of well qualified and experienced Structural Engineers. A nationwide database of Structural Engineers has been compiled and is being constantly updated.

The Association provides opportunity for all the members to develop skills in Structural Engineering and helps members to be at the forefront of Structural Engineering practice. Towards achievement of its aims and objectives, IAStructE is engaged in organizing the following:

- CPD Courses for Professionals
- Student's orientation program
- Technical Lectures and Technical Discussions
- Refresher Courses for young engineers
- Seminars/Workshops

IAStructE is currently operating from four regional / state centres. These regional centres are located in the Eastern, Western, Northern and Southern parts of the country residing/practicing all over the country.



## Invited Speakers



**Dr. Akira Wada**, *Professor Emeritus, Expert Earthquake Engg. Specialist, Tokyo Institute of Technology*  
Dr. Akira Wada, recipient of the 2011 Fazlur R. Khan Lifetime Achievement Medal, is considered to be a Japan's leading expert in structural engineering with a specific focus on seismic structural design, base isolation and damping. Dr. Wada's contributions to the field of science and technology make him uniquely qualified to lead and consult on a wide variety of projects.

Since becoming Professor at the Tokyo Institute of Technology in 1989, Dr. Wada has held a number of important positions, including serving as President of ANCER and chairing the CTBUH Japan Chapter since its formation in 2010. In 2014, he was elected as President of the Japan Seismic Isolation Association. He also has served as President for the Architectural Institute of Japan (AIJ, 2011.6-2013.5)

**Dr. Yoshikazu Takahashi**, *Professor, Kyoto University*

Dr. Yoshikazu Takahashi is currently serving as Professor of Structural Engineering, Department of Civil and Earth Resources Engineering, Kyoto University. After graduated as B.S. Dept. of Civil Engineering Kyoto University in 1994, he obtained his M.S. from Graduate School of Kyoto University, Japan in 1996 and Degree of Doctor of Engineering, Kyoto University in 2002. His present area of research includes Bridge Earthquake Engineering, Structural Engineering, Concrete Engineering.



**Dr. Taiki Saito**, *Professor, Toyohashi University of Technology*

Dr. Taiko Saito is currently serving as Professor / Director of Research Center for Collaborative Area Risk Management (CARM) in Toyohashi University of Technology, Japan. He graduated in 1985 and Doctor of Engineering from Tohoku Iniversity, Japan in 1990. He conducted is doctrol Research on Seismic Reliability and Random Vibration of Structures.

**Dr. Anoop Mokha**, *Vice President ,Earthquake Protection Systems, Inc., California*

Dr. Mokha ( PhD. 1990 at UB under the advisement of SUNY distinguished Professor Michael Constantinou). 1999, Prestigious "GeorgeW.Thorn" awardee. Contribution and Accomplishments in Implementation of Friction Pendulum Seismic Solutions for Reducing Earthquake Damage. He has done basic research on Friction Pendulum bearings & & implemented them in important industrial, bridge, and building structures worldwide. As V.P of EPS, since 1999, he has worked closely with all all stakeholders for successful and cost-effective implementation of 'Continued-Functionality' design with Friction Pendulum bearings in over 30 countries. He has further 10 years experience as design lead with Skidmore, Owings,& Merrill, San Francisco-- in charge of prestigious base isolation projects.



**Mr. Peter Huber**, *Head of Business Development, MAURER SE*

Handling technical sales support for anti-seismic devices, tuned mass damping devices, etc. within MAURER SE for the world market until now. Living in Penzberg/Germany 60km south of Munich. Studied at Technical University Munich with graduation in Mechanical Engineering (Dipl.-Ing.) 1990-1995. Sales Manager for bridge bearings within MAURER SE for the world market starting in 1996. Graduation in Master of Business Administration (MBA) for Technical Sales at University of Applied Sciences Landshut/Germany in cooperation with the University of California in San Diego/USA (UCSD) 2002-2004. Sales Manager for anti-seismic devices, tuned mass damping devices, etc. within MAURER SE for the world market starting in 2002-2016.

