Board on Technical Knowledge Dissemination (BTKD) Annual Report

Covering the ASME Fiscal Year 2012 July 1, 2011 – June 30, 2012

Executive Summary:

The Board on Technical Knowledge Dissemination (BTKD) guides the technical knowledge dissemination activities within the Knowledge and Community (K&C) Sector. The products and services that this Board guides are vital to Technical Communities meeting our value proposition to *"Provide opportunities for engagement that facilitate technical knowledge exchange and relationship building."* BTKD has five active committees: Strategic Planning Committee (SPC), Conference Planning Committee (CPC), Technical Committee on Publications and Communications (TCPC), Congress Steering Committee (CSC), and Interdisciplinary Councils Committee (ICC). This report covers year four of BTKD operation.

This has been another exceptionally productive year. Some highlights (and the pertinent committee) include: significant interdisciplinary council committee activities – successful Energy-Water Nexus Highlight events at IMECE11 and creation of options for the NanoEngineering Council to become a permanent entity within the TCOB structure (ICC); the creation of two SPC taskforces -- Integrated /Sustainable Building Equipment and Systems Taskforce and Thermal Energy Storage Taskforce (SPC); an extremely successful IMECE 2011 and implementation of further improvements for IMECE2012 (CSC); support of effective implementation of ASME Policy 12.1 in the Events Committee, and identification of mutually beneficial Sector roles and Society roles for conference planning/oversight (CPC); and publication of over 19,000 pages in 25 archival journals, identification of Impact Factor algorithm errors, ensured editorial oversight quality and generated over $3.5M in net revenues (TCPC). Each committee has identified issues that are being addressed to improve our effectiveness. In addition, we established and began implementation of the New Product Development (NPD) Funding Process – an exciting seed funding mechanism for technical communities to develop new multidisciplinary products across multiple units.

These accomplishments result from the effective partnering of three constituencies: volunteers contributing technical content; volunteers providing guidance via BTKD; and staff providing implementation leadership. I note the contributions of Brandes Smith, ASME Staff, for her exceptional commitment to BTKD. I have observed great teamwork and it has been a privilege to work with all these dedicated individuals over this past year to create impressive value to our members and our profession. Many are not aware of these accomplishments, such that it is my hope that this Report will be broadly informative to the Community.

Russell D. Skocypec, PhD
Chair, Board on Technical Knowledge Dissemination

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Appendices:

INTERDISCIPLINARY COUNCILS COMMITTEE (ICC)

Prepared by H.S. Tzou, ICC Chair, April 2012

Overarching Goals: The Interdisciplinary Councils Committee (ICC) fosters and establishes new interdisciplinary councils (ICs) which sponsor timely cross-disciplinary activities/products, promotes collaboration among ASME Technical Divisions and provides institutional agility to quickly respond to new strategic opportunities. Currently, there are two active ICs within ICC and their major activities are outlined below.

Major Accomplishments (ICC):

1. ICC development & approval of ICC Measures of Success
2. Approval of Energy-Water Nexus (EWN) IC Operation Guides
3. Guidance for NanoEngineering Council (NEC) to potentially become a permanent entity

NanoEngineering Council (NEC) major activities/accomplishments (see Appendix A):

- Completion of ASME Strategic Plan for NanoEngineering & Mission & Vision endorsement
- Sponsored NanoEngineering for Energy and Sustainability (NEES) & NanoEngineering for Medicine and Biology (NEMB) tracks at IMECE2011
- Approval & planning for NEMB2013 Conference in Boston
- Planning & execution of *"Challenges for Engineers in Biomedical & Clinical Sciences"* Workshop
- Approval & planning for Nano Cancer Workshop (received New Product Development funding)
- Execution of a series of three nano energy focused complimentary webinars (build content & community)

Energy-Water Nexus (EWN) Interdisciplinary Council major activities/accomplishments (see Appendix B):

- Sponsored a track, two roundtables and keynote at IMECE2011
- Planning & development of a Power Plant Cooling Design Guide are underway; anticipated publication: November 2013
- Completion & approval of the EWN IC Operation Guide (Dec. 2011)
- Execution of a series of three energy-water nexus focused complimentary webinars (build content & community)

Issues and challenges:

Establish more active Division engagement and sustainable leadership development, including active volunteer recruitment.

STRATEGIC PLANNING COMMITTEE (SPC)

Prepared by: Chinh Bui, SPC Chair, April 2012

Overarching Goals: The ASME Strategic Planning Committee (SPC) provides advice and strategic guidance for technical knowledge dissemination in ASME's Knowledge and Community Sector to BTKD and committees that report to the BTKD, as well as to other committees, technical groups, technical divisions, centers and institutes through BTKD and Technical Communities Operating Board (TCOB).

Major Accomplishments:

1. Established prioritization process, communication plan, operating documents and made them available in the SPC/TCOB link. These include all face-to-ace meeting presentations.
2. Continued to support the Energy-Water Nexus Task Force to develop a product portfolio as a new Interdisciplinary Council (IC).
3. Worked with the two SPC taskforce (Integrated /Sustainable Building Equipment and Systems Task Force and Thermal Energy Storage Task Force) activities and called for volunteer participation at IMECE 2012 and other ASME events. These flyers were communicated to all Divisions, TGLs, at the plenary session, and via ASME News (Article February 15, 20012). See Appendices D, E and F.
4. Completed the Track Performance Assessment Dashboard and delivered it to Congress Steering Committee for implementation. See Appendix G.
5. Helped provide training to Deputy TGLs and Division Vice Chairs at IMECE and LTC.
7. Working with CSC to create a separate track for Emerging Technologies to provide visibility to the new emerging energy areas and ease assessing track performance.

Issues and challenges:

1. Operationalize the Emerging Technology Committee (ETC) to bring emerging technology areas to SPC in a consistent basis (preferred semi-annually at LTC and Congress) for discussion and execution of the ET Management prioritization process.
2. Increase communication since some ASME Divisions lack awareness of SPC efforts/ASME ET focus-area initiatives.

CONGRESS STEERING COMMITTEE (CSC)

Prepared by Pradeep Lall, CSC Chair-Elect, May 2012

Overarching goal: The primary activities of the CSC are to establish strategies for successful future Congresses and organize the IMECE (Congress) held in November of each year.

Major accomplishments:

1. Very successful IMECE2011 in Denver, Colorado (12,401 session attendees), with significant NSF presence. National Science Foundation (CBET & CMMI) Information Session arranged on November 14. Over 3,000 individuals were in attendance. See survey results in Appendix I. Session attendance and details are attached below:

Table 1. Attendance and Session Details from 2011 Congress

Total # Sessions	516
Total # Sessions >= 10 attendees	450
Total # effective Sessions at Congress	680
Total session attendees	12401
Total session attendees – Sessions >= 10 attendees	12019

2. Net distributed revenue to divisions for IMECE2011: $96,944 (40% to ASME General Fund & 60% distributed to Divisions)
3. Adopted overall "Theme" for Congress. For 2011, the theme was energy-water nexus which included: Conference keynote on energy and water (two vital commodities); Energy grand challenge talks on both November 14 and November 15; Energy-water nexus track co-sponsored by various divisions amongst other events.
4. Relevance of mechanical engineering to Japan Earthquake and Disaster highlighted in talk by Akira Yabe, vice president of the Japan Society of Mechanical Engineers.
5. Strong exhibitor and poster presence at the IMECE 2011.
6. Poster sessions: Organized these sessions to provide increased prominence/prestige to posters, at par with podium presentations.
7. Overall satisfaction with the 2011 Congress was high, on a par with 2010.
8. Twenty-seven percent gave the 2012 Congress a nine or ten rating on a ten-point scale.
9. Fifty-eight percent gave Congress an eight, nine, or ten on a ten-point scale.
10. Sixty-one percent are considering attending next year's Congress, and more than 73 percent indicated they will "definitely" or "probably" recommend it to a colleague.
11. Congress met or exceeded the expectations of 87 percent of the attendees (compared with 86 percent in 2010).
12. Reasons given for exceeding expectations included organization, networking

opportunities, and the keynotes and presentation.

