

# REPORT ON THE IAASS TECHNICAL ACTIVITIES, 2011–2012

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## 1. INTRODUCTORY REMARKS

This year's annual Symposium in Seoul took place in May, earlier in the year than typical. Due to this circumstance, the Technical Activities Committee (TAC) Report, which is usually published together with the Symposium Report, has been included into the September issue of the *Journal*.

The IAASS policy on Technical Activities was approved by the Executive Council in 2008. It was successfully implemented during a three-year (2009-2011) trial period [1], [2]. The Executive Council agreed to a three-year extension (2012-2014) of this policy in the meeting that took place at the 2011 Symposium in London. As a result of the new actions, IAASS members and other interested participants could attend the Working Group Organized Sessions in the Valencia, Shanghai, London and Seoul Symposia, and in this way, they could stay informed and/or participate in the new developments of each WG.

This is the first report that I am authoring after my appointment as TAC Chair. Much of its contents are based on a preliminary version presented to the EC in Seoul, and owed to my predecessor, Prof. René Motro, new President of IAASS, whose efforts and achievements as TAC Chair I would like to acknowledge.

I would also like to acknowledge the efforts of the 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.

### 1.1. IAASS Policy on Technical Activities

The policy on Technical Activities relies on two fundamental actions:

- Each WG is asked to prepare an **annual report**. According to the renewed policy guidelines approved in London, all Working Group chairs have used the updating tool of the IAASS website

in order to upload their reports. All reports are therefore accessible to IAASS members in the Internet.

- Each WG commits to **organize a session during the annual Symposium**. The Organized Sessions are a useful tool not only for giving a taste of the latest developments in the field of the WG, but also to attract new members and relevant experts. This year, 15 sessions have been organized by the Working Groups, comprising 82 lectures. These figures represent an increase of 22% in the number of lectures, and of 50% in the number of organized sessions when compared to the previous Symposium.

### 1.2. Technical Activities Committee Session

In order to underline the importance of the Working Groups in our Association, a specific plenary speech by Prof. René Motro as outgoing TAC Chair took place on the first day of the Seoul Symposium. Several objectives motivated this initiative:

- To improve the knowledge of our Association by the Symposium delegates,
- To present the IAASS website, and Working Group web pages,
- To summarize the activities of Working Groups that could not organize a session in Seoul,
- To identify the Organized Sessions for delegates who could be interested to attend one or more of them,
- To inform about the *Journal of the IAASS*,
- To make a brief announcement of future technical conferences endorsed by the IAASS (annual symposia, WG colloquia, and other IAASS-endorsed conferences.)

This TAC plenary session is intended to recur at all future Annual Symposia.

### 1.3. Working group webpages

All IASS members have 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. The organization of each page follows a common structure, which allows keeping the specific characteristics of each WG. The main parts of the website report are:

- A first set comprising three sections: “**Mission**”, “**Background**” and “**Current Objectives**”. They are self-explanatory, and are the ones also posted on the **public part** of the website.
- The second set begins with information of the last updating date, and contains a section on “**Activities**” (the period covers the activities since the preceding symposium, and includes those developed until the Seoul Symposium), and one of “**Future Anticipated Activities**” (The period may cover several years according to the specific Working Group projects).
- A third set is devoted to “**Membership**”: it begins by a “call for joining” the Working Group. The subsequent list contains IASS members. An additional list of experts (non IASS members) can be attached as a document at the end of the web page. Since the webpage is not completely visible by non-members, distribution of flyers has been suggested to WG chairpersons in order to attract new members.
- The two last sections concern “**Documentation**” and “**Links**.” It is possible for IASS members to download documents previously attached by the chairpersons as resources, and to benefit of useful links to other websites. Working groups are encouraged to use this possibility. It is advisable to scan documents, such as older reports, recommendations, and other publications of the various Working Groups, creating an **archive** that could be read by IASS members. Chairs have also been asked to upload a flyer related to their Working Group. This has already been accomplished by some WGs.

It is also planned to include slideshows collecting a few photographs of each WG to illustrate the public WG pages.

