Wow, how the past two years have flown by. My tenure as CTI President ends during the upcoming Annual Conference at the Hilton North in Houston, Texas, February 3–6, 2014. It has truly been an honor to have been able to serve CTI and our member companies as your president during this period.

While much progress has been made over the past two years in a variety of areas important to the sustainability of our industry, most recently as Committee Chair and Chairman of the Past President’s Council and I have appointed Steve Chaloupka with Amarillo Gear to replace Art in this position. Art has served CTI in numerous positions throughout the years, most recently as Committee Chair and Chairman of the Business communications committee. Art has served while having been honored with the CTI Lifetime member designation and has continued with his work with the Energy Star Cooling Tower program to continue to provide his valuable input to our organization.

I, Paul Nelissen, Phil Kiser, Helen Cerra, John Lichtie and Jalene Fritz, your program committee, invite and welcome you to the 2014 Annual Conference. I look forward to seeing you in Houston, Texas.

Brandon Rees
2014 CTI Program Chairman

Inside

If you are new to our conference and seem to be a little overwhelmed look for the CTI Ambassadors (the members with ‘Yellow’ name badges). These members will be able to help you and answer any questions you may have.
Swifter CTX Series

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Swifter®
Owner Operator Session
Tuesday, February 4, 2014, Da Vinci
12:00 p.m. - 2:00 p.m. - (lunch included)

Come and join Frank Michell, Chairman and Natasha Jones, Co-Chair for the Owner/Operator Council with the Cooling Technology Institute (CTI) at the CTI Annual Technical Conference in Houston, Texas. The Council is comprised of owner/operators that are responsible for cooling towers, associated equipment and/or water treating of the cooling systems at their facilities. This is an opportunity for owner/operators to hear informative presentations from recognized experts in the industry and talk with their peers about issues they are having and share lessons learned as well as best practices developed through experience.

This year’s Council will feature two technical panel-type presentations followed by an owner/operator only (no suppliers or manufacturers present) open forum discussion. The first panel will feature recommendations on specifications and other requirements that owner/operators should consider when purchasing new towers and performing re-builds. The second presentation will be a panel discussion by representatives from various CTI-licensed testing agencies. The goal of this session will be to help owner/operators prepare for testing activities on their equipment – learn when to test, what equipment features facilitate testing activities, the impacts that out-of-code parameters have on results, and ways to determine if problems exist prior to test team mobilization. The open discussion following the presentations is a great opportunity for owner/operators to cultivate relationships amongst each other and have candid discussion about their ongoing operations, problems, and solutions. Be sure to sign up and come enjoy the benefits of being an active participant in this Council.

2014 Education Seminar
Wednesday, February 5, 2014
8:00 a.m. - Noon

Reducing Risk Through Effective Design and Operation of Your Cooling Tower

Cooling Tower Acoustics - Understanding the Engineering and Sounds

What is that noise? Is that too loud? How does sound pressure and sound pressure level affect your equipment? These are all common questions and issues associated with sound and vibration for cooling towers installed around the world that will be discussed by Eric Miller-Klein. This session will present the basics of engineering acoustics through real life and audio examples to help make the challenging topic accessible. Understand the difference between sound pressure level and sound pressure level, why humans are so sensitive to certain sounds and less sensitive to others. Explore some common noise mitigation treatments and learn about how effective they are and their limitations. Review the current environmental noise codes around the United States and what this means for your facility or equipment. Learn about how noise is measured and what the measurement metrics and results mean.

Erik Miller-Klein is an Associate Partner and Acoustical Engineer at SSA Acoustics, LLP. He is a licensed Professional Engineer (PE) in Acoustics from the State of Oregon, the only state with this certification. He is an experienced engineer with experience assisting companies with acoustical design support for a range of architectural acoustic, mechanical noise, environmental noise, and industrial noise issues. His experience focuses on the effective evaluation and noise mitigation design for sound in the built environment, which includes healthcare, educational, multi-family/mixed-use buildings, commercial, civic, environmental, and industrial projects. His work includes mitigation design for existing facilities with issues with excess noise, and vibration issues. He has been a featured speaker on sound and vibration at ASHRAE, Acoustical Society of America, American Society of Healthcare Engineering, and American Industrial Hygiene Association.

Risk Management and Chemistry

Your Money Or Your (Cooling Tower) Life

This portion of the program will be presented by Ray Post and explores the role of water treatment chemistry in managing the risk and cost of cooling tower maintenance. Ray will expand on the basics of an effective water treatment program, identifying risks and speciﬁc practices to manage those risks.

Ray Post, P.E. is the Director, Cooling Water Technologies at ChemTreat, Inc. He has thirty-seven years industrial water treatment experience including thirty years in the development, application and evaluation of chemical treatment applications. Ray holds two US patents and authored more than 30 technical papers on industrial water treatment. He is a member of ASME and the National Society of Professional Engineers and active at CTI and International Water Conference (IWC). He holds a Bachelor of Science in Engineering degree from Princeton University.

Design and Operation for Cooling Towers in Cold Weather

Operating cooling towers in freezing climates presents challenges for cooling tower owners. This is particularly true when water-side economizers are part of the system design which require very cold water. Paul’s presentation will discuss effective design issues and principles of operation for cooling towers with a focus on HVAC systems and data centers.

Paul Lindahl is Director, Market Development, for the SPX Thermal Equipment & Services Segment. Paul has worked in various roles starting with Marley as an engineer-in-training in 1968. He is a past President of CTC, a permanent member of the Past Presidents Council, and has been active in many CTI Roles since 1982. Paul is currently involved in Multiple CTI Committees. He is also active in multiple ASHRAE roles, is on the Board of Directors of the Air-conditioning, Heating and Refrigeration Institute (AHR), and has committee roles with Eurovent Certification, ASME and other organizations.

Risk Management and Chemistry

How CTI Helps Owner/Operators And EPC's Manage Performance

For several decades, CTI has been a key provider of services that reduce the performance risk around specification and ownership of cooling towers. This presentation will provide general descriptions and outline the benefits of the CTI Multi-Agency Testing Program for Thermal, Drift and coming soon for Sound performance. It will also describe the CTI Thermal Certification Program based on CTI STD-201, and its beneﬁts. Lastly the presentation will describe the program for Publication of Custom Tower Thermal Performance Results based on CTI STD-202.

Ray Post, P.E. is the Director, Cooling Water Technologies at ChemTreat, Inc. He has thirty-seven years industrial water treatment experience including thirty years in the development, application and evaluation of chemical treatment applications. Ray holds two US patents and authored more than 30 technical papers on industrial water treatment. He is a member of ASME and the National Society of Professional Engineers and active at CTI and International Water Conference (IWC). He holds a Bachelor of Science in Engineering degree from Princeton University.