13. The most frequently mentioned reasons for attending the Congress were relevance to work (35%), technical sessions (35%), and employer paying expenses (34%).
14. Attendance at most Congress events was unchanged or slightly down from 2010.
15. Of note, attendance at the opening reception event and Honor's Assembly, was less than in 2010. However, attendance at technical presentations was up.
16. The Honor's events were less well-regarded than in 2010 and 2009. Regard for the President's Luncheon, keynote event, and opening reception all decreased between 2010 and 2011.
17. Attendees liked the move of the Keynote Event from Sunday evening to Monday morning. Approximately half would like to see it at this time during the 2012 IMECE as opposed to 14% preferring it on Sunday evening (the remaining 37% said either time slot would be fine).
18. Interest in a short course accompanying IMECE is low to moderate. Forty-one percent indicted some interest in this program.
19. Energy was the topic that garnered the most interest for this short course followed by bioengineering and design.
20. There was an overwhelming consensus toward scheduling the course on Saturday and Sunday preceding the technical sessions, and making it a half day in length.
21. Selected Comments by Participants whose expectations were exceeded:

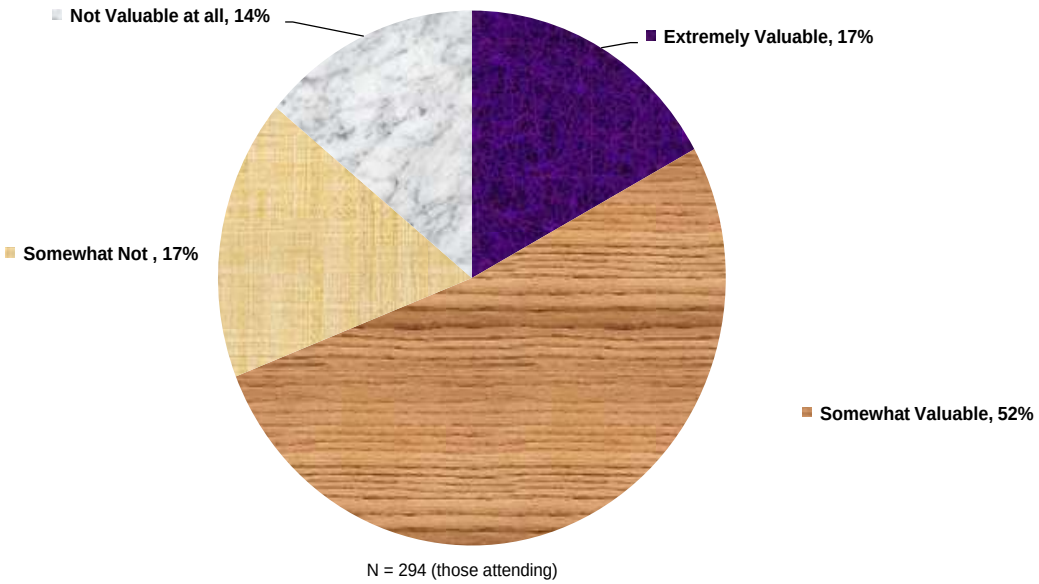
- *This was my first Congress, and I was expecting a much more modest number of presentations*
- *I expected the conference would be scattered but it was reasonably well focused.*
- *The keynote speakers presented new perspectives.*
- *I was not expecting the free lunches, but the food was good and I appreciated them as a good networking opportunity.*
- *I was impressed by the organization, and most of the presentations I saw was very good.*
- *I met a lot of famous mechanical engineers, the sessions were interesting and the overall conference was great.*
- *The presentations (poster and talks) were from a very wide array of current topics including nano and bio-related fields, which I found very pertinent to my research.*
- *Well organized, great atmosphere, good location.*
- *I was extremely impressed with the quality of the student competitions and the organization of the event.*

Major challenges/issues over the last year:

1. Change perception of the Poster Papers: We need to bring some similarity in expectations/requirements for these two types of presentations at Congress.
2. Evaluation of the change in the fee structure is being examined for the IMECE 2012. If the early registration fee is increased to $650 from its current value of $595 with similar increases of $50 per attendee for both the advanced registration and on-site fees, then it is expected that the surplus will increase by 14.21%. A surplus increase of 12.38% can also be achieved by eliminating breakfast. The possible path is under discussion in the CSC. The following table represents some of the trade-offs:

	Registration Fee Increase - IMECE 2012						
	* Expected attendance remains constant at approximately 2300 paid						
	Early Bird Fee with Breakfasts	Advanced Fee	On-site Fee	Total Revenue	Total Expenses	Event Surplus	Surplus %
	$595	$645	$745	$ 1,158,980.00	$ 1,064,550.63	$ 94,429.37	8.15%
Option 1	$650	$695	$795	$ 1,219,150.00	$ 1,045,966.34	$ 173,183.66	14.21%
	Early Bird Fee w/o Breakfasts			Total Revenue	Total Expenses	Event Surplus	Surplus %
	$595	$645	$745	$ 1,158,980.00	$ 1,015,506.15	$ 143,473.85	12.38%
Option 2	$635	$680	$780	$ 1,202,425.00	$ 996,221.86	$ 205,503.14	17.09%
	* Original Budget in EPAT - $226,398 surplus						
	** All Student fees remain the same at $200 early bird member presenter & $250 non-member Committee meeting only and guests fees are $50, Life member attendee is $100, undergraduate expo is $100						
	*** Discussion on table regarding increasing the registration fees due to $50,000 extra in technical publications costs, additional audio-visual costs from running up to 37 concurrent technical sessions, increased food and beverage expenses from offering breakfast for all attendees every morning and lunch in the afternoon of $50,000, micro-nano wine and cheese reception, printing the final program						

This decision of strategic importance given that 52% of the people found the author and session chair breakfast valuable in IMECE 2011 survey.



N = 294 (those attending)

CONFERENCE PLANNING COMMITTEE (CPC)

Prepared by: Hamid R. Hamidzadeh, CPC Chair, April 2012

Overarching Goals: To advise and assist preparation of established conferences aligned with the K&C mission scope under the Board on Technical Knowledge Dissemination (BTKD). Also, to review and evaluate proposals from other organizations inviting the unit(s) of the K&C sector for collaboration in the form of co-sponsorship or participation.