### 1.4. Activities of Working Groups

Besides the organization of sessions in the annual Symposia, Working Groups carry out diverse technical activities such as:

- **Organization of scientific meetings.** Some of the Working Groups hold regular colloquia and international seminars. This year, WG 3 (Cooling and Solar Updraft Towers) organized the 6<sup>th</sup> International Symposium on Cooling Towers in Cologne, Germany on June 20-23 2012. This is the most recent in the series of Colloquia of IASS WG 3.
- **Preparation of reports and state-of-the-art reviews** of fields related to the WG, like those published in previous years (for example “Structural Design of Retractable Roof Structures” by Prof. Kazuo Ishii.)
- **Preparation of guidelines:** WG 19 presented during the Seoul Symposium the “Draft structural design guidelines for Temporary Spatial Structures”.
- **Edition of special issues** of the *Journal of the IASS*. WG 15 is editing a special issue on Structural Morphology, which is scheduled in December.
- **Publication of scientific papers** in the *Journal of the IASS* and other international journals.
- **Organization of special sessions in other scientific meetings**, like WG 5 and WG 13 at the IASS-IACM 2012 Conference, which took place last March in Sarajevo.
- **Analysis of real cases.**
- **Publication of newsletters.**

It should be remarked that more recent Working Groups (Computational Methods, Structural Morphology, Historical Spatial Structures, Environmentally Compatible Structures, and Temporary Spatial Structures) have transversal character. Previous ones were dedicated to specific sub-classes of Shell and Spatial Structures. This feature conditions the way in which each group carries out its activities.

### 1.5. Working group membership

According to the statutes of IAASS the members of a WG should be members of the Association.

#### TITLE IV - ARTICLE 22

The Executive Council may from time to time create Working Groups as described in Article 7 of the Statutes. Each Working Group shall consist of members of the Association and shall be presided over by a Chairperson appointed by the President. Each Working Group shall report to the Executive Council in writing or on the website once a year. The report of the investigations of each Working Group shall be submitted to the Executive Council who shall have the right to approve or disapprove the publication of such report under the auspices of the Association.

Experts (non IAASS members) who are interested by the activities of a Working Group are welcome as WG members. The objective is to encourage them to join our Association by explaining the advantages attached to membership: reduced fees for Symposia, access to the totality of the website, reception of the four annual Issues of the *Journal of the IAASS*.

The geographical concentration in the Working Group membership is generally justified by a local dominant interest in the field: it is the case of WG 3 “Cooling Towers,” or WG 8 “Metal Spatial Structures” (particularly for earthquake studies.) Financial considerations for the organization of meetings and colloquia also play a significant role. All groups make remarkable efforts to enlarge their membership, and new co-chairing can help the geographical extension, expressing the international character of the Association. This situation happened recently in WG 6 “Tension and membrane structures”: two new co-chairs were appointed with the purpose to cover Europe and America.

Most Working Groups have between **20** and **25** IAASS Members.

### 2. COMMENTS ON WORKING GROUP REPORTS

Some specific comments concerning each of the active Working Groups are included in this section. Further details may be found on the corresponding WG webpage.