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New CTI Members for 2013

A.C.R. Systems, Inc
Agni Fiber Boards Pvt Ltd
Aria Beniz
Ascend Performance Materials, Inc
Alan E. Bischof
Cerex Advanced Fabrics, Inc
Chang Mei Holdings Singapore Pte Ltd
Changzhou Tianma Group Co., Ltd
Cooling Parts & Services, Ltd
Daeil Aqua Co., Ltd
EvapTech, Inc.
FasTec International
Julio Galan
GEA Sistemas De Refriamento Ltda
Genius Premier Sdn Bhd
Grupo CEA SA De CV
Guang Dong Kang Ming Conditioning (PT) INTI Composite Figlasindo Utama
PATKOL Public Company Ltd
Polaris Energy Nicaragua S.A.
SERVCO, The Service Company, Corp
Smart Sogutma Suyu Ve Aritma Tes. Taah. Ltd
Tecon Engineering
Vettor Torres de Refriamento de Aqua Ltda
Wacon Engineering Ltd
Yixing Pact Environmental Co.

Message From The President continue from page 1

for the February 2014 meeting. In addition, we currently have over 45 table top exhibitors with a few spaces left for those companies who have not yet signed up to reserve a table top display. The CTI table top exhibits are a great way to promote your company and its capabilities to the Cooling Technology Industry, as part of the Annual Conference Program. Please contact Vicky Manser at CTI.org to reserve one of the few remaining spaces for the February conference.

• Past Presidents Council: Last, I wish to thank Jess Seawell and the other members of the CTI PPC for their solicited guidance and recommendations to me and the CTI Board on a number of issues related to our organization structure and important focal initiatives going forward.

• CTI Executive Director and Administrative Staff: A huge “Thank you” to Vicky, Donna and the CTI administrative staff for all the work they do to make all of our jobs easy on a daily basis. We are truly fortunate to have such an energetic and stable executive office staff (Note: CTI is not a Trade Association).

I look forward to seeing everyone in Houston in February.

Respectfully submitted,
Jack Bland
CTI President 2013

Water Treating Panel Discussion
Monday, February 3, 2014 from 2:00p - 3:30p

Techniques for Heat Exchanger Life Extension

Proper mechanical design and the engineering and administration of sound cooling water chemical treatment programs are essential to provide long-lasting service of industrial heat exchange equipment. Even so, various application issues can occur that jeopardize the functional life of these key assets. Expert speakers will present the latest technologies available to extend the serviceable utility of these critical equipment assets.
For nearly thirty years, the Cooling Technology Institute has provided a truly independent, third party, thermal performance testing service to the cooling tower industry. In 1995, the CTI also began providing an independent, third party, drift performance testing service as well. Both these services are administered through the CTI multi-agency Tower Performance Test Program and provide comparisons of the actual operating performance of a specific tower installation to the design performance.

To be licensed as a CTI Cooling Tower Performance Test Agency, the agency must pass a rigorous screening process and demonstrate a high level of technical expertise. Additionally, it must have a sufficient number of test instruments, all meeting rigid requirements for accuracy and calibration. Once licensed, the Test Agencies for both thermal and drift testing must operate in full compliance with the provisions of the CTI License Agreements and Testing Manuals which were developed by a panel of testing experts specifically for this program. Included in these requirements are strict guidelines regarding conflict of interest to insure CTI Tests are conducted in a fair, unbiased manner.

Cooling tower owners and manufacturers are strongly encouraged to utilize the services of the licensed CTI Cooling Tower Performance Test Agencies. The currently licensed agencies are listed below.

**Licensed CTI Thermal Testing Agencies**

<table>
<thead>
<tr>
<th>Agency Name</th>
<th>Address</th>
<th>Contact Person</th>
<th>Telephone/Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Air Engineering</td>
<td>7936 Conner Rd, Powell, TN 37849</td>
<td>Kenneth Hennon</td>
<td>865.338.7568</td>
</tr>
<tr>
<td>Cooling Tower Technologies Pty Ltd</td>
<td>PO Box N157, Rocky South, NSW 2207 AUSTRALIA</td>
<td>Ronald Barton</td>
<td>61 2 9789 5900</td>
</tr>
<tr>
<td>Cooling Tower Test Associates, Inc.</td>
<td>13325 Melrose Dr, Sandy, UT 84059</td>
<td>Thomas R. Wiant</td>
<td>801.481.8027</td>
</tr>
<tr>
<td>McHale &amp; Associates, Inc.</td>
<td>4400 Brain Dr, Knoxville, TN 37919</td>
<td>Thomas Wheelock</td>
<td>865.586.2064</td>
</tr>
</tbody>
</table>

* Type A license is for the use of mercury in glass thermometers typically used for smaller towers. Type B license is for the use of remote data acquisition devices which can accommodate multiple measurement locations required by larger towers.*

**Licensed CTI Drift Testing Agencies**

<table>
<thead>
<tr>
<th>Agency Name</th>
<th>Address</th>
<th>Contact Person</th>
<th>Telephone/Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Air Engineering</td>
<td>7936 Conner Rd, Powell, TN 37849</td>
<td>Kenneth Hennon</td>
<td>800.208.6162</td>
</tr>
<tr>
<td>McHale &amp; Associates, Inc.</td>
<td>4400 Brain Dr, Knoxville, TN 37919</td>
<td>Thomas Wheelock</td>
<td>425.557.8377</td>
</tr>
</tbody>
</table>

The following schedule will begin the process for papers presented at the 2015 Annual Conference:

**2014**

- May 9: Deadline for Abstracts
- June 20: Authors Notified by Program Chair
- Aug 8: Copy of the first draft must be sent to CTI office for review
- Nov 7: Final draft, based on review comments and slides due in the CTI office

Abstract Forms can be obtained by contacting the CTI office at 281.583.4087 or email: vmanser@cti.org

**CALL FOR PAPERS**

**2015 Annual Conference**

February 9-12, 2015
Sheraton New Orleans
New Orleans, Louisiana

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Cooling Technology Institute

Code of Ethics

We the members of the Cooling Technology Institute (CTI), when acting on behalf of CTI, its members and the industry, will always abide by:

• Behaving with honesty, trustworthiness, and in good faith in representing and performing duties for the betterment of the CTI.
• Always striving to provide the best and most up to date technological information so CTI remains current with industry standards, specifications, guidelines and recommended practices for the benefit of both our members and our industry.
• Insuring that all official works, statements and/or actions on behalf of CTI are so noted as official property of the CTI. All non-official works, statements and/or actions will be clearly recognized as not of CTI and are of personal opinion.
• Avoiding damaging or critical actions with other CTI members that might be personally hurtful or degrading to their employer.
• Exposing existing or past conflicts and rectifying these conflicts in an expedient manner to the best possible solution for all parties involved.
• Holding fellow CTI members in the highest regard of respect and admiration.