Major activities and accomplishments:

1. **Development of Proposal for New CPC Roles**
   With direction from BTKD and full support of the K&C Sector, CPC was charged to revise its roles for providing guidance, and advising assistance to the K&C conference organizers. This was to ensure that our conferences are ready to receive endorsement of the K&C sector leader before the conference is submitted to the EC for the final review and approval. To comply with the request, CPC proposed the following new tasks:
   - Review submitted documents by conferences developed by units of the K&C Sector to enable suggestion(s) for improvement and recommendation for endorsement by the K&C sector leader.
   - Review and assess plans for new conferences originated within the K&C sector and seek appropriate division(s) for possible financial support.
   - Review and evaluate proposals from other organizations inviting the unit(s) of the K&C sector for collaboration in the form of co-sponsorship or participation.
   - Develop plans to improve the quality of the K&C conferences such as reducing "no shows" and other conference related issues
   - Train future conference organizers by organizing training sessions in large conferences
   - Advise conference organizers regarding planning and appropriate budgets
   - Promote the development of interdisciplinary conferences
   - Coordinate efforts with the Strategic Planning, Publications and Communication, Interdisciplinary Councils, and Congress Steering Committees of the BTKD

2. **External Event Opportunity Decision (EEOD)**
   The CPC received three EEOD Forms requesting ASME involvement in these events. The CPC Members-at-Large (MALs) contacted their respective units for input for these events. The received feedback indicated that the ASME units are having similar activities and they showed no interest for collaboration with these events.

3. **Activities of Event Committee (EC)**
   The Event Committee has continued to review conferences that have received approval from the appointed staff. In addition, EC requested a number of suggestions for improvement of EPAT that were implemented.

Technical Committee on Publications & Communications (TCPC)

Prepared by: Shiv G. Kapoor, Chair TCPC, April 2012

Overarching goals: The overall objectives of the Technical Committee on Publications and Communications are to promote dissemination of technical knowledge through archival and reference technical publications and communications and to provide long-range plans and guidelines for the purpose of increasing the quality and impact of publishing and communication programs of the Society.

Major Accomplishments and Challenges

1. Published more than 19,000 pages in 25 ASME archival Journals.
2. Impact Factors
   - Impact factors assigned by Thomson Reuters to ASME journals have been verified to be inaccurate due to errors in the data collection by Thomson Reuters.
   - ASME is in talks with Thomson-Reuters on how to address.
   - 2011 Impact Factors to be released in July 2012 should show increases for all ASME titles due to corrections in Thomson Reuters data collection methodology.
3. Approved the following new Technical Editors:
   - Michael Khonsari, J. of Tribology, 01/01/2012-12/31/2016
   - Hameed Metghalchi, J. of Energy Resources Technology, 01/01/2012 - 12/31/2016
   - Yonggang Huang, J. of Applied Mechanics, 07/01/2012 -06/30/2016
   - Beth Winkelstein, co-Editor, J. of Biomechanical Engineering, 01/01/2012-12/31/2016
   - Harry Dankowicz, Applied Mechanics Reviews, 01/01/2012-12/31/2016
   - Y. Lawrence Yao, J. of Manufacturing Science and Engineering, 07/01/2012 - 06/30/2016
   - Young W. Kwon, J. of Pressure Vessel Technology, 01/01/2013-12/31/2017
   - Jian Cao, J. of Micro and Nano-Manufacturing, 01/01/2013-12/31/2017
   - Boris Khusid, Interim Editor, J. of Nanotechnology in Engineering and Medicine, 09/01/2011-12/31/2012.
4. Approved new Journal to launch in 2013: ASME Journal of Micro and Nano-Manufacturing. Journal sponsor: Manufacturing Division.
5. J. of Turbomachinery approved for 2012 frequency increase from quarterly to bi-monthly.
6. J. of Nanotechnology in Engineering and Medicine: new Purpose and Scope approved.

7. Journal of Mechanisms and Robotics got included in Science Citation Index Expanded.
8. Digital Signatures/Electronic Copyright has been implemented by ASME Publishing for the Journal Program on 03/27/2012.
9. Transfer to a new Typesetting Vendor (Cenveo) completed on 03/30/2012.
10. Continued review of adherence of ASME Journals to their respective publishing schedules.
11. ASME Journals completing new contract to move print product to a digital fulfillment structure by 06/30/2012.
12. ASME Publishing launching new Digital Library November 1, 2012 that will include Journals, Books, Conference Proceedings, and ME Magazine. Vendor: Silverchair Information Systems http://www.silverchair.com/
13. Beginning transfer of ASME papers to NIH Database by June 2012.
14. New knowledge dissemination programs including webinars and rapid publication of short, quickly peer-reviewed “letters” as an additional publication product are being explored.

APPENDICES:

Appendix A: NanoEngineering Council (NEC)

Appendix A: NanoEngineering Council, NEC

Prepared by: Vikas Prakash, Chair, NanoEngineering Council, April 2012

Overarching goals of the NanoEngineering Council (NEC) are to bring together the multi-divisional strengths in nanotechnology to sponsor timely cross-disciplinary activities, products, and services, to foster collaboration among technical divisions and other ASME sectors and/or professional societies, and to provide institutional agility to respond quickly to new opportunities. The NEC is the governing body of the ASME Nanotechnology Institute. The NanoEngineering Council reports to the ASME Interdisciplinary Councils Committee (ICC).

Major Accomplishments:

1. NEC Governance

- Completion of Strategic Plan for ASME in NanoEngineering with clear strategic goals & focus areas.
- Endorsement of NanoEngineering Mission & Vision statements.
- Establishment of regular monthly Steering Committee conference calls and monthly/bi-monthly NEC conference calls.
- Appointment of Prof. Tim Fisher (Purdue University) as a second NEC Vice Chair.

2. NEC PRODUCTS

1. Organized two separate tracks at IMECE2011 in NanoEngineering for Energy and Sustainability (NEES) & NanoEngineering for Medicine and Biology (NEMB). The NEES track featured several key note speakers and a panel session. The micro nano Forum was a highlight at the IMECE with over 200 student participants and travel grants from NSF and the ASME Materials Division.
2. NEC, in coordination with ASME Training and Development, launched two Assessment Based Courses (ABC) in Dec. 2011. A total of six courses have been developed and launched. An additional NEMB ABC course is in development.
3. Offered three webinars focusing on nano energy in cooperation with Emerging Technologies.
4. The ASME Journal of Nanotechnology in Engineering and Medicine (sponsored/supported by NEC) has a new editor in place. Several special issues have been planned and are in progress.
5. Submission and approval of NEMB2013 Congress in EPAT; planning underway for an FY'13 launch (Feb. 2013).
6. April 20th workshop planned on NEMB focused topic, "Challenges for Engineers in Biomedical Clinical Sciences"
7. Submission and approval of Nano Cancer Workshop proposal (planned for Venice, Italy, September 2012); via NPD Funding process. Building block for NEMB portfolio.

Issues & challenges

1. All interdisciplinary councils have a three-year time limit (with an option for one three-year extension). The NEC is currently in the third and final year of its incubation phase. Over the last three-year period, in support of ASME's strategic objectives, the NEC has successfully engaged in the development of new initiatives via products and programming, etc. The Council would like to continue to build upon this solid foundation and explore options to become a permanent entity in 2012.
2. Neither the NEC nor the Nanotechnology Institute has a custodial account making it cumbersome to pursue new interdisciplinary collaborative opportunities and content development initiatives in a timely fashion.
3. A large number of volunteers (both ASME members and non-members) have expressed a keen interest in pursuing nanoEngineering-related activities with the ASME NEC. However, due to the current structure and limited resources of the NEC, the council has not been able to fully utilize their expertise and services. A more formal/permanent structure would allow NEC to expand the steering committees and engage these individuals more effectively in the council activities.