<p><b>WG 1 Tanks and Silos</b></p> <ul style="list-style-type: none"> <li>• This Working Group is currently under reorganization.</li> <li>• Critical issues related to silos and tanks include the evaluation of wall loads due to nonuniform discharge, as well as the study of buckling phenomena in metal tanks and silos.</li> <li>• IAASS members interested in these problems may contact the author of this report.</li> </ul>	<p><b>Prof. Dr. J. Michael ROTTER (Chair)</b></p>
<p><b>WG 3 Cooling and Solar Updraft Towers</b></p> <ul style="list-style-type: none"> <li>• Participation in the 15<sup>th</sup> IAHR-conference on Cooling Technologies in Beijing, China Oct. 2011</li> <li>• Organization of the 6<sup>th</sup> International Symposium on Cooling Towers in Cologne, Germany in 2012, <a href="http://www.isct2012.de">http://www.isct2012.de</a></li> <li>• Plan to participate in the 3<sup>rd</sup> SUTPT 2012 Conference in Wuhan, China, <a href="http://www.SUTPT2012.org">www.SUTPT2012.org</a> , and in the 16<sup>th</sup> IAHR 2013 Conference in Minsk, Belarus, <a href="http://16iahr-cooling-tower.itmo.by">http://16iahr-cooling-tower.itmo.by</a></li> <li>• Plan to organize special sessions at the IAASS Wroclaw 2013 Symposium, and at SEMC 2013 Symposium in Cape Town, South Africa, <a href="http://www.semc.uct.ac.za">www.semc.uct.ac.za</a></li> <li>• Current membership: <b>16</b> IAASS Members</li> <li>• Specific action is being developed for extending the membership outside Europe.</li> </ul>	<p><b>Prof. Dr. Eng. Reinhard HARTE (Chair)</b></p>
<p><b>WG 4 Masts and Towers</b></p> <ul style="list-style-type: none"> <li>• Encourage the members of the Working Group to become members of the IAASS.</li> <li>• Planning of the 26<sup>th</sup> meeting in September 2013 in Paris, France with approx. 60 participants from approx. 20 countries (22-24 presentations.)</li> <li>• Current membership: <b>30</b> IAASS Members</li> </ul>	<p><b>Eng. Ulrik STOTTRUP-ANDERSEN (Chair)</b></p>

<b>WG 5 Concrete Shell Roofs</b> <ul style="list-style-type: none"> <li>• Co-edited a special issue of the <i>J. of IASS</i> on the work of H. Isler (2011) [3].</li> <li>• Organized a session at the IASS-IACM 2012 Conference in Sarajevo, <a href="http://www.gf.unsa.ba/iass-iacm-2012/">http://www.gf.unsa.ba/iass-iacm-2012/</a> , and <b>two</b> sessions at IASS-APCS 2012 Symposium in Seoul (joint sessions with WG 17).</li> <li>• Contributed a special section of the June 2012 issue of the <i>J. IASS</i> on “Retrospectives on Concrete Shells” [4].</li> <li>• Plan a set of sessions on the works of P.L. Nervi at the IASS Wroclaw 2013 Symposium (joint with WG17).</li> <li>• Plan, organize and edit a special issue of the <i>J. IASS</i> on the works of P.L. Nervi (joint with WG17, co-editors J. Abel, G. Arun and M. Chiorino) timed in September 2013</li> <li>• Uploaded several documents of interest on its webpage as potential source material for the State-of-the-Art/Practice Report.</li> <li>• Current membership: <b>25</b> IASS Members</li> </ul>	<b>Prof. John ABEL (Chair)</b>
<b>WG 6 Tension and Membrane Structures</b> <ul style="list-style-type: none"> <li>• Organized <b>two</b> sessions at IASS-APCS 2012 Symposium in Seoul.</li> <li>• Plan a session on “Membrane Structures in America” at IASS 2013.</li> <li>• Contribute a keynote lecture at the Tensinet Symposium 2013 in Istanbul (May 8-10, 2013) - <a href="http://www.tensinet.com/content/view/124/54/">http://www.tensinet.com/content/view/124/54/</a></li> <li>• Participate at the “Structural Membranes 2013” Conference in Munich (Oct. 9-11, 2013) with a plenary lecture - <a href="http://congress.cimne.com/membranes2013/frontal/default.asp">http://congress.cimne.com/membranes2013/frontal/default.asp</a></li> <li>• Organize discussion of the state-of-the-art of tension structures in the world and promote the exchange of information about regional standards.</li> <li>• Current membership: <b>28</b> IASS Members</li> </ul>	<b>Prof. Dr. Ken'ichi KAWAGUCHI (Chair)</b>
<b>WG 8 Metal Spatial Structures</b> <ul style="list-style-type: none"> <li>• The activities of this WG8 focus on two main design concerns: Buckling, and Earthquake Response of Metal Spatial Structures.</li> <li>• Publication of a State-of-the-Art on Earthquake Structural Response in the <i>J. IASS</i> in 2012 [5].</li> <li>• Organized <b>three</b> sessions at IASS-APCS 2012 Symposium in Seoul.</li> <li>• From early 2012, a group has started to work on a "Guide to Buckling Load Evaluation of Metal Roof Spatial Structures".</li> <li>• From late 2012, a group will start working in the preparation of a "Guide to Earthquake Response Evaluation of Metal Roof Spatial Structures".</li> <li>• WG Sessions will be organized in future IASS Symposia in order to promote discussion and exchange information among IASS members.</li> <li>• Current membership: <b>19</b> IASS members.</li> <li>• Specific action will be developed for extending the membership outside Asia.</li> </ul>	<b>Prof. Dr. Shiro KATO (Chair)</b>
<b>WG 12 Timber Spatial Structures</b> <ul style="list-style-type: none"> <li>• Organized <b>one</b> session at IASS-APCS 2012 Symposium in Seoul.</li> <li>• Plan to organize two sessions at IASS 2013 Symposium in Wroclaw.</li> <li>• Current membership: <b>24</b> IASS members.</li> </ul>	<b>Prof. John CHILTON (Chair)</b>
<b>WG 13 Computational Methods</b> <ul style="list-style-type: none"> <li>• Organized a session on Optimization at the International 2011 Seminar on Structural Morphology in London.</li> <li>• Organized a session on Beams and Rods at the IASS-IACM 2012 Conference in Sarajevo.</li> <li>• Co-organized <b>five</b> sessions at IASS-APCS 2012 Symposium in Seoul, jointly with WG 15.</li> <li>• Plan to contribute in the organization of the next IASS-IACM 8<sup>th</sup> Conference on Computation of Spatial Structures (date and place to be determined.)</li> <li>• Current membership: <b>25</b> IASS Members.</li> </ul>	<b>Prof. Dr. Hiroshi OHMORI (Chair)</b>