**Dr. Yogendra Singh**, *Professor, Railway Bridge Chair, and Head, Earthquake Engineering at Indian Institute of Technology Roorkee* has research interests in Performance Based Design of Buildings and Bridges; Seismic Vulnerability and Risk Evaluation; Non-Linear Modelling and Analysis; and Seismic Evaluation and Retrofitting of Structures. He has 24 years of research and teaching experience, guided 12 Ph.Ds., published 60 research articles in refereed journals and presented more than 100 papers in national and international conferences. He has been member of several expert teams on seismic safety and is convener of the BIS expert group on Performance Based Seismic Design of Structures.





**Dr. Or Tan Teng** is a Fellow of the Institute of Plastic and Rubber Malaysia, Fellow of the Institute of Material (UK), and the current President of the Malaysian Earthquake Engineering and Technology Society (MEETS). He holds a PhD in Seismic Engineering from the University of Southampton and a MSc in Mechanical and Design Engineering as well as a BSc in Rubber Technology from UK. Served as a Board Member of Malaysian Rubber Board (MRB) and Board Member of TARRC (Tun Abdul Razak Research Center, UK). He has more than 40 years of manufacturing experience in the rubber industry and a Pioneer in developing Dampeners and Isolators for Buildings, Bridges, Ports and Railways

**Mr. Oscar Galindo** is currently Buildings Solutions Manager at Quaketek Inc. where he continues to collaborate on the research and development of affordable technologies for seismic protection. At the same time, he is conducting his Civil Engineering doctoral research in vibration control based on friction devices at Concordia University in Montreal Canada, precisely where this technology was born in 1984. He collaborates with engineers in over 15 countries to thrive in the correct implementation supplemental damping in small, medium and high-rise buildings.



## Advisory Committee

<b>Mr. Manoj Mittal</b>	<i>President IAStructE, Chief Mentor, Shelter Consulting Engineers</i>
<b>Mr. Mahendra Raj</b>	<i>Founder President IAStructE, MD, Mahendra Raj Consultants Pvt Ltd</i>
<b>Mr. S. Ghosh</b>	<i>Past President IAStructE, Former Director (Emeritus) CES(I) Pvt Ltd</i>
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<b>Prof. Mahesh Tandon</b>	<i>Past President IAStructE, MD, Tandon Consultants Pvt Ltd</i>
<b>Mr. Abhai Sinha</b>	<i>Former DG, CPWD</i>
<b>Mr. Jayesh Kumar</b>	<i>Engineer Member, DDA</i>
<b>Mr. Sanjay Pant</b>	<i>Director &amp; Head Civil Engineering BIS</i>

## Technical Committee

<b>Prof. Akira Wada</b>	<i>President, The Japan Society of Seismic Isolation (JSSI)</i>
<b>Dr. C.V. R. Murty</b>	<i>Director, IIT Jodhpur</i>
<b>Dr. D. K. Paul</b>	<i>Former Professor, IIT Roorkee</i>
<b>Dr. R. Pradeep Kumar</b>	<i>Professor and Head EQRC, IIIT Hyderabad</i>
<b>Prof. Vasant Matsagar</b>	<i>Associate Professor, Civil Engineering Department, IIT Delhi</i>
<b>Mr. Vipul Ahuja</b>	<i>CEO and Director, Ahuja Consultants Pvt Ltd</i>
<b>Dr. S.D. Bharti</b>	<i>Associate Professor, Civil Engineering Department, MNIT Jaipur</i>
<b>Dr. Yogendra Singh</b>	<i>Professor and Head, Earthquake Engineering Department, IIT Roorkee</i>

