



IASS Technical Activities Committee Report, 2021-2022

Date: 17th December 2022

1. Status of WG Organized Sessions

The following WG organized sessions have been proposed and organized (Status September 2021). 244 full papers have been assigned to and reviewed by the IASS Working Groups

	Session Name	Organizer
WG4	Masts and Towers	M. Nielsen
WG5	Future Challenges in the Design and Construction of Shell Structures for Low or Zero Carbon	S. Gabriele, C. Olivieri
WG6	Tension Structures and Sustainable Society	K. Kawaguchi, M. Mollaert
	Retractable Tension and Membrane Structures	K. Kawaguchi, M. Mollaert
WG8	Metal Grid-shell Structures	T. Takeuchi, S.D. Xue, S. Kato
	Connections and Stability	T. Takeuchi, S.D. Xue, S. Kato
	Dynamic Response of Metal Spatial Structures	T. Takeuchi, S.D. Xue, S. Kato
WG12	Concepts for Sustainable Innovation in Construction	A. Falk, M. He
WG13	Computational Methods	M. Ohsaki, J. Coenders
WG15	Structural Morphology	N. De Temmerman, T. Tachi
WG17/WG5	Sustainable Heritage: Challenges and Strategies in the Preservation and Conservation of 20th Century Historic Concrete Shells	R. Tarczewski, M. Mendoza, S. Gabriele
WG18	Life-Cycle Design and Assessment of Shell and Spatial Structures	O. Baverel, C. Fivet
WG 20	Facilitating Innovation, Sustainability and Legacy	O. Popovic, A. Behnejad
WG 21	3D Printing and Molding	A. Pronk, J. Orr



2. Meet and Greet New Chair

An informal virtual meeting was held on 25th of February 2022 to thank the outgoing and greet the new chair while making introductions and connections with WG chairs. During the meeting, strategies were discussed to augment WG activities, increase active WG membership and ensure smooth and timely chair succession. Drafted notes were circulated to the WG chairs after the meeting.

3. Appointments

3.1. Reinhard Harte (WG3) and Sigrid Adriaenssens (WG5) have informed the IASS president of their intent to step down as co-chairs in 2023.

3.2. The IASS president has appointed Arndt Goldack (University of Wuppertal, Germany) and Lin Zhao (Tongji University Shanghai, China) as co-chairs of WG3 Reinhard Harte remains as chair of the group for one more year.

3.3. The IASS President has appointed Stefano Gabriele (Roma Tre University, Italy) as new co-chairperson of WG5. Philippe Block and Sigrid Adriaenssens remain as co-chairs of the group. Sigrid Adriaenssens remains co-chair for one more year.

4. WG Requests for name changes

Two requests for name changes have been received and discussed at the WB meetings.

4.1. WG3's request to change from *Cooling and Solar Updraft Towers* to *Shell Structures for Energy Supply* has been discussed in the meeting of July 12th, 2022.

4.2. WG5 has submitted a request to change their name from *Concrete Shell Roofs* to *Continuous Shells*. This request has been discussed in the July 12th, 2022 meeting.

4.3. Both requests of name change have been brought and approved by the Executive Council.

5. WG addressing climate change and adaptation

WG18, with the support of Carlos Lazaro, Sergio Pellegrino and Sigrid Adriaenssens has started spearheading an IASS awareness initiative on the topic of climate change and adaptation.

6. Annual TAC report on WG activities

The activity report of each WG in the period 2021-22 is appended.

Dr. Sigrid Adriaenssens
Chair of the IASS Technical Activities Committee
Professor
Princeton University
Tel. +1 609 258 6441
e-mail: sadriaen@princeton.edu



WORKING GROUP ACTIVITIES 2021–2022

WG 3 Technical Expert Group on Cooling and Solar Updraft Towers

Prof.Dr. Reinhard HARTE (Chair)

1. To extend WG3 to a larger group of engineers, especially outside of Europe.
2. To evaluate new editions of cooling tower guidelines within VGB PowerTech Association.
3. To co-operate with the International Association for Industrial Constructions CICIND in the design and construction of all kinds of industrial buildings like chimneys, cooling towers, silos, tanks, solar towers.
4. Participation in the 94th Virtual CICIND Conference in Rotterdam, The Netherlands, May 20-21, 2021.
5. Participation in the 95th CICIND Conference in Dresden, Germany, October 20-23, 2021.:
6. Current membership: 7 IASS Members

WG 4 Technical Expert Group on Masts and Towers

Eng. Mogens G. NIELSEN (Chair), Eng. D Sankara GANESH (Secretary)

1. The 30th Biennial Meeting of the Working Group for Masts and Towers is held in Toronto, ON, Canada 11th - 15th September 2022.
2. Because of the postponed meeting, the meetings of the IASS WG4 (TEG) will be held every even year from 2022.
3. A web-meeting of 3 hours was held on Monday 13th of September 2021
4. Current membership: 28 IASS Members

WG 5 Concrete Shell Roofs

Prof. Sigrid ADRIAENSSENS, Prof. Philippe BLOCK (Co-chairs)