August 29, 2006

Key Features of CTI ToolKit Version 3.1

• Air Properties Calculator. Fully ASHRAE compliant, psychrometrics. Interactive.
• Thermal Design Worksheet. in the “Demand Curve” Tab which can be saved to file and retrieved for later review. Now with printable and exportable graphs.
• Performance Evaluator. in the “Performance Curve” Tab to evaluate induced draft or forced draft, crossflow or counterflow cooling tower performance. Now calculates percent performance or leaving water temperature deviation. Data can be entered manually or with an input file. Automatic Cross-Plotting. Now with printable and exportable graphs.
• New and Improved Help Files. guide you through the software, explain performance evaluation techniques and offer tips for use.

Now works with Microsoft Windows 7 and all earlier Windows Operating Systems back to Windows 95
(16 MB ram recommended, and 3 MB free disk space required)
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Dynamic Fabricators
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- Fan Stacks, Fan Ring, Inlet Bells, FRP Basins.
- Fiberglass Pipe Saddles, Tanks, Access Hatches, Doors, Molded Stairs & Distribution Splash Boxes.

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Attend the Committee Meeting of Your Choice
February 4-6, 2014

Engineering Standards and Maintenance

Bill Howard - Cooling Tower Depot, Inc., Chair
Ken Mortensen - SPX Cooling Technologies
James F. Blake - American Lightning Protection (not pictured)

- Wood Standards
- Corrosion in Concrete Towers
- Cleaning cooling Towers
- ESG-153 Recommended Guidelines for Portland Cement
- Tower Vibration Standard
- Wood to FRP
- BUL-109 Nomenclature
- CH 7 and CH 8 Environmental Aspects of Cooling Towers
- ESG-120 Lightning Protection Guidelines
- STD-203 Industrial Cooling Towers

IX. Standing Assignments
- Technical Review Committee (5 year reviews) - Bill Howard
- The ‘Ask The Expert’ Designee
- Task Group Meeting Schedule - Bill Howard
- Attendance Recording - James Blake
- Ad-Hoc Reviews

X. New Business

XI. Adjourn

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Ask The Expert?
cti.org
Committee Meeting of Your Choice Continued

Performance & Technology

Water Treating Committee

I. Call to Order
II. Acknowledgement of Attendees
III. Old Business - Active Task Groups:
- ATC-105 Thermal Test - Rich Harrison, Chair
- STD-146 Flow Measurement, David Wheeler, Chair
- ATC-128 Sound - Jean-Pierre Liber, Chair
- STD-201 Certification - Frank Michelli, Chair and Trevor Hegg, Co-Chair
- STD-202 Publication Standard - Paul Lindahl, Chair
- PTG-156 Preparation for an Official CTI Thermal Performance Plume Abatement, or Drift Emission Test - Ken Hennon, Chair
- PFM-143 Recommended Practice for Airflow Testing of Cooling Towers - Paul Nelissen
IV. New Business

Press Release

Contact: Chairman, CTI Multi-Agency Testing Committee
Houston, Texas 2-November-2013

Cooling Technology Institute, PO Box 73383, Houston, Texas 77273 - The Cooling Technology Institute announces its annual invitation for interested thermal testing agencies to apply for potential Licensing as CTI Thermal Testing Agencies. CTI provides an independent third party thermal testing program to service the industry. Interested agencies are required to declare their interest by March 1, 2014, at the CTI address listed.

Cooling Tower

Before

After

No Special Training Needed
Easy To Apply By Hand
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Fax: 281-821-0334
E-mail: info@densona.com

www.densona.com
II. Lead Task Group Chair Reports

At 10:01 AM, Bill Howard began the meeting. A list of 23 attendees at the Closing

I. Call to Order/Announcements/Introduction of Attendees -

• Wood, Jane Hauser [including Redwood, Douglas Fir, Connections, and Plywood]
• Wood, Metal, and Concrete Materials Task Group [Bill Howard]
• STD – 104 and 117. NDS effects on all of documents is now included.

- Expected to enter AdHoc by October BOD 2013 meeting. Designating as Historical:
- Met Tuesday at 1:30PM. Reviewed: STD – 103, 114, 119, and 134 which are

James L. Baker

- Composite Cooling Solutions, LP (not pictured)
- American Lightning Protection (not pictured)

- OP304 Document Procedure – Bill Howard, Jon Ahern, Glenn Barefoot, Ken Mortensen – met Tuesday at 8AM. Document outline discussed and additional input sought for several sections. Plan is to incorporate comments and send out the document for further work.

- STD – 124 – FRP Fan Stuck Design, Jamie Bland – met and decided to incorporate

- New Guideline – Wood to FRP, John Ahern, Glenn Barefoot, Ken Mortensen – met

- Chapter 11 – Electrical Components, Dave Suptic – met at 11AM Tuesday. Draft document reviewed and section organization of the document is being layed out, the specifics will be about motors.

- FRP and Plastics Task Group [Glenn Barefoot, Jamie Bland]

- New Guideline – Wood to FRP, John Ahern, Glenn Barefoot, Ken Mortensen – met

- New Task Group Guideline on Fill, Eliminators and Louvers, Kevin Hole, Chris

- Chapter 13 – Inspection of Cooling Towers, Tom Toth – met Wednesday at 4PM to revisit document and plan the next steps. Expect to detail and send to AdHoc after Summer Meeting.

- Tower Operations Task Group [Jim Baker]

- Chapter 13 – Inspection of Cooling Towers, Narendra Gosain – has been approved by the Board of Directors.

- STD-203 - Industrial Cooling Tower, Tom Toth – will consider the request.


- New Guideline, Cleaning of Cooling Towers, Phillip Poll, Don Zelek – met Monday at 1:30PM. Document will include basin cleaning, disinfection and fill cleaning. Subject assignments were made on fill, eliminators, chemical treatment, and disinfection.

- Corrosion of Concrete, Narendra Gosain, Tom Kline – met Monday at 11AM. Draft document was reviewed. Scope was clarified to include concrete and related hardware and reinforcement issues.

- Mechanical Equipment Task Group [Dave Suptic, Craig Burris]

- STD-151 – Variable Frequency Drives, Dave Suptic – has been approved by the Board of Directors.

- New Standard – Vibration, Craig Burris – met at 3PM. Worked on the draft including monitoring, instruments, probe location, baseline development, with frequency tables and graphs. This document is expected to go to AdHoc by about the October BOD 2013 meeting.

- Chapter 11 – Electrical Components, Dave Suptic – met at 11AM Tuesday. Draft document reviewed and section organization of the document is being layed out, the specifics will be about motors.