<p><b>WG 15 Structural Morphology</b></p> <ul style="list-style-type: none"> <li>Established one additional Study Group with the topic “Active Bending”, which complements the other five groups: Transformable Structures – Adaptive Formworks – Computation and Geometry – Origami – Curved Surface Structures.</li> <li>Co-organized <b>five</b> sessions at IASS-APCS 2012 Symposium in Seoul, jointly with WG 13.</li> <li>A special Issue of the <i>J. IASS</i>, based on selected papers delivered during the 7<sup>th</sup> International Seminar of the Structural Morphology Group held in London in 2011, is scheduled for December 2012.</li> <li>Current membership: <b>53</b> IASS Members.</li> </ul>	<p><b>Prof. Andrew BORGART (Chair)</b></p>
<p><b>WG 17 Historical Spatial Structures</b></p> <ul style="list-style-type: none"> <li>Current objective is documenting early reinforced concrete shell and folded plate structures all over the world. A web database is being prepared to allow for contributions of IASS members.</li> <li>Co-organized <b>two</b> sessions at IASS-APCS 2012 Symposium in Seoul (joint sessions with WG5.)</li> <li>Recent discussions were held for organizing sessions at Seoul and Wroclaw and for the special issue of the <i>J. IASS</i> on Nervi (joint with WG 5.) Discussions also allowed increasing the membership and the interest in this Working Group.</li> <li>Current membership: <b>25</b> IASS Members.</li> </ul>	<p><b>Prof. Dr. Görün ARUN (Chair)</b></p>
<p><b>WG 18 Environmentally Compatible Structures</b></p> <ul style="list-style-type: none"> <li>Organized the 9<sup>th</sup> WG 18 Seminar in Milano in April 2011 with the topic “Concept of the Theory and Terminology of ECS.”</li> <li>Organized <b>one</b> session at IASS-APCS 2012 Symposium in Seoul.</li> <li>Plan to organize the 10<sup>th</sup> WG 18 Seminar in Cluj (Romania) in 2013.</li> <li>Current membership: <b>6</b> IASS Members.</li> <li>Specific actions are being developed for extending the membership and cooperate with other IASS Working Groups.</li> </ul>	<p><b>Prof. Dr. Ludevit VEGH (Chair)</b></p>
<p><b>WG 19 Temporary Spatial Structures</b></p> <ul style="list-style-type: none"> <li>Completed the “Draft structural design guidelines for Temporary Spatial Structures.”</li> <li>Gather commentaries and practical information for the guidelines in order to finish the mission of the group.</li> <li>Organized <b>one</b> session at IASS-APCS 2012 Symposium in Seoul.</li> <li>Current membership: <b>7</b> IASS Members.</li> </ul>	<p><b>Eng. Tatsuo MUROTA (Chair)</b></p>