Appendix B: Energy Water Nexus Interdisciplinary Council (EWN IC)

Prepared by: Mike Hightower Chair, EWN IC and Raj Manchanda ASME Staff, April 2012

Mission:

Expedite the development of technologies focusing on innovative water reuse and recovery for industrial applications in energy water management through knowledge-sharing experiences, content and community-building opportunities.

Vision:

Become a leading advocate of innovative technologies and applications in industrial energy water management.

Near-Term Goals:

Communicate ASME's role as a neutral third party convener to bring diverse body of subject matter experts to engage the technical communities of interest to create awareness, develop and deploy knowledge and educational products and services in the area of energy water management

Facilitate content portfolio development to meet the knowledge & training needs of the engineering community across all career stages in the area of Non Traditional Sources of Power and Innovative Water Reuse & Recovery

Foster a diverse and inclusive community of experts to develop best management practices with ASME and external players in the field through collaborative cost sharing/fund raising arrangements

Major Accomplishments:

1. **EWN IC Governance**
   - Completion of Strategic Plan for ASME in energy-water nexus.
   - Endorsement of Energy-Water Nexus Mission & Vision statements.
   - Establishment of regular quarterly EWN IC meetings/teleconferences : March 29; June 28; September 27; November 12 (face-to-face @ ASME Congress in Houston); and December 13, 2012
   - Appointment of Professors Shaurya Prakash and Wallace Leung as 2012 Congress EWN Track Co-Chairs.
2. **EWN IC Products**
   - Organized Track at IMECE 2011 and IMECE 2012 (in development)
   - Organized Plenary Session at IMECE 2011

- Delivered keynote presentation at Power Conference in July 2011 in Denver, Colorado
- Wrote "Energy Meets Water" feature article for Mechanical Engineering magazine - Volume 133/Number 7 July 2011 issue
- Offered three webinars focusing on energy-water nexus issues in cooperation with Emerging Technologies (see attached PDF).
    - August 2, 2011 : Energy-Water Nexus Landscape and Opportunities for Engineers. Speaker : Mike Hightower, Sandia National Laboratory
    - December 6 2011 : Energy-Water Nexus IMECE2011 Report & Energy for Water Provision. Speaker : Michael Webber, University of Texas, Austin
    - April 3, 2012 : Water Needs for Transportation and/or Electricity. Speaker : Carey King, University of Texas, Austin
- Power Plant Cooling Guide in development with ASME Standards Technology LLC and ASME Emerging Technologies. Lead Editor is Carey King, Ph.D. Projected completion date is November 2013. Final product to be distributed via ASME Press.

Issues & challenges

1. Engaging related ASME Divisions such as Process Industries and Power Division to strengthen EWN IC

Appendix C: Energy Water Nexus FY13 Webinar Series

Energy-Water Nexus Webinars
Nano Energy Webinars

August 2, 2011
Energy-Water Nexus Landscape and Opportunities for Engineers
Speaker: Mike Hightower, Sandia National Laboratories

October 4, 2011
Materials and Technological Challenges for Large Scale Energy Storage
Speaker: Jun Liu, Pacific Northwest National Laboratory

December 6, 2011
Energy-Water Nexus IMECE2011 Report & Energy for Water Provision
Speaker: Michael Webber, University of Texas, Austin

February 7, 2012
From Nanofabrication to Nanomanufacturing
Speaker: Hanchen Huang, University of Connecticut

April 3, 2012
Water Needs for Transportation and/or Electricity
Speaker: Carey King, University of Texas, Austin

June 5, 2012
Nanoscale Heat Transfer for Emerging Energy Technologies
Speaker: Tim Fisher, Purdue University

Registration limited to the first 100 attendees!

nano.asme.org

Complimentary Registration is Available Now at www.nano.asme.org

Nano Educational Series
Nano Engineering for Medicine and Biology Workshop
September 25, 2011
Irvine, California

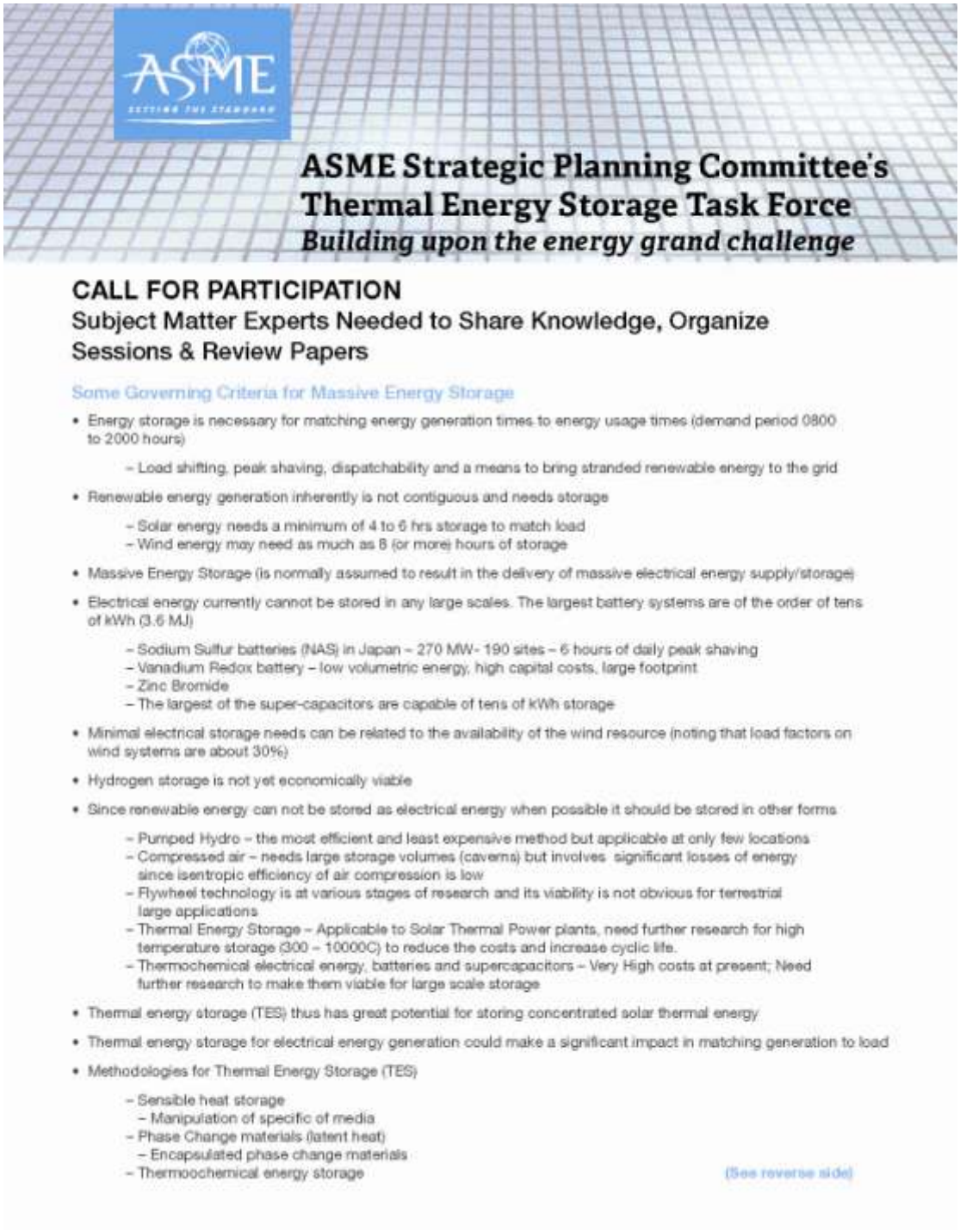
– Podcasts
Video and audio podcasts that focus on energy, materials, life sciences and environment