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- Chapter 11 – Electrical Components, Dave Suptic – met at 11AM Tuesday. Draft document reviewed and section organization of the document is being layed out, the specifics will be about motors.

- FRP STD-137, Glenn Barefoot – Met at 11AM Tuesday. Discussed a request to include Nylon 6/6 surface veil as an option in this standard. Strongwell and Bedford will test this change in Cooling Tower operation. Standard is not in review cycle, but the voting group will consider the request.


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Standing Committee Minutes from July 2013 continued

Performance & Technology

Kenneth (Ken) Hennon - Clean Air Engineering, Vice Chair
Rich Aull - Brentwood Industries, Inc., Vice Chair
Toby Daley - Composite Cooling Solutions, LP, Chair
Jean-Pierre Libert - EvapTech, Inc., Vice Chair (not pictured)

1. Call to Order:
The P&T Committee Chairman, Toby Daley called the closing meeting of the Performance & Technology Committee to order at 10:00 am at the Del Mar Hilton in Del Mar, California.

2. Active Task Group Concluding Remarks
a. ATC-105 (Thermal Test Code) David Wheeler, Chair. The committee met on two occasions and discussed Appendix O (Wet bulb instrument standard) and the section on long term testing. The sub task group on uncertainty met and made significant progress and agreed to continue discussions the 3rd or 4th week of September.

Water Treating Committee

Jon Cohen - H-O-H Water Technology - Coordinator
Jim Kanuth - ChemTreat, Inc. - Vice Chair
Matt Wangerin - Ashland Water Technologies, Chair
Pete Elliott - GE Water & Process Technologies - Secretary (not pictured)

1. Call to Order - Matt Wangerin, Water Treating Committee Chair, called the Opening meeting to order at 9:00 A.M. in Del Mar, CA.

2. Minutes - The minutes from the Winter 2013 meeting were approved as written.

3. Task Groups - Task Groups were set to meet per the following schedule:
   • Microbiological Monitoring WTG-130c (Boudoin)
   • Instrumentation & Control (Dorsey)
   • Non-Oxidizing Microbiocides (Cohen)
   • Physical Water Treatment (Cunningham)
   • Legionella STD-159 Review (Lindahl)
   • Instrumentation & Control (Dorsey)
   • Deposit Monitoring WTG-130b (Moriarty)

   a. ATC-128 (Sound Test Code) Jean-Pierre Libert, Chair (Committee Member Larry Burdick provided the summary). The committee met at their scheduled time and reviewed all comments made on the existing draft. Revised draft will be distributed to committee members. The document is ready for Ad-hoc review.

   b. PFM 143 (Air Flow Measurement Guideline) Paul Nelissen, Chair. A brief meeting was held. The document requires updating to 1) incorporate current instrumentation technology, 2) add more detail for the static pressure calculation, 3) convert the document from its current format to MSWord. It is anticipated that the document will take one year to revise.

   c. Sound Testing Task Force – Paul Lindahl. The group met with quorum achieved. Several committee members suggested changes. A conference call will be scheduled in later July or early August to continue discussions. Topic up for discussion: Who will be on the newly formed task group for application review and audit visits? This will need to be a presidentially appointed task group. Another unresolved question is how to handle sound test agencies who do not have thermal testing capabilities.

   d. PTG 156 (Thermal Test Guide) Ken Hennon, Chair. Document is completed and ready for ad-hoc review.

   e. STD-146 (Water Flow Measurement Standard) - David Wheeler, Chair. A portion of the meeting was devoted to reviewing the final draft of the Pitot Tube Study Request for Proposal document. Zan Liu and David Wheeler committed to update the proposal document and address all issues raised. It is anticipated that the document will take one year to revise.

   f. STD-201 (Thermal Test Certification Program) – Frank Michell, Chair. The rating manual is now complete and will be submitted to the BOD for approval.

   g. STD 202 (Publication of Thermal Test Results) – Paul Lindahl, Chair. This document has been approved by the BOD.

   i. Other. Committee Chair Toby Daley opened the floor to discussions as to how to improve the next meeting. Several items were identified and noted below:
      i. All meeting rooms should have an LCD projector with screen & microphone.
      ii. Meetings should be scheduled earlier to allow posting to website.
      iii. Toby suggested that 1) all meeting agendas include specific goals of the committee, 2) all task groups have a vice chair in addition to the committee chair.

3. The meeting was adjourned 11:00am.
The magnitude and advantage of composites over conventional materials.

Finally, energy absorption and energy dissipation is the key characteristic of any structure. Materials and as a result, their vibrational performance is better. The order higher than conventional materials, are ideal candidates from this point of view. The pilot hybrid cooling system is being evaluated.

A pilot TSC hybrid system (consisting of a TSC and a small pilot conventional mechanical refrigerant and then to the air without water evaporation. Operation to the TSC in series with a small pilot conventional evaporative cooling tower forms a hybrid wet/dry cooling systems.

Hybrid System

For the past three years, Jay Renew has been employed as a Senior Environmental Engineer with Southern Research Institute. He is a Principle Investigator located onsite at the newly established Water Research Center at Plant Bowen near Cartersville, Georgia where he leads research on water related issues for the electrical power industry. Jay specializes in advanced cooling research and the management of solids from zero liquid discharge (ZLD) systems. Before joining the Southern Research Institute, Jay worked for 8 years in the water and wastewater consulting industry. Jay obtained his Master of Science in Environmental Engineering from the Georgia Institute of Technology and a Bachelor of Science in Agricultural Engineering from the University of Georgia. Jay is a licensed professional engineer in the State of Georgia. The thermoelectric power industry is expected to face increased competition for water rights (withdrawal and consumption) from agricultural, municipal, and industrial users. One technological option for decreasing water consumption in power plants is the Thermosyphon Cooler Hybrid Cooling System by J&J Controls, Inc. Thermosyphon Cooler (TSC) is a dry cooling technology that transfers heat from hot condenser return water to a refrigerant and then to the air without water evaporation. Operation to the TSC in series with a small pilot conventional evaporative cooling tower forms a hybrid wet/dry cooling systems.

The pilot TSC hybrid system (consisting of a TSC and a small pilot conventional mechanical draft cooling tower) was installed at the Water Research Center at Plant Bowen in Cartersville, Georgia. In this year-long test program, the water savings performance of the pilot hybrid cooling system is being evaluated.