## Organizing Committee

<b>Mr. Vinay Gupta</b>	<i>Chairman, Seminar &amp; Workshop Committee IAStructE, Director and CEO, Tandon Consultants Pvt Ltd</i>
<b>Mr. Alok Bhowmick</b>	<i>Honorary Secretary IAStructE, MD, B&amp;S Engineering Consultants Pvt Ltd</i>
<b>Prof. Anjan Dutta</b>	<i>Vice President (East), IAStructE, Professor &amp; Head, CED, IIT Guwahati</i>
<b>Mr. Bhavin Shah</b>	<i>Chairman Gujarat State Centre IAStructE, CEO, VMS Engg. &amp; Design Services (P) Ltd</i>
<b>Dr. Harshavardhan Subbarao</b>	<i>Vice President (West), IAStructE, CMD, Construma Consultancy Pvt Ltd</i>
<b>Mr. Mayank Rawal</b>	<i>GC member ICI</i>
<b>Mr. Ratish Jain</b>	<i>Managing Director, Resistoflex Group</i>
<b>Mr. Sandeep Shah</b>	<i>Country Head and MD Taylor Devices India</i>
<b>Ms. Sangeeta Wij</b>	<i>Vice President (North), IAStructE, Managing Partner, SD Engineering Consultants LLP</i>
<b>Mr. S. P. Anchuri</b>	<i>Vice President (South), IAStructE, Chief Consultant, Anchuri &amp; Anchuri,</i>
<b>Mr. Supradip Das</b>	<i>GC member ICI</i>
<b>Dr. T. Visalakshi,</b>	<i>GC member, IAStructE, Professor and Head, CED, Bennett University</i>

# PROGRAM

DAY I : 14TH SEPTEMBER 2018

**DELEGATES REGISTRATION (09:00 Hrs to 9:30 Hrs)**

**INAUGURAL SESSION (9:30 Hrs to 10:30 Hrs) (60 mins)**

Chief Guest & Keynote Address – TBD

**TEA: 10:30 Hrs to 11:00 Hrs**

**Technical Session 1**  
11:00 Hrs to 12:25 Hrs

**Overview of Proceedings & Global Trends in Vibration Control**

**Overview of Seminar** Mr. Vipul Ahuja (15 mins)

**Statement by BIS Chairman of Code Committee on Vibration Control.**  
Prof. D.K. Paul (15 mins)

**Global Trends in Vibration Control - Recent earthquakes and next concept for earthquake design including Case Studies. (Part I)**

Prof. Akira Wada (45 mins)

QA-10 minutes

**Technical Session 2**  
12:25 Hrs to 13:40 Hrs

**Performance of Buildings with and without Vibration Controlled**

**Devices during major Earthquakes including Case Studies. (Part I)**

Prof. Taiki Saito (45 mins)

Presentation by Mr Oscar Galindo, KLA-Quaketek Inc. (20 mins)

QA-10 minutes

**LUNCH: 13:40 Hrs to 14:15 Hrs**

**Technical Session 3**  
14:15 Hrs to 15:55 Hrs

**Vibration Control in Bridges & Buildings Japanese & Indian perspective**

**Performance of Bridges in major earthquakes with and without Vibration Control devices during major Earthquakes/ wind events including Case Studies (Part I)**

Prof. Yoshikazu Takahashi (45 mins)

**Applications of Vibration Control in the Indian Landscape and need for important provisions for future codes.**

Mr. Vipul Ahuja (45 mins).

QA- 10 minutes

**TEA: 15:55 Hrs to 16:20 Hrs**

**Technical Session 4**  
16:20 Hrs to 18:00 Hrs

**Resilience in Buildings & Bridges**

**Applications of natural rubber product for seismic isolation of civil engineering structures**

Dr. Or Tan Teng (45 mins)

**Quantifying Resilience in Buildings & Bridges as per FEMA & REDi (Part I)**

Dr. Anoop Mokha (45 mins)