– Assessment-Based Courses
Online nanotechnology courses

For more information, visit
nano.asme.org

ASME
SETTING THE STANDARD

Appendix D: Thermal Energy Storage Task Force Flyer



ASME Strategic Planning Committee's Thermal Energy Storage Task Force

Building upon the energy grand challenge

CALL FOR PARTICIPATION

Subject Matter Experts Needed to Share Knowledge, Organize Sessions & Review Papers

Some Governing Criteria for Massive Energy Storage

- Energy storage is necessary for matching energy generation times to energy usage times (demand period 0800 to 2000 hours)
  - Load shifting, peak shaving, dispatchability and a means to bring stranded renewable energy to the grid
- Renewable energy generation inherently is not contiguous and needs storage
  - Solar energy needs a minimum of 4 to 6 hrs storage to match load
  - Wind energy may need as much as 8 (or more) hours of storage
- Massive Energy Storage (is normally assumed to result in the delivery of massive electrical energy supply/storage)
- Electrical energy currently cannot be stored in any large scales. The largest battery systems are of the order of tens of kWh (3.6 MJ)
  - Sodium Sulfur batteries (NAS) in Japan – 270 MW- 190 sites – 6 hours of daily peak shaving
  - Vanadium Redox battery – low volumetric energy, high capital costs, large footprint
  - Zinc Bromide
  - The largest of the super-capacitors are capable of tens of kWh storage
- Minimal electrical storage needs can be related to the availability of the wind resource (noting that load factors on wind systems are about 30%)
- Hydrogen storage is not yet economically viable
- Since renewable energy can not be stored as electrical energy when possible it should be stored in other forms
  - Pumped Hydro – the most efficient and least expensive method but applicable at only few locations
  - Compressed air – needs large storage volumes (caverns) but involves significant losses of energy since isentropic efficiency of air compression is low
  - Flywheel technology is at various stages of research and its viability is not obvious for terrestrial large applications
  - Thermal Energy Storage – Applicable to Solar Thermal Power plants, need further research for high temperature storage (300 – 10000C) to reduce the costs and increase cyclic life.
  - Thermochemical electrical energy, batteries and supercapacitors – Very High costs at present; Need further research to make them viable for large scale storage
- Thermal energy storage (TES) thus has great potential for storing concentrated solar thermal energy
- Thermal energy storage for electrical energy generation could make a significant impact in matching generation to load
- Methodologies for Thermal Energy Storage (TES)
  - Sensible heat storage
    - Manipulation of specific of media
  - Phase Change materials (latent heat)
    - Encapsulated phase change materials
  - Thermoochemical energy storage

(See reverse side)

- TES can be made cost competitive by considering mitigation of capital costs and operating costs
  - High utility demand costs
  - Utility time of use rates
  - High daily load variations
  - Short duration loads
  - Infrequent or cyclic loads
  - Trouble handling peak loads

  Examples: Dallas Veterans affairs medical center has installed 25,000 ton chilled water TES – reduced annual cost of about $250 K Parabolic trough thermal energy storage technology- achieve higher annual capacity factors due to storage

- Challenges in implementing TES are multi-disciplinary but many of the issues are very much under ASME umbrella, e.g.,
  - Large structure engineering (due storage needs – 600 to 1,800 MWh)
  - Pressure vessel technologies
  - Heat transfer and heat exchanger technology
    - Thermal stratification
    - High temperature TES
    - Sensible heat, latent heat and bond energy

- Fluid transport technology
- Materials compatibility
- Economics of large devices

To participate in Congress 2012 or to join the Strategic Planning Committee's (SPC) Thermal Energy Storage Task Force – please contact:

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Appendix E: Thermal Energy Storage ASME News article: Feb. 2012

+ Spotlight On: Thermal Energy Storage — Changing the Game for Solar Power

The Knowledge and Community Sector's Strategic Planning Committee (SPC) provides guidance for technical knowledge dissemination to the Board on Technical Knowledge Dissemination (BTKD) and its technical committees, divisions and groups. Additionally, the SPC oversees the Emerging Technologies Management Process — a methodical, stage-gate approach that SPC and Staff developed to identify emerging technologies for ASME.

Currently, SPC has two interest areas and two attendant task forces, the Thermal Energy Storage Task Force headed by D.Yogi Goswami, Ph.D. and the Integrated/Sustainable Building Equipment and Systems Task Force headed by Jorge Gonzalez, Ph.D. The SPC Thermal Energy Storage Task Force seeks to build a robust, multidisciplinary community (ASME and non-ASME) to expedite the development of the topic through technical tracks at ASME's International Mechanical Engineering Congress and the Energy Sustainability Conference, as well as webinars, panel sessions, and other related events.

For those of you who are not familiar with the opportunities and challenges within thermal energy storage, the members of the task force have crafted the following article.

Thermal energy storage will drastically change the way concentrated solar energy use will grow. ASME's Thermal Energy Storage Task Force acknowledges this and is involved in a number of activities — including planning a Thermal Energy Storage Symposium to be held at the 2012 ASME International Mechanical Engineering Congress and Exposition (IMECE) in Houston.

Solar power capacity around the world has increased at an average annual rate of more than 30 percent over the last decade. During the same period, wind power has increased at an average annual rate of 28 percent. At this rate, renewable energy seems to be on pace to achieve the growth targets for some parts of the world. For example the Germany has a target that 20 percent of its energy will come from renewable energy by 2020 .

Although growing in popularity, renewable energy sources are intermittent and don't always match load patterns. Wind energy, for example, has a load factor of about thirty percent. Furthermore, when the wind turbines are working and producing renewable electrical energy, it may very well be when the energy isn't needed. Solar power plants rarely have a capacity factor more than 20 percent without storage. This presents a big problem for large-scale penetration of solar and wind power in the grid. The solution is obvious: Store the energy when available and use it when needed. As with most things, however, that is easier said than done.

Thermal energy storage is expected to drastically expand the use of concentrated solar energy.

Large-scale storage of electrical energy is difficult with the current state of the art. While significant progress is being made, methods available for the storage of electrical energy, such as super-capacitors and batteries, are very expensive. There is a significant effort underway in the area of flow batteries and other thermo-chemical means of storing electrical energy, and we may be close to the long-anticipated breakthroughs. Once established, those technologies will be applicable for the wind turbines and solar photovoltaic applications. At present, the primary applications of battery energy storage are aimed at the transportation sector, which can make do with a few hundred kilowatt hours (kWh) of energy stored per charge of the battery pack. The range of automobiles like the Nissan Leaf and the Chevrolet Volt reflect this. These vehicles yield 62- and 35-mile ranges respectively on a single charge depending on speed and climate conditions. That corresponds to 24 kWh of energy storage used for an 80 kW motor for the Leaf, and 16 KWh storage used for a 111 kW motor for the Volt. Recharging the batteries could take several hours and a national network of charge/swap stations will be needed. The Volt, of course, takes a different path by including a 1.4 L gasoline engine.