Composite Materials Selection for Structures in Seismic Regions

Cardo received his university degree in aerospace engineering from the Politecnico of Milan in 2004. His studies were focused on structural analysis and turbo machines in general. Since 2005 he has been working in the technical department of Cofimco S.r.l., a leader in aluminium and fibreglass axial fans manufacturing. He is now in charge of the Engineering Division of Cofimco S.r.l. and involved in the Research & Development of high performance axial fans. Cofimco extensive research and the application of aerodynamic concepts to fan blades through computational fluid dynamic analysis (i.e. CFD simulation) and laboratory tests pointed out in the develop-

The CTI Office has worked hard to schedule a program that fits everyone’s needs. Incidents arise that may cause changes and/or omissions to parts of the program that are out of our hands. Our apologies if this happens.

continued on page13
This paper describes the ongoing restoration of two reinforced concrete hyperbolic cooling towers that exhibited extensive deterioration due to corrosion of the embedded reinforcing steel. The cooling towers were constructed in 1983 and 1985 and are each 453 feet tall reinforced concrete shell structures. The restoration work included the removal and replacement of more than 200,000 square feet of concrete and the installation of an impressed current cathode protection (ICCP) system to protect the embedded reinforcing steel from corrosion. The cost of the restoration work is approximately $53 million.

David Corelli holds a Bachelor of Science degree in Systems Engineering from Wright State University and a Master of Science degree in Mechanical Engineering from The University of Alabama. He has over 30 years of experience in vibration analysis, instrumentation, and sensors. He has worked as a test engineer for the Air Force Avionics Laboratory; as a Field Engineer for Hewlett Packard; Entek Scientific; and IDR Measurement; and is currently the Director of Application Engineering for ProMinent Fluid Controls, a global chemical feed equipment manufacturer. David A. Corelli holds a Bachelor of Science degree in Systems Engineering from Wright State University and a Master of Science degree in Mechanical Engineering from The University of Alabama. He has over 30 years of experience in vibration analysis, instrumentation, and sensors. He has worked as a test engineer for the Air Force Avionics Laboratory; as a Field Engineer for Hewlett Packard; Entek Scientific; and IDR Measurement; and is currently the Director of Application Engineering for ProMinent Fluid Controls, a global chemical feed equipment manufacturer.

This paper will present the basics of both mechanical and electronic vibration switches, explain how they are designed, how they work, and show where they are effective and where they are not. It will show their frequency responses along with the major differences in the responses of mechanical and electronic switches. Finally, it will show how the various switches meet or do not meet the new CTI Vibration Standard. A video will also be included in the presentation to show switch response using vibration shakers.

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Raymond M. Post, P.E., ChemTreat, Inc. has a Bachelor of Science in Chemical Engineering degree from Princeton University. He has thirty-seven years industrial water treatment experience including thirty years in the development, application and evaluation of chemical treatment applications. Ray holds two US patents and authored more than 30 technical papers on industrial water treatment. He is a member of ASME and the National Society of Professional Engineers and active at CTI and International Water Conference (IWC). He holds a Bachelor of Science in Engineering degree from Princeton University. 

**Group Luncheon**
- 12:15p - 1:45p
- Raphael Ballrooms C and D

**TP14-13**
Preventive Maintenance for Cooling Towers Utilizing Gamma Scanning Technology
Paul Chila, Quantum Technical Services, LLC

Paul Chila earned a Bachelor of Science in Chemical Engineering degree from the University of Akron. He has been involved with all aspects of process design and troubleshooting from the start of his career in 1992 to the present. Paul aided in the development and finalization of the cooling tower monitoring program patented by Quantum Technical Services, LLC and maintains all records of cooling tower information for clients worldwide.

One of the most common questions asked concerning high efficiency cooling towers is “how do we know what is happening inside the fill section?” Quantum Technical Services has developed and patented a gamma scanning technique to address this question directly. Utilizing a gamma scan of the fill section, we calculate the bulk density of all material in the fill. This technology, applied over several scans on a tower over time, has proven to be the most informative and cost effective method to determine the effectiveness of chemical treatment and help guide treatment companies in their treatment strategies.

**TP14-12**
Challenges of the First Cooling Tower System of a Petroleum Refiner Supplied with Water Reuse
Sergio Pagnin, Andrea Azevedo Veiga & Tiago Queiroz Bonfim, Petroleos Brasileiro SA

Sergio Pagnin has a degree in chemical engineering from the State University of Rio de Janeiro (UERJ) – Brazil. Specialization in Petroleum Processing Engineering and Master degree in Material and Metallurgy Engineering from Pontifical Catholic University of Rio de Janeiro (PUC-Rio) – Brazil. He works as a chemical process engineer researcher in Water Treatment and Reuse Management at PETROBRAS Research & Development Center (CENPES) – Rio de Janeiro - Brazil, focusing on corrosion and microbiological control in industrial process units.

Reuse of refineries wastewater as make-up water in cooling water systems has the driving forces based on environmental brazilian’s restrictions and economic benefits. After almost a decade investigating wastewater treatment technologies, the use of reclaimed water in the cooling system of Petrobras, a Brazilian petroleum company, initiated in February 2012. This case history has reduced about 410,000m3 annually the amount of water supplied to refinery’s cooling tower. This system was the first to receive effluent from refinery treated as makeup water in Petrobras, becoming a benchmark for all other operating units of the company.

**TP14-14**
Development and Application of Phosphorus Free Cooling Water Technology
Raymond M. Post, P.E., ChemTreat, Inc.

Ray Post, P.E. is the Director, Cooling Water Technologies at ChemTreat, Inc. He has thirty-seven years industrial water treatment experience including thirty years in the development, application and evaluation of chemical treatment applications. Ray holds two US patents and authored more than 30 technical papers on industrial water treatment. He is a member of ASME and the National Society of Professional Engineers and active at CTI and International Water Conference (IWC). He holds a Bachelor of Science in Engineering degree from Princeton University. Phosphate based corrosion and scale inhibitor programs emerged as the cooling water technology of choice when the water treatment industry was strongly encouraged to eliminate chromates some 35 years ago. At the time, we were certainly aware of the control without forming phosphate deposits on hot bundles, problems with admiralty brass corrosion using only azoles, and troubles with well water iron and aluminum carryover interacting with the phosphate and escalating dispersant demand. Of course we could see the increased algae growth on the towers, and covered many tower decks and increased chlorine and biocide usage in response. We were also aware of impending phosphorus regulations already affecting laundry detergents, but still persisted in perfecting phosphorus based cooling water programs, because there simply was no reasonable alternative ...until now. This paper describes the development of a promising phosphorus free corrosion and deposit control program including laboratory and field application performance data in several challenging applications.

This ends the Water Treating Papers for Monday’s program.

Below is the schedule for Monday afternoon.

