



REPORT ON THE IASS TECHNICAL ACTIVITIES, 2017–2018

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1. INTRODUCTION

The annual report of the Technical Activities Committee (TAC) summarizes the main activities, results and news related to the IASS Working Groups (WGs).

The IASS policy on Technical Activities includes the organization of Working Group sessions during IASS annual Symposia and the reporting of WG activities in the website of the Association.

Besides the organization of sessions in the annual Symposia, Working Groups carry out diverse technical activities ranging from the organization of scientific meetings to the preparation of guidelines, reports or scientific papers, as well as the edition of special issues of the Journal of the IASS. You may find more detailed information about WG membership, organization and activities in the IASS website, and in previous TAC reports available under the Technical Activities menu tag.

All IASS members have full access to the Working Group webpages. An abridged presentation of Working Group activities for non-members is available on the public part of the website. WG webpages include information about mission, objectives, activities and membership of each group, as well as links to relevant related documentation.

2. ACTIVITIES DURING 2016-2017

2.1. News related to the Working Groups

- **WG 12 – Timber Spatial Structures.** Dr. Andreas Falk, chair of WG 12, requested to

change the name of the WG to “**Timber and Bio-based Spatial Structures**” to reflect recent interests and developments in the field related, for example, to the use of paper (cellulose based) or bamboo as materials for spatial structures. The IASS Executive Council (EC) approved this change.

- **WG 18 – Environmentally Compatible Structures.** Specific actions to increase the activity of WG 18 have been started in Boston. A discussion group met twice during the symposium. In the meetings that took place, the following directions of development were identified: (a) consolidation of environmental footprint assessments of shell and spatial structures; (b) investigation on environment-driven design techniques; (c) development of benchmarking techniques and case-studies on best practices. Potential new names for the group were also proposed. The one that received more support was “Life-cycle design and environmental impact of shell and spatial structures”.

Following the discussions, the IASS President has appointed Profs. Olivier Baverel and Corentin Fivet as new chairs of the group. We express hereby, on behalf of the Association, our gratitude to Dr. Petr Vegh for his commitment and achievements as past chair of WG 18.

2.2. Summary of Working Group activities

A summary of the main activities of each of the active Working Groups is included in the following pages. Further details may be found on the corresponding WG website.

<p>WG 3 Technical Expert Group on Cooling and Solar Updraft Towers Prof.Dr. Reinhard HARTE (Chair)</p> <ul style="list-style-type: none"> • Held a special session and a meeting of the group at IASS 2017 in Hamburg. • Is working on a new edition of the VGB Standard VGB-S 612 <i>Structural Design of Cooling Towers</i>, which shall be published in German around the end of 2018; a version in English will follow. • Organization of the <i>International Conference on Industrial Chimneys and Cooling Towers ICCT2019</i> in Edinburgh, UK, Oct 2019, jointly organized by CICIND, the International Association for Industrial Chimneys, VGB PowerTech, the Technical Association for Power and Heat Generation and IASS WG 3. • Current membership: 11 IASS Members
<p>WG 4 Technical Expert Group on Masts and Towers Eng. Mogens G. NIELSEN (Chair), Eng. Thomas LAURSEN (Secretary)</p> <ul style="list-style-type: none"> • Organized the bi-annual group meeting in Beijing in September 2017. • Next colloquium will take place in Winchester (UK) in September 8-12, 2019 • Current membership: 26 IASS Members
<p>WG 5 Concrete Shell Roofs Prof. Sigrid ADRIAENSSENS, Prof. Philippe BLOCK (Chairs)</p> <ul style="list-style-type: none"> • Organized three sessions on construction of shell structures, validation of shell behavior and historic shells in the USA (with WG 17) at IASS 2018. • Current membership: 28 IASS Members
<p>WG 6 Tension and Membrane Structures Prof. Ken'ichi KAWAGUCHI (Chair), Prof. Marijke MOLLAERT, Prof. Ronald SCHAEFFER (Co- Chairs)</p> <ul style="list-style-type: none"> • Organized four sessions on pneumatic structures, mechanical properties of membrane materials, memorial for K. Snelson and tension structures in North America (with WG17) at IASS 2018 Boston. • Chairs of the WG delivered lectures at <i>Structural Membranes 2017</i> and at the <i>9th International Symposium on Steel Structures</i> in Jeju, Korea • Current membership: 26 IASS Members
<p>WG 8 Metal Spatial Structures Prof. Toru TAKEUCHI (Chair), Prof. Su-Duo XUE (Co-chair), Prof. Shiro KATO, (Co- Chair)</p> <ul style="list-style-type: none"> • Organized two special sessions on connections and stability, and on dynamic response of metal spatial structures at IASS 2018 Boston. • Uploaded the <i>Guide to Buckling Load Evaluation of Metal Roof Spatial Structures</i> to the WG8 webpage. • Finalized a first draft of the <i>Guide to Earthquake Response Evaluation of Metal Roof Spatial Structures</i>. • Current membership: 25 IASS members.
<p>WG 12 Timber and Bio-based Spatial Structures Dr. Andreas FALK (Chair), Prof. Minjuan HE (Co- Chair)</p> <ul style="list-style-type: none"> • Organized two sessions on innovative timber constructions at IASS 2018. • Current membership: 16 IASS members.
<p>WG 13 Computational Methods Prof. Makoto OHSAKI, Prof. Kai-Uwe BLETZINGER, Dr. Carlos LÁZARO (Co- Chairs)</p> <ul style="list-style-type: none"> • Co-organized two sessions at <i>Structural Membranes 2017</i>, 9-11 October, Munich. • Organized two special session on modelling, optimization and control, and on topology optimization at IASS 2018. • Is participating in the organization of the joint conference <i>Form and Force</i> (IASS Symposium 2019 – Structural Membranes 2019) to be held in Barcelona. • Current membership: 22 IASS Members.