Another approach to store large quantities of energy that is being investigated is in the form of hydrogen for use in fuel-cell based power trains. While a lot of research has been conducted, hydrogen technologies are probably years away from becoming commercially feasible.

Large-scale storage of electrical energy is feasible with the use of pumped-hydro and compressed air. These technologies can be a part of a national baseload electrical power generation and management. Estimates for the cost of compressed air technology vary and geological and geographical locations for such energy storage appear to be few. On the other hand, low temperature thermal storage needs for commercial/residential HVAC can be met easily with the available technologies. However, widespread use of these technologies depends on the electrical power rate structure (peak vs. off-peak rates).

While all of the above scenarios for the storage of energy are interesting and can be important, wide use of high-temperature thermal energy storage will be the game changer for the solar-based electrical power industry. Thermal energy storage is feasible even now, although the present research is intended to reduce the costs by as much as 75 percent, which will in turn forever change the market solar thermal power. This cost reduction will be particularly important since the wide use of solar energy is essential to meet the global targets for renewable energy. Because solar energy is available only for about eight hours per day, energy storage is essential to make solar power practical. Since thermal energy storage during the daytime makes it possible to utilize the power block of a solar thermal power plant during non-sunshine hours also, investment in thermal storage can actually reduce the levelized cost of energy (LCOE).

Storage of thermal energy at low temperatures (~100°C) has been demonstrated with many hydrated salts and paraffins. Of interest here is high-temperature energy storage where the desired temperature depends on the choice of solar technology. Solar power plants using parabolic troughs operate at 300–400°C, which will benefit from thermal energy storage around 350°C. Power towers that are capable of operating at higher temperatures may demand energy storage at 500-700°C. Since thermodynamic cycle efficiency is very much a function of the operating high temperature of the system, and since it is envisioned that solar power generation systems eventually will migrate toward Brayton gas turbine cycles and supercritical Rankine cycles, thermal energy storage around 900-1000°C will be quite desirable. Fortunately, current research and developments indicate that all of the above are feasible.

Current practices for thermal energy storage primarily take advantage of sensible heat of materials. Wide ranges of materials including synthetic oils and concrete have been tried for storing thermal energy. Thermal energy applications that are below 500°C appear to be gravitating toward two-tank storage systems that store energy by heating a eutectic mixture of salts, such as, KNO_3-$NaNO_3$ eutectic. The molten salt in these systems is transported between the cold/hot tanks and for charging and discharging. Such storage systems can be expensive.

Much more thermal energy per unit mass can be stored if the storage material is subject to phase change. The latent heat of storage of the phase change material (PCM) can often be significant compared to the sensible heat based on the allowable temperature swing and this in turn can bring costs down. Proper design of such a system can provide for isothermal heat transfer for a significant portion of the stored energy. PCM storage can also be designed with a favorable temperature gradient (thermocline) in the storage tank, which allows a single tank to be used instead of two tanks, further reducing the system costs. One such PCM based storage example in Germany involved the use of salts in a tank with numerous pipes with heat transfer oil in the pipes to transfer energy to/from the salt during the phase change. Such systems have inherent problems during the discharge/retrieval of the energy since the PCM solidified on the tubes inhibits the heat transfer.

A better way to store thermal energy is with the use of encapsulated phase change materials. Use of PCM capsules provides much more surface area for heat transfer and with proper design does not inhibit heat transfer during storage or retrieval of the energy. There are several other advantages of using thermoclines that use PCM capsules that are not initially obvious; for example cascades of a number of PCMs with different melting temperatures can be used resulting in significant system exergy gains. Present indications are that with proper choice of PCM, based on the operating temperature and using an appropriate encapsulation, the costs of storage can be brought down to meet the U.S. Department of Energy goal of $\$15/kWh_{th}$ (kilowatt hours thermal) in capital costs — even for thermal energy storage around 950°C. Research is currently under way in various universities and national laboratories to make such thermoclines practical. As in any endeavor concepts are under various stages of developments as lab tests, leading to prototype testing that will eventually be useful for large-scale applications. Current research progress appears to indicate that we are on track to doing exactly that, making thermal energy storage an indispensable technology.

The ASME Thermal Energy Storage Task Force is currently accepting abstracts for the Thermal Energy Storage Symposium at the 2012 IMECE this November. The Task Force encourages all interested engineers to take part in the event, which will provide those with an interest in thermal energy storage with a forum to share their novel ideas with peers and participate in panel discussions, poster sessions, and research presentations. **The deadline to submit abstracts is Feb. 27.**

For further information please contact SPC Thermal Energy Storage Task Force Chair, D. Yogi Goswami, Ph.D. at Goswami@usf.edu; Co-Chairs Sudhakar Neti, Ph.D. at Sn01@Lehigh.edu; or Arun Muley, Ph.D. at Arun.Muley@Boeing.com; or Raj Manchanda, Director, Emerging Technologies, ASME at ManchandaR@asme.org.

— D. Yogi Goswami and Sudhakar Neti, Thermal Energy Storage Task Force

Appendix F: Integrated Buildings Task Force Flyer

CALL FOR PARTICIPATION

Subject Matter Experts **Needed to Share Knowledge, Organize Sessions** and Review Papers

Background – Funding Opportunities in US and Europe

US Federal funding in integrated building technologies has been on the rise for the past few years. A key program is the US Department of Energy's (DOE's) Energy Efficiency and Renewable Energy (EERE) Office—which includes building technologies, industrial technologies, weatherization assistance and more—which doubled its operational budget since FY2009 to close to $2B projected for FY2012. This includes a large investment in commercial buildings efficiency. R&D in integrated solar technologies, advanced lighting technologies, new building materials, energy management systems, commercialization acceleration strategies, energy research hubs, and many other programs. The Advanced Research Projects Agency - ENERGY (ARPA-E) program has also set aside funding to motivate high-risk research for advanced building technologies within the agency budget.

Other funding agencies are adding direct and indirect support to advanced building technologies at different application scales. One example is the US National Science Foundation with the Science, Engineering, and Education for Sustainability (SEES) initiative; SEES is coordinating with multiple US and international agencies. SEES calls for a large investment in 2011–2013 across the agency's more than $6.5B annual budget, in sustainability topics including nexus with long-term climate trends and resilient buildings and cities.

The European Union has several programs that directly and indirectly support research and education in building technologies. The 7th Framework Programme for Research and Technological Development (FP7) is the European Union's main instrument for the funding of research over the period 2007–2013. The total budget for FP7 is more than $100B, and split along thematic priorities. The EU has earmarked over $20 billion for funding for Environmental Management and for energy-efficient buildings and spaces of public use in particular.

Opportunities for ASME

Building upon ASME's strategic priority in energy and its energy grand challenge are opportunities in energy efficient buildings and in building integrated equipment and systems. The opportunities for ASME are various in energy efficient buildings and in building integrated equipment and systems. Most funding support, and related commercialization strategies, can be organized into equipment and systems, such as:

(a) advanced building materials

(b) integrated renewable energy technologies (thermal and PV)

(c) advanced HVAC systems

(d) advanced controls and energy management systems

(e) advanced lighting technologies

(f) efficient water systems

(g) integrated micro-combined heat and power technologies (MCHP)

(See reverse side)

The professional organizations most closely connected to these emerging technologies are the US Green Building Council (addressing the whole building), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) for HVAC components and systems, IEEE for PV technologies and energy management systems (EMS), and the US Lighting Association. No professional organization is supporting research in building integrated equipment and systems as a whole and, in particular, in building materials, MCHP, solar integrated building technologies, imbedded EMS and sensors, and efficient building water technologies. This is leading to a lack of coordination in the research, education and commercialization agendas, and in projecting a need for standards for the integration of technologies into the buildings. This void may be an excellent opportunity for ASME to contribute via existing supporting structures such as the Solar Energy and the Advanced Energy Systems Divisions, and associated dissemination forums and activities.