**Afternoon Schedule for Monday, February 3rd**
- 12:15p - 1:45p Group Luncheon

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>2:00p - 3:30p</td>
<td>Water Treating Panel Discussion, Raphael Ballroom B</td>
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<tr>
<td>3:00p - 4:00p</td>
<td>Break</td>
</tr>
<tr>
<td>3:45p - 5:00p</td>
<td>Technical Committee Meetings</td>
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<tr>
<td></td>
<td>• Engineering Standards &amp; Maintenance, Raphael Ballroom B</td>
</tr>
<tr>
<td></td>
<td>• Performance &amp; Technology, Raphael Room</td>
</tr>
<tr>
<td>5:00p - 12:00a</td>
<td>Hospitality Suite - Donatello</td>
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<tr>
<td></td>
<td>(Bar Closes @ 9:30p)</td>
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<tr>
<td>6:00p - 10:00p</td>
<td>Monday Night Dinner (information on page 20)</td>
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**ES&M and P&T continued on page 15**
Frank Michell, American Electric Power and Marcela Politano & Yushi Wang, IIHR-Blockage

expenditure and system reliability. overlooked installation processes may have a substantial negative impact on maintenance as well as analytical data on material of construction options. The authors explain how the cooling system—the life expectancy of a cooling tower fire protection sprinkler system per year since its founding. The presentation explains how wireless vibration monitoring can be used as part of a predictive maintenance program to monitor the health of cooling towers. Benefits of wireless vibration monitoring of cooling towers will be discussed and a case study will be presented.

Jeremy Frank and Matt Cowen, KCF Technology

TP14-17

Wireless Vibration Monitoring for Cooling Towers

Dr. Jeremy Frank is the President and co-Founder of KCF Technologies, Inc., a leader in developing innovative solutions in low power wireless sensing, energy harvesting, and smart material devices. Dr. Frank earned his Doctorate in Mechanical Engineering and a Masters in Business Administration from the Pennsylvania State University. He has been engaged for over a decade on the development and optimization of innovative low power sensors and actuators. KCF leverages both government and industry-funded research to accelerate the transition of advanced technologies to commercial products. Under Dr. Frank’s leadership, company revenues have grown at an average annual rate of over 60 percent wedge dry cooler, developed by EVAPCO, conserves water and energy used at power plants by utilizing an innovative wet-dry fluid technology. The cooling tower works in wet-dry mode during the hot summer months and in dry mode other times of the year. In wet-dry mode, hot water is first cooled through dry coals and additional tubes sprayed with treated water. In dry mode, the spray system is off, using no water and no water treatment chemicals. In addition, the eco wet-dry cooler has a limited visible water cloud, or condensate plume, in wet-dry mode and zero visible plume in dry mode. This technical paper presents data related to the thermal performance, water use and energy use of the pilot unit after several months of operation.

This ends the ES&M and P&T Papers for Monday’s program. Schedule for the continuation of day is at the bottom of page 14

TP14-19

Advanced Cooling Solutions for Water Conservation

Jean-Pierre Libert is Technical Director for EvapTech Inc. He plans, directs and controls the technical matters involving thermal evaluations, ratings and optimizations of all mechanical draft, natural draft and plume-abated towers, mechanical equipment selections, low sound applications, water chemistry, thermodynamic R&D and related product development activities. Jean-Pierre holds a M.S. Degree in Mechanical Engineering from Faculté Polytechnique of Mont, Belgium, and has been an active member of the Cooling Technology Institute since 1985. He is a member in good standing of the American Society of Mechanical Engineers. Prior to joining EvapTech, Jean-Pierre had extensive cooling tower industry experience acquired since 1979 in a variety of assignments in Belgium, Mexico and the U.S.A.

THE 2014 CTI ANNUAL CONFERENCE

PROGRAM continued

THE 2014 CTI ANNUAL CONFERENCE

PROGRAM continued

Monday’s ES&M and P&T Technical Sessions Raphael Ballroom A

continued from page 12

TP14-17

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This ends the ES&M and P&T Papers for Monday’s program. Schedule for the continuation of day is at the bottom of page 14

Tuesday, February 4, 2014

THE 2014 CTI ANNUAL CONFERENCE

PROGRAM continued

Tuesday’s Technical Sessions running simultaneously between Raphael Ballrooms A and B

Raphael Ballroom A (ES&M and P&T Sessions)

7:00a - 10:00a - New Member’s Breakfast, Salon 10
7:00a - 10:00a - Service, Atrium
7:00a - 5:00p - Registration and Paper Sales, Atrium
7:00a - 5:00p - Speakers’ Breakfast, Photo Session & Prep Room, Salon 1
8:00a - 8:30a

Raphael Ballroom B (Water Treating Sessions)

7:00a - 10:00a - New Member’s Breakfast, Salon 10
7:00a - 10:00a - Service, Atrium
7:00a - 5:00p - Registration and Paper Sales, Atrium
7:00a - 5:00p - Speakers’ Breakfast, Photo Session & Prep Room, Salon 1
8:00a - 8:30a

TP14-17

Wireless Vibration Monitoring for Cooling Towers

Jeremy Frank and Matt Cowen, KCF Technology

TP14-19

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Matt Wangerin is currently the Cooling Water Business Manager for Ashland Water Technologies. He has over twenty years experience in various aspects of water treatment, having started his career as a metallurgist and failure analyst before moving into the commercial part of the business and product management. He has co-authored papers for the Cooling Technology Institute (CTI) and NACE. He currently is the Chairman of the Water Treating Committee for the Cooling Technology Institute. Matt hold Master of Science Degrees in Materials Science and Management from the Stevens Institute of Technology.

This paper investigates an often overlooked, but critical portion of the cooling system—the life expectancy of a cooling tower fire protection sprinkler system piping. It describes the operating experience of the Hugo Power Plant’s sprinkler system, as well as analytical data on material of construction options. The authors explain how overlooked installation processes may have a substantial negative impact on maintenance expenditure and system reliability.