### 3. CONCLUSION

The current policy on Technical Activities is producing successful results in terms of knowledge of the WG activities by IASS members and Symposium delegates, participation in the WG activities, and increase in the production of technical reports, guidelines and publications.

As new TAC Chair, I believe that Working Groups constitute the essential backbone of the Association. We need active groups with well-defined missions and targets. The technical and scientific activities of the groups are key for the progress of the IASS.

I offer my support to the WG Chairs for their initiatives and actions. **I encourage all IASS**

**members to participate in the groups, and all Working Groups to continue with their activities, especially,**

- Organizing specific sessions in future Symposia, and attracting relevant experts,
- Publicizing their activity by posting documents and links, providing illustrations for the public part, updating their web pages and producing flyers,
- Extending the scope of their activities beyond session organization,
- Producing scientific papers, state-of-the-art reports, guidelines, and newsletters.

## REFERENCES

- [1] **Motro, R.**, Annual summary of Technical Activities, 2008-2009, *J. IASS*, Vol. 50, No. 3, 2009, pp. 139-142.
- [2] **Motro, R.**, Technical Activities Committee, Report 2009-10, *J. IASS*, Vol. 51, No. 4, 2010, pp. 250-254.
- [3] **Abel, J.F. and Chilton, J.C. (Guest Eds.)**, Heinz Isler – 50 Years of “New Shapes for Shells,” Special Issue of the *J. IASS*, Vol. 52, No. 3, Sept. 2011.
- [4] **Abel, J.F.**, Retrospectives on concrete shells: Preface, *J. IASS*, Vol. 53, No. 2, 2012, pp. 73-74.
- [5] **Nakazawa, S., Kato, S., Takeuchi, T., Xue S.D. and Lázaro C.**, State-of-the-Art of seismic response evaluation methods for metal roof spatial structures, *J. IASS*, Vol. 53, No. 2, 2012, pp. 117-130.

## UPCOMING EVENTS

EVENT	DATE & PLACE	WEBSITE
<b>AAG-2012: The Third Advances in Architectural Geometry Symposium</b>	27-28 September 2012 Paris, France	<a href="http://aag12.architecturalgeometry.at">http://aag12.architecturalgeometry.at</a>
<b>Steelwork for Spatial Sport Facilities</b>	16-19 October 2012 Kiev, Ukraine	<a href="http://urdisc.com.ua/engl">http://urdisc.com.ua/engl</a>
<b>TensiNet Symposium 2013: [RE]THINKING Lightweight Structures in memory of Prof. Dr İhsan MÜNGAN</b>	8-10 May 2013 Istanbul, Turkey	<a href="http://www.tensinet2013.org">http://www.tensinet2013.org</a>
<b>ICSA 2013: The 2nd International Conference on Structures and Architecture</b>	24-26 July 2013 Guimarães, Portugal	<a href="http://www.icsa2013.com">http://www.icsa2013.com</a>
<b>TRANSFORMABLES 2013: First Conference “Transformable” in Honor of Emilio Pérez Piñero</b>	18-20 September 2013 Seville, Spain	<a href="http://www.transformables2013.com">http://www.transformables2013.com</a>
<b>IASS Symposium 2013: Beyond the Limit of Man</b>	23-27 September 2013 Wrocław, Poland	<a href="http://iass2013.pwr.wroc.pl">http://iass2013.pwr.wroc.pl</a>
<b>Structural Membranes 2013: The sixth conference on Textile Composites and Inflatable Structures</b>	9-11 October 2013 Munich, Germany	<a href="http://congress.cimne.com/membranes2013">http://congress.cimne.com/membranes2013</a>

For more information and links: <http://www.iass-structures.org/index.cfm/events.listing>