You can contribute by:

1. Presenting the latest R&D developments at the 2012 Congress (November; Houston, TX) and the 2012 Energy Sustainability Conference (July; San Diego, CA), or by organizing sessions, chairing sessions and reviewing papers
2. Joining the Strategic Planning Committee's Task Force on the topic
3. Working with ASME Emerging Technologies on creating webinars, online training, etc.

For more information and to contribute your expertise, please contact:

Prof. Jorge E. Gonzalez
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Appendix G: Track Performance Assessment Dashboard

New Initiatives, Track Performance Criteria and Metrics
ASSESSMENT DASHBOARD – Endorsed by BTKD Nov. 13, 2011

Metric	Metric Assessment (what will the data tell us?)	Notes	Overall Track Recommendation		
Division Engagement			**Criteria for Success**	**IMECE2011 Track Comparison**	**Other ASME Conf. Tracks**
Division Co-sponsorship of Track (list Divisions)	1. Which Division if any should the initiative reside in? 2. Which Division would be depleted if the initiative becomes an Interdisciplinary Council, Institute or new Division? 3. Who (what Division) is not participating that should be (may be difficult to measure)?	1. This is only one data point and should not be considered the final "decision-maker" for a Division home.	High participation is best	Success = High compared to other tracks	Success = High compared to other tracks
Division representative(s) serving as leadership on Track (list Divisions)			High participation is best	Success = High compared to other tracks	Success = High compared to other tracks
Division author representation (list Divisions)		Manual process; not all members indicate a Division affiliation. Would like to keep this metric.	High participation is best	Success = High compared to other tracks	Success = High compared to other tracks
Conference Data	**Metric Assessment (what will the data tell us?)**	**Notes**	**Overall Track Recommendation**		
# of abstracts submitted to track	1. Track data over time, 2. Compare w/ total # of papers @ conference (need to benchmark data); 3. Compare w/ other tracks @ Congress; 4. Compare with track data from other conferences (ie, EWN track at another ASME conference) that collect the data.		Higher number is success. Ratio greater than 1 is desired compared to avg for other tracks (IMECE). Ratio greater than 1 is desired compared to avg for other tracks (other ASME conferences).		
# of abstracts accepted			Higher number is success. Ratio greater than 1 is desired compared to avg for other tracks (IMECE). Ratio greater than 1 is desired compared to avg for other tracks (other ASME conferences).		
# of papers submitted to track			Higher number is success. Ratio greater than 1 is desired compared to avg for other tracks (IMECE). Ratio greater than 1 is desired compared to avg for other		

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			tracks (other ASME conferences).
# of papers accepted			Higher number is success. Ratio greater than 1 is desired compared to avg for other tracks (IMECE). Ratio greater than 1 is desired compared to avg for other tracks (other ASME conferences).
# of papers re-assigned to other track/session			Lower number is success. Ratio less than 1 is desired compared to avg for other tracks (IMECE). Ratio less than 1 is desired compared to avg for other tracks (other ASME conferences).
# of papers accepted by an ASME Journal			
# of papers rejected			Lower number is success. Ratio less than 1 is desired compared to avg for other tracks (IMECE). Ratio less than 1 is desired compared to avg for other tracks (other ASME conferences).
Ratings of Tracks – Percent Attending.		Metric is tracked at IMECE.	List Tracks in order of percent attending. Determine rank of "new initiative" in the track list. Number score is the number above the median ranked track. If score is below median, score will be negative.
Ratings of Tracks – Percent Rating Excellent		Metric is tracked at IMECE.	Higher number is success. Ratio greater than 1 is desired compared to avg for other tracks (IMECE). Ratio greater than 1 is desired compared to avg for other tracks (other ASME conferences). Metric will show the range of percentages in the dataset.
Demographics	**Metric Assessment (what will the data tell us?)**	**Notes**	**Overall Track Recommendation**
	Not a success metric – information is used to evaluate and interpret success metrics.		
Members/Non-Members (session attendance)	1. Who are we attracting? 2. Members vs. Non-members: how many outside of the org. are we	In each session and total for track. Was there a keynote or panel session that	Compare to conference as a whole.

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	attracting? 3. Compare members vs. non-members at other conferences vs. IMECE track. 4. If more non-members than members, does this indicate that the topic is not important to our members? OR does it indicate a potential for membership growth in the area? 5. Where are they coming from? Does who attends show any kind of trend?	attracted a high # of attendees?	
Country			Is this a more popular topic outside the host country?
How many years of experience do you have in the field?		Should be part of reg. process	Attracting new or experienced engineers?
Age range		If ppl. don't answer, should record % of don't/do; OPTIONAL	Similar to above.
Gov't/industry/academic participation			Compare to conference as a whole.
Size of Organization		May vary from conf. to conf.	
ME/EE/CE, or other profession		May vary from conf. to conf.; may not apply and be more appropriate for exhibit sales	Are we attracting ME's?

Other considerations for data collection:

1. On-site and post track surveys to attendees
2. Track, Session Chair(s) and Author feedback
3. Compare to another IMECE track that cuts across several Divisions (tracks that are co-owned or co-sponsored) – apply to first section on **Division Engagement**
4. *We must have reasoned analysis of the results to make an assessment!*

Future/Bigger Picture Metrics:

1. # of papers accepted to a Journal (What is tracking mechanism for this?)
2. Based on abstracts/papers submitted, could that be an indicator that there is a need for a new Journal, new standard, new design guide, best practices, etc?

Metrics have been chosen because the data referenced is available and obtainable.

The objective is to limit the number of metrics needed to evaluate the success of the initiative.

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Appendix H: ASME Journal 2010 Impact Factors

ASME Journal Program: 2010 Impact Factors

Title	JCR Data							Eigenfactor Metrics	
	Total Cites	Impact Factor	% Self Cites	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-Life	Eigenfactor Score	Article Influence Score
APPL MECH REV	1961	2.559	0%		0.5	12	>10.0	0.0033	
J APPL MECH	7044	0.617	1%	1	0.157	127	>10.0	0.0066	0.507
J BIOMECH ENG	5183	1.584	6%	2.099	0.17	182	9.2	0.00928	0.655
J COMPUT INF SCI ENG	399	0.667	12%	1.138	0	47	5.5	0.00143	0.349
J COMPUT NONLIN DYN	151	0.571	13%		0.074	54	3.3	0.00111	
J DYN SYST-T ASME	1678	0.41	3%	0.871	0.06	100	>10.0	0.00308	0.328
J ELECTRON PACKAGING	734	0.564	5%	0.955	0.042	48	6.9	0.00178	0.296
J ENERG RESOUR	392	0.227	4%	0.502	0.083	36	>10.0	0.0008	0.205
J ENG GAS TURB POWER	1800	0.464	10%	0.732	0.122	263	8.8	0.00347	0.261
J ENG MATER	1685	0.695	1%	1.141	0.159	63	>10.0	0.00334	0.514
J FLUID ENG	2475	0.44	5%	0.772	0.071	155	9.6	0.00544	0.358
J FUEL CELL SCI TECH	523	0.884	15%	1.33	0.273	132	3.8	0.00264	0.393
J HEAT TRANS	5817	0.94	5%	1.552	0.238	227	>10.0	0.01008	0.546
J MANUF SCI E	1472	0.567	7%	0.915	0.081	124	7.1	0.00435	0.381
J MECH DESIGN	2327	0.617	17%	1.155	0.08	150	7.7	0.00519	0.356
J OFFSHORE MECH ARCT	211	0.277	7%	0.327	0.024	41	8.6	0.00055	0.131
J PRESS VESS	927	0.289	12%	0.484	0.019	107	9.3	0.00198	0.187
J SOL ENERG	1035	0.61	4%	1.134	0.107	75	7	0.00273	0.384
J TRIBOL	1933	0.449	10%	0.934	0.079	89	>10.0	0.00353	0.34
J TURBOMACH	1362	0.339	16%	0.902	0.119	84	8.9	0.00291	0.348
J VIB ACOUST	1219	0.39	5%	0.7	0.128	94	9.9	0.00265	0.32