1. The WG organized two sessions for IASS 2021 Symposium at Surrey "21st Century fabrication and construction of shells" and "Conservation and preservation of 20th century historic concrete shells" (with Prof. M. Mendoza and Prof. J. Chilton).
2. The WG formulate and submitted a request for a name change.
3. The WG organized 3 virtual meetings during 2021-2022.
4. The group continues to seek opportunities to organize sessions on concrete shell roofs for IASS Symposia and Colloquia and to assemble resources of interest including these in the listings of Resources on the WG 5 web page.
5. Current membership: 35 IASS Members

WG 6 Tension and Membrane Structures

Prof. Ken'ichi KAWAGUCHI (Chair), Prof. Marijke MOLLAERT (Co-chair)

1. WG6 had an OS "Tension and Membrane Structures: Recent Developments in and around the United Kingdom", during IASS2020/2021 online symposium, mainly prepared by Sudarshan Krishnan.
2. Ken'ichi Kawaguchi and Marijke Mollaert were awarded Pioneers' Award from the Spatial Structures Research Centre of the University of Surrey .
3. WG6 has organized the first annual meeting, in the form of online,
4. Current membership: 30 IASS Members



WG 8 Metal Spatial Structures

Prof. Toru TAKEUCHI (Chair), Prof. Su-Duo XUE (Co-chair), Prof. Shiro KATO, (Co- chair)

1. IASS2021 conference has been held online by Univ. Surrey, and WG8 provided four sessions with eight slots. Although in online, the sessions have been well organized and active discussions were taking place. For annual conference 2022 in Beijing, WG8 is proposing organized sessions regarding as "Metal Grid shell structures, Connections, and Stability" and "Dynamic Response of Metal spatial structures"
2. Working group is now planning to organize the special issue for IASS Journal regarding as Metal Spatial Structures targeting on 2023.
3. Current membership: 21 IASS members.

WG 12 Timber and Bio-based Spatial Structures

Dr. Andreas FALK (Chair), Prof. Minjuan HE (Co- chair)

1. Organised five special sessions on "Bio-based concepts inspiring the Spatial Structures and Architecture of the next generation" for the IASS Symposium 2021 in Surrey/Guildford, UK which was postponed from 2020 due to the Covid-19 pandemic and organised as an online venue (organiser Dr. Andreas Falk).
2. Started a Working Group online forum arranged every second month, for discussions and exchange of ideas and updates.
3. Current membership: 10 IASS members.

WG 13 Computational Methods

Prof. Makoto OHSAKI, Prof. Kai-Uwe BLETZINGER, Dr. Carlos LÁZARO (Co- chairs)

1. Started a new study group on "Next Generation Parametric Design." Two study group meetings have been held online in November 2021 and in April 2022.
2. Edited a special issue of the IASS Journal on "Computation of Shell and Spatial Structures" (vol. 62, n.208, 2021)
3. Organized two sessions titled "Optimization methods for analysis and design of roof structures" and "Next generation of parametric design" for the IASS 2021 - Surrey 7 Symposium.
4. Current membership: 29 IASS Members.

WG 15 Structural Morphology

Prof. Niels DE TEMMERMAN (Chair), Prof. T. Tachi(co-Chair)

1. The Structural Origami Gathering 2021 was held online in August 2021
2. *ReciPlyDome*: a transformable reciprocal frame structure with bending-active elements, was shown at a science exhibition in Brussels, Belgium,
3. The study group on Graphical Methods organized a session on Optimized Structural Design at ASCE Structures Congress 2022
4. Current membership: 46 IASS Members.

WG 17 Historical Spatial Structures

Prof. Marisela MENDOZA (Chair), Prof. Romuald TARCZEWSKI (Co- chair)

1. WG17 regular members meetings.
2. Organized session for IASS Surrey 2020/21 Symposium – S24 Historical structures.
3. Current membership: 26 IASS Members.



WG 18 Life-Cycle Design and Assessment of Shell and Spatial Structures

Prof. Olivier BAVEREL, Prof. Corentin FIVET (Co- chairs)

1. Organized a session on “Lifecycle design and assessment of structures” at IASS 2021 Surrey.
2. Is redefining the mission of the Working Group and preparing a roadmap for future activities.
3. Plans to build a list of links to relevant publications on the life-cycle design and assessment of structures.
4. Current membership: 4 IASS Members.

WG 20 Teaching of Shell and Spatial Structures

Prof. Olga POPOVIC LARSEN (Chair), Dr. Alireza BEHNEJAD (Co-chair)

1. Organised two technical sessions at the IASS Symposium 2020/21.
2. Organised several workshops and short courses ranging from 2-16 hours focusing on the design, construction and education of spatial structures in collaboration with the local hosting universities Ferdowsi University of Mashhad, Iran, Isfahan University of Technology, Iran, Southwest Jiaotong University, China.
3. Current membership: 25 IASS Members.

WG 21 Advanced Manufacturing and Materials

Dr. Arno PRONK (Chair), Dr. John ORR (Co-chair)

1. Organized a session on “Fabric Formwork” at the 2021 Structural Membranes conference (online).
2. Arranged a special IASS Journal Issue
3. Current membership: 19 IASS Members.

Updated December 22nd, 2022

Dr. Sigrid Adriaenssens
Chair of the IASS Technical Activities Committee
Professor
Princeton University
Tel. +1 609 258 4661
e-mail: sadriaen@princeton.edu