<p>WG 15 Structural Morphology Prof. Niels DE TEMMERMAN (Chair)</p> <ul style="list-style-type: none"> Organized a gathering and an exhibition on Structural Origami in Tokyo (January – July 2018) Exhibition of the ReciPlyDome at the <i>I Love Science Festival</i> in Brussels. Organized two masterclasses and six special sessions (history, current focus and challenges of structural morphology; structural origami; graphic statics; active bending – new hybrids; transformables; and construction aware structural design) at IASS 2018 in Boston. Current membership: 58 IASS Members.
<p>WG 17 Historical Spatial Structures Prof. Edmond SALIKLIS (Chair), Dr. Romuald TARCZEWSKI (Co- Chair)</p> <ul style="list-style-type: none"> Organized three special sessions on analysis, context and symbolism of historical spatial structures, tension structures in North America (with WG 6) and historical shells in the USA (with WG 5) at IASS 2018. Current membership: 22 IASS Members.
<p>WG 18 Environmentally Compatible Structures Dr. Petr VEGH (Past-Chair), Prof. Olivier BAVEREL (Co- Chair), Prof. Corentin FIVET (Co- Chair)</p> <ul style="list-style-type: none"> Organized one special session at IASS 2018. The objectives and mission of the group are being discussed. Current membership: 8 IASS Members.
<p>WG 20 Teaching of Shell and Spatial Structures Prof. Olga POPOVIC LARSEN (Chair), Eng. Alireza BEHNEJAD (Co-Chair)</p> <ul style="list-style-type: none"> Organized one session on education in architecture and technology at IASS 2018. Current membership: 30 IASS Members.
<p>WG 21 Advanced Manufacturing and Materials Eng. Arno PRONK (Chair), Dr. John ORR (Co-Chair)</p> <ul style="list-style-type: none"> Organized one special session at IASS 2018. Is organizing a competition and exhibition of innovative lightweight structures during the IASS 2019 Symposium in Barcelona. Is organizing <i>Structural Ice 2018</i> in cooperation with the Harbin Institute of Technology (China) Current membership: 22 IASS Members.

3. FINAL REMARKS

IASS Working Groups are the center of the technical and scientific activities of the association. They evolve and adapt to new fields of interest and action of IASS members. I would like to acknowledge the efforts of all Working Group chairs in coordinating the WG activities, recruiting members, preparing reports and technical documentation, and contributing the Organized Sessions at the various recent Symposia. **I encourage all IASS members to participate in the Working Group activities!**