NOTES:

1. Impact Factor: The journal Impact Factor is the average number of times articles from the journal published in the past two years have
2. % Self Cites > 20% starts to draw attention. If % rises too much beyond 20, journal will be removed from impact factor for a year.
3. Immediacy Index: The Immediacy Index is the average number of times an article is cited in the year it is published. The Immediacy
4. Citing Half-Life: The median age of the articles that were cited in the JCR year. Half of a journal's cited articles were published more
5. Eigenfactor Score: The Eigenfactor Score calculation is based on the number of times articles from the journal published in the past five
6. Article Influence Score: The Article Influence determines the average influence of a journal's articles over the first five years after

Journals not yet included	Year Eligible
Medical Devices	2010
Mechanisms and Robotics	2012
Thermal Science	2012
Nanotechnology in Engrg. Med.	2013

Appendix I: IMECE 2011 Survey Results (CSC)

On November 21, 2011 an email was sent to 2,543 Congress participants inviting them to take part in an online survey regarding their Congress experience. A follow-up (reminder) email was sent a approximately a week later. 698 individuals started the survey and 494 completed the entire survey. The completed survey response rate was 19.4 percent.

Major Findings:

- Overall satisfaction with the 2011 Congress was high, on a par with 2010.
  - Twenty-seven percent gave the 2012 Congress at nine or ten rating on a ten-point scale;
  - Fifty-eight percent gave Congress an eight, nine, or ten on a ten-point scale;
- Sixty-one percent are considering attending next year's Congress, and more than 73 percent indicated they will "definitely" or "probably" recommend it to a colleague.
- Congress met or exceeded the expectations of 87 percent of the attendees (compared with 86 percent in 2010).
  - Reasons given for exceeding expectations included, organization, networking opportunities, and the keynotes and presentation.
  - In much less-frequent instances where Congress failed to meet expectations, it was because of weak technical content (inconsistent quality of peer reviews of presentations, and the number of organizations exhibiting in the vendor exposition.)
- The most frequently mentioned reasons for attending the Congress were relevance to work (35%), technical sessions (35%), and employer paying expenses (34%).
  - Seventy percent of the attendees say they attended the Congress primarily for the technical sessions. Location as a reason for attending declined from 2010
- Congress facilities, ASME staff, venue, meeting information desk, registration, materials, and schedule were all well-thought of.
- Attendance at most Congress events was unchanged or slightly down from 2010.
  - Of note, attendance at the opening reception event and Honor's Assembly, was less than in 2010. However, attendance was at technical presentations was up.
  - The Honor's events were less well-regarded than in 2010 and 2009. Regard for the President's Luncheon, keynote event, and opening reception all decreased between 2010 and 2011.
- Attendees liked the move of the Keynote Event from Sunday evening to Monday morning. Approximately half would like to see it at this time during the 2012 IMECE as opposed to 14% preferring it on Sunday evening (the remaining 37% said either time slot would be fine).
- Interest in a short course accompanying IMECE is low to moderate. Forty-one percent indicted some interest in this program.
  - Energy was the topic that garnered the most interest as a topic for this short course followed by bioengineering and design.

  - There was an overwhelming consensus toward scheduling the course on Saturday and Sunday preceding the technical sessions, and making it a half day in length.
- Participants initially became acquainted with Congress in a variety of different ways. The most frequently mentioned were colleagues, co-workers, and peers (28%), employers and supervisors (16%), and the ASME Web site (14%). Emails from ASME were also an effective means of informing individuals about the Congress (13%).

Appendix J: New Product Development Funding (NPD)

Prepared by: Russ Skocypec, BTKD Chair & HS Tzou, BTKD Vice Chair, April 2012

Under the auspices of Technical Communities Operating Board (TCOB), the New Product Development (NPD) Funding Process is a seed funding mechanism for technical communities to develop new multidisciplinary products across multiple units. Launched in January 2012 and managed by the Board on Technical Knowledge Dissemination (BTKD), the NPD Funding Process supports the following principles:

- Utilize resources to benefit the strategic direction(s) of Technical Communities & ASME;
- Enable new multi-disciplinary ideas to come to fruition;
- Encourage Idea Generators to secure additional funds from other sources (including Division Custodial Accounts), thereby leveraging and strengthening their proposal request; and
- Provide investment opportunities for Divisions to support nascent activities and benefit from revenue-sharing.

Proposed new products should:

- Be new and multi-disciplinary,
- Enhance the mission of an ASME unit,
- Support the Technical Communities Value Proposition*: "Provide opportunities for engagement that facilitate technical knowledge exchange and relationship building."*
- Contribute to the portfolio of interdisciplinary products being provided within the Interdisciplinary Councils Committee (ICC) and/or endorsed by the Strategic Planning Committee (SPC) and approved by BTKD.

Idea Generators propose their product via a two-fold process: a brief oral pitch, and, if approved, then a written proposal.

The process was established, approved by TCOB, and funding opportunities were communicated to the Technical Community. Three oral pitches were heard and two written proposals were evaluated. After proposal refinement, a Nano-Cancer Workshop and the Integrated/Sustainable Building Equipment and Systems Roundtable were supported, meeting all criteria (see following Table). The NPD funding is an exciting opportunity to establish new multidisciplinary products and services for our membership.

New Product Development Funding Status 4-12									
	Criteria								
Project Title/ Proposer	**Originality of Idea**	**Expand/Enhance the ASME Brand & enhance the mission of the proposer's unit**	**Alignment to ASME strategy & tie-in to technical communities strategic objectives**	**Support the Technical Communities value-proposition**	**Community Building**	**Contribute to the portfolio of interdisciplinary products provided through ICC**	**Market Risk**	**Realistic Budget**	**Approved funding amount**
Nano Cancer Workshop Paolo Decuzzi	✓	✓	✓	✓	✓	✓	medium	✓	$20K
Integrated/Sustainable Building Equipment and Systems Roundtable Jorge Gonzalez	✓	✓	✓	✓	✓	✓	low	✓	$6K
Engineering Education of Veterans **Alan Moghissi	✓								N/A

**No funding request; BTKD recommendation: Need for additional volunteer support; Benchmark against existing ASME programs; Connect with ASME Education and Outreach staff for possible collaboration