8:30a - 9:00a

TP14-21

Cooling Tower Fire Protection Materials Evaluation in a Fossil Plant

Matt Wangerin and Emery Lange, Ashland Water Technologies

TP14-24

Structural Modification of a Power Plant’s River Water Intake to Minimize Ice Blockage

Frank Michell, American Electric Power and Marcela Politano & Yushi Wang, IIHR-Hydroscience & Engineering at the University of Iowa

Frank Michell is Manager of the Applications Engineering and Balance of Plant Mechanical Equipment Group of the Services Organization of American Electric Power responsible for providing engineering services to AEP’s Fossil Hydro Generating Fleet in the areas of Mechanical Engineering Analysis including fluid mechanics, thermodynamics, heat transfer, stress analysis, CFD modeling and balance of plant mechanical equipment & system expertise/design basis for pumps, heat exchangers, cooling towers,
failed columns and horizontal members were also damaged from ice. Surface blisters were during construction or after 18 months of operation. The failed or cracked columns were (Bob Cashner, American Electric Power and Hota GangaRao, West Virginia University) AEP's Experience with Failure Modes in FRP Cooling Towers TP14-27

Augusto is a member of the Acoustics Committee an Italian organization for standardization ISO member (UNI) and acoustic measurement of the accredited calibration Laboratories WG of the National Institute of Metrological Research and a member of the Physical agents WG for the preparation of the Consolidated Law on safety in the workplace. He entered in the first list of competent technicians in environmental acoustics of the Campania region, writing to the Board of Technician Engineer of Naples and the Board of Expert Witness, Court of Naples and Public Prosecutor’s office. He is an author and curator of many publications and books in the acoustics theme. Augusto is a lecturer in the university and accredited training centers. His national benchmark is in public administration for the organization of conferences and workshops on acoustics and vibration. He is the President of the Italian Center for the Environment, a recognized Italian non-profit organization. The study concerns a noise impact prediction, in order to establish compliance according to, of new water cooling towers that will be installed following the completion of a modern central cooling subservient to the General Hospital “A. Gemelli” in Rome.

To characterize the existing cooling towers of the refrigeration unit, and to detect the residual noise area of the sound, level measurements were carried out during the night. These samples, together the data of sound emission of the new sources (certified by the manufacturer), were used in order to build the prediction noise scenarios using the “CADINA” software and other appropriate algorithms.

TP14-25 Noise Control of Water Cooling Towers in Rome’s Hospital Area

Dr. Augusto Papa, Italian Workers Compensation Authority

This ends the ES&M and P&T Papers for Tuesday Continued activities for Tuesday is on page 17

TP14-24 AEP’s Experience with Failure Modes in FRP Cooling Towers

Bob Cashner, American Electric Power and Hota GangaRao, West Virginia University

Bob Cashner is a principal engineer with American Electric Power and works out of the corporate headquarters in Columbus, Ohio. He received a BS in mechanical engineering from the University of Missouri – Rolla. Bob has more than 25 years of experience with heat exchangers (e.g. cooling towers, feedwater heaters and condensers), pumps and balance of plant equipment. Bob is a member of ASHRAE, ASME and ASTM, and has presented several technical papers at ASME, ASHRAE and ASTM conferences. The intent of this paper is to share information on how pulledtud fiberglass members can fail or be structurally compromised. Failed or cracked fiberglass columns were found in five towers (for AEP) during construction or after 18 months of operation. The failed or cracked columns were attributed to misuse of fiberglass bearing pads or poor construction procedures. Several failed columns and horizontal members were also damaged from ice. Surface blisters were noticed in two of the new towers after 2 to 18 months of operation. A summary of these events will be discussed in this paper along with the probable reasons and actions AEP is taking to prevent a reoccurrence.

This ends the ES&M and P&T Papers for Tuesday

TP14-23 Premature Failure of Open and Closed Recirculating Cooling Water and Fire Water System Piping and Equipment - Are You Responsible?

Robert J. Ferguson, , French Creek Software, Inc.

Rob Ferguson began modeling mineral scale formation and its control in 1974 and continues to be a major contributor to the practical application of physical chemistry to solving industrial water treatment challenges. Rob wrote much of the software in use today for cooling water, reverse osmosis, and oil field chemistry. He co-founded French Creek Software in 1989 and has presented and published papers at AWF, NACE, the IWC, CTI, ACS, AWWA, and in many trade journals. His motto is “Physical Chemistry for Fun.” Rob was educated at the US Naval Academy and University of Minnesota and received a BS in Biochemistry and Microbiology in 1971. Rob worked in research, marketing, and software development for several major water treatment service companies prior to cofounding French Creek Software in 1989; water treatment chemists have long observed that some scaling inhibitors work better at high pH rather than low pH, and that some inhibitors have little, if any activity at very low pH. Examples would be the effectiveness of polyacrylic acid at high pH as a calcium carbonate inhibitor as compared to calcium phosphate, some miscellaneous metal ions, etc. Another effect is related to the nature of freshwater resources. Resulting restrictions in freshwater availability for evaporative cooling use may lead to potential production constraints. Johnson Controls has recently developed the Thermosyphon Cooler Hybrid System (TCHS), a combination of equipment and controls, which has the potential to significantly reduce make-up water requirements of conventional evaporative cooling towers. This paper will detail the TCHS and the ways it can provide water resiliency to power and processes relying on evaporative cooling.

TP14-24 PI Support on Inhibitor Performance

Owner/Operator Seminar (box lunch included)

Raphael Ballroom A (ES&M and P&T Sessions)

Tuesday, February 4, 2014 Noon - 2:00p Da Vinci Room

Leauply: Frank Michell w/AEP & Natasha Jones w/Bechtel

Water Treating continued on page17
Pairing Two Proprietary Technologies Key to Power Plant Efficiency Increases

Darcy Dauterive and Jeff Kisty, Ashland Water Technologies

TP14-24

Indication of condenser fouling.

As a result of the program modifications, the plant is setting power generating records and shows no indication of condenser fouling. A zero liquid discharge power plant, with five ppm of iron in the make-up water, had been experiencing condenser fouling for over twenty years. The plant was shut down two to three times per year to clean the condenser in order to maintain efficient power production. The condenser and fill fouling was estimated to cost the plant approximately 5% in lost efficiency. Major changes were implemented to the traditional microbiological control, deposit control, and side stream softening programs that the plant had used for years. In order to assess the program performance, an OnGuard 2-plus analyzer was installed on the cooling system. This proprietary monitoring/control system accurately simulates the steady state conditions in plant heat exchangers while revealing differentiation among various causes of fouling (i.e. sedimentation, scaling, microbiological, etc.). This diagnostic tool, acting as a window into the cooling system, was essential to validating the response to the treatment program changes before they could impact plant efficiency. As a result of the program modifications, the plant is setting power generating records and shows no indication of condenser fouling.

Cyril Marconnet, EDF-CEIDRE

Graduated from the Ecole Centrale Paris as engineer and Ph.D., I worked for five years with Veolia Water company, on R&D projects carried out on behalf of the Syndicat des Eaux d’Ile de France. My projects aimed at anticipating the future evolutions of the process in three big drinking water treatment plants, located in the suburbs of Paris, especially the implementation of membrane filtration processes (MF, NF), to improve water quality at the outlet of the plant. I have been working now for one year for EDF, the French main electricity production and transportation company, on the topic of scaling in the cooling circuit of nuclear power plants and in particular on the packing in the cooling tower.