QA- 10 minutes

## DAY II : 15TH SEPTEMBER 2018

**Technical Session 5**  
09:30 Hrs to 11:15 Hrs

**Indian & Eurocode provisions on Vibration control**

**Design, application and Testing of Base Isolation, Cable Dampers, Tuned Mass Dampers and other Anti-seismic Devices as per Eurocode EN15129**  
Mr Peter Huber (Sanfield) (45 mins)

**Formulation of Indian Code on Vibration Control--Emulation and Value Addition.**

Dr. Yogendra Singh, Professor & Head, EQ. Engg. Dept., IIT Roorkee (45 minutes)  
QA-15 minutes

**TEA: 11:15 Hrs to 11:45 Hrs**

**Technical Session 6**  
11:45 Hrs to 13.45 Hrs

**Importance of Vibration Control & the Indian Landscape**

**Global Trends in Vibration Control - Recent earthquakes and next concept for earthquake resistant design including Case Studies. (Part 2)**  
Prof. Akira Wada (45 mins)

**Performance of Bridges in major earthquakes with and without vibration control devices during major Earthquakes/ wind events including Case Studies (Part 2)**

Prof. Yoshikazu Takahashi (45 mins)  
Presentation by Sponsor (15 mins)  
QA-15 minutes

**LUNCH:13:45 Hrs to 14:30 Hrs**

**Technical Session 7**  
14:30 Hrs to 16:30 Hrs

**Buildings with Vibration Control & ASCE 7 2016 Provisions**

**New provisions of ASCE 07-2016 relevant to Vibration Control**  
Dr. Anoop Mokha (45 mins)

**Performance of Buildings with and without Vibration Controlled Devices during major Earthquakes including Case Studies. (Part 2)**

Prof. Taiki Saito (45 mins)  
Presentation by Sponsor (15 min)  
QA-15 minutes

**TEA: 16.30 Hrs to 17:00 Hrs**

**Technical Session 8**  
17:00 Hrs to 17:45 Hrs

**Panel Discussion (45 mins)**

**Concluding Session & Report 17:45 Hrs to 18:00 Hrs**

**END OF DAY TWO**



# Who Should Attend

- Structural Engineers
- Architects
- Consultants and Designers
- Urban Planners
- Contractors and Builders
- Promoters and Developers
- Academicians and Students
- Government Departments, PSUs
- Financiers and Funding Agencies
- Equipment System Suppliers
- Applicators
- Civil Society
- Project Management Consultants

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Complimentary Delegates	7	5	3	2	2	1
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Presentation Slot (15 mins)	√	-	-	-	-	-
Display of name during lunch hours at lunch venue	-	-	-	-	√	-
Logo and name in the inner flap of the Kit	-	-	-	√	-	-
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		Chair	2 no.	Power socket	1 no.	
		Delegate passes	1 no.			

## REGISTRATION FEE

(Delegate fee includes registration, kit, seminar literature, lunch and tea)

- IAStructE Members - Rs 8000/-
- Others - Rs 10000/-
- Students of Engineering Colleges and Institutions - Rs 5000/-
- Foreign Delegates - 150 USD
- Three or more delegates from same organization can avail 10% discount on Registration fee
- **This program is approved and supported by Engineering Council of India and may be considered under their CPD program**

## MODE OF PAYMENT

- Cheque/ DD drawn in favor of **“Indian Association of Structural Engineers”**
- Bank Transfer (See Registration Form)

# REGISTRATION FORM

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14th – 15th September, 2018

**Venue:** Civil Services Officers' Institute (CSOI), Vinay Marg, Chanakyapuri, New Delhi

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## REGISTRATION FEE

(Delegate fee includes registration, kit, seminar literature, lunch and tea)

- |   |   |            |
|---|---|------------|
| • IAStructE Members                                 | - | Rs 8000/-  |
| • Others  | - | Rs 10000/- |
| • Students of Engineering Colleges and Institutions | - | Rs 5000/-  |
| • Foreign Delegates                                 | - | 150 USD    |

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