One of the main issues of condenser open recirculating cooling systems is scaling. This can have high economic consequences due to a loss of thermal exchange, an increase of maintenance costs and potentially plant shutdown. To tackle this problem, EDF, which operates 30 condenser open cooling circuits in nuclear power plants in France, has developed a modeling computer program called CooliSS, to help optimize chemical treatment. CooliSS is based on a chemical mass balance model and can provide previsions of cooling water chemistry evolution within the cooling circuit, as a function of operating conditions. The software was developed under the open source environment Scilab/Xcos*. Phreeqc is used for the calculation of water chemistry in each component of the circuit (chemical speciation, pH and saturation index calculation, etc.). The model is based on theoretical considerations. A case study will be presented in this paper.
New Microsand Crossflow Filter for High Flow Systems

- Up to 85% of savings on footprint
- Sub-micron filtration
- Speed of 50m/h
- Up to 50% less water for backwash
- 10-20% of energy savings with cooling applications

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• Instrumentation & Control: This Task Group will now be referred to as WTG-125. Mike Dorsey and Trey Cook have made excellent progress over the past 6 months via monthly conference calls with distribution of document sections. Several sections have been completed, with only a small number of sections remaining.

• Microbiological Monitoring WTG-130c: Paul Schook, the chairman of this Task Group, was not present. The task group was represented by Lutricia Boudoin, who reported progress from Winter 2013 meeting. The specific method of detecting biofilms in cooling systems is still needed. Paul Schook to continue conference calls to move toward completing document after the February 2014 Winter Meeting.

• Deposit Monitoring WTG-130b: Barb Moriarty, the chair for this Task Group, was not present, and it is believed she will not return to CTI. A new TG chair is needed. Pete Elliott and Matt Wangerin supplied historical sections of document for distribution to and members of this Task Group, and work continues.

• Corrosion Monitoring: WT Committee discussed the history of “Corrosion Testing Procedures-STD-149 (2000)”, and the “Corrosion Monitoring” WTG #330a. Consolidation of these documents was possible consideration. Art Brunn and Matt Wangerin investigated STD-149 and WTG-130. STD-149 relates to use of corrosion coupon strips only and can be renewed as written. The work previously performed on WTG-130a “Corrosion Monitoring” appears to have been lost, and the WTG-130a needs to be resurrected to work in accordance with WTG-130b and WTG-130c to create 3 new sections to update WTG-130.

• Physical Water Treatment: This Task Group will now be referred to as WTG-158. The focus of this document is how overall performance is monitored. Bob Cunningham, acting as interim chair, reported that Mark Winter had effectively authored a first-draft document, which is a summary of devices/technologies involved. Bob felt this document should specify table of technologies as clearly as “claims” and not based on documented proof/case data. Performance criteria should be based on basic standards in the areas of corrosion, deposition, and instrumentation & control. Bob reported that the document is a work in progress. He would like input where devices/technologies can be measured against, in an objective manner. Wangerin suggested that Cunningham should research and include as part of this document, a reference to the prior research project sponsored by ASHRAE (Drexel University?).

• Application of Non-Oxidizing Biocides: This Task Group will now be referred to as WTG-126. Jon Cohen is acting as chair. An outline will be generated, from which selected individuals from within the task group will be required to write designated sections, in a fashion similar to that of the Oxidizing Biocides document (WTG-141). Cohen reported that this document needs to include a matrix for Non-Oxidizing biocide actives and required dosage rates of those actives. Bill Pierson offered that AWT has compiled a matrix for Non-Oxidizers, and this resource can be used by this TG with proper citation/footnotes.

4. Liaison Reports

• NACE (Trey Cook reporting): Annual meeting held in March. All water treating-related committees are getting thinner with respect to attendance and participation.

• IWC (Jack Bland reporting): The October meeting held in San Antonio was extremely well-attended. Overall, the meeting was considered successful.

• AWT (Bill Pierson reporting): Annual convention occurred in October, 2012, with the 2013 meeting also slated for October at the Mohican Sun Resort in Connecticut. AWT continues to conduct 2 Technical Training seminars each year, with 1 held on the east coast and one of on the west coast in the U.S. These seminars remain extremely popular. One does not need to be a member of AWT to attend. On a separate but related note, the “CWT” (certified water treater) designation is still being issued by AWT for qualified participants and is reviewed for renewal every 5 years. AWT started the Student Enrichment and Education Development (SEED) program at 24 universities.

• ASHRAE (Bill Pierson and Jon Cohen reporting): STD 188P is out for public comment for the 3rd time. This has been an 8-year period for public approval. Some members from the original committee have since retired or passed away. The drawn-out public approval process has ASHRAE concerned to the point of elevating the 188P document to “Policy Standard” status. Only 2 other documents in ASHRAE’s history have been elevated to such a status. AWT and CTI should continue to consider partnering with ASHRAE for the purpose of co-funding a research project. From previous experience, the co-funding option does lead to an easier path toward approval of any research project.

Any proposed project ideas need to be submitted to Matt Wangerin for initial approval, and will be submitted according to a standardized format. The next ASHRAE meeting is scheduled for January 18-22, 2014. Abstracts for papers are due by August 13, 2013. One area that has gained ASHRAE focus is “Hydronic System Design for Efficiency in Large Buildings”.

5. Old Business

• CTI is still interested in sponsoring research projects, such as Pitot tube topics (Bland).

• WTG-141 “Application of Oxidizing Biocides” has been submitted for CTI final board approval, which is expected to occur. WTG-142 “Treatment of Galvanized Cooling Towers to Prevent White Rust” has been approved by the Board and appears correctly in PRM-102.

• A suitable subject for the Annual Meeting Water Treating Panel Discussion was discussed and needs to be finalized.

6. New Business

Jack Bland proposed idea for a new Task Group to develop a new document/white paper be produced detailing performance standards or Best Practices Guidelines Cooling Water Systems - for each type of industry or stressed vs. non-stressed cooling systems. This Task Group will be referred to as WTG-159. The performance standards for consideration in this document will be in the major areas of corrosion, deposition, and microbiological control. Emphasis is to be placed on the fact that this document will not be considered a “Standard”, so there will not be the liability associated with it that usually would be the case. Jack Bland did offer to provide a document based on information currently residing in public domain.

The meeting adjourned at 10:45 A.M.
Dress Code for the Annual Conference is Business Casual No Ties!
Seminar
Tuesday, February 4
2:00p - 4:30p
in the
Donatello Ballroom
information on page 3
The following companies have reserved their tables for exhibiting:

1. French Creek Software
2. ChemTreat, Inc
3. Design Controls
4. Prominent Fluid
5. Composite Cooling Solutions
6. GEA 2H Water Technologies
7. Resolite
8. C.E. Shepherd Co.
9. Scale Blaster
10. Midwest Towers
11. Denso
12. Strongwell
13. CleanAir Engineers
14. Tower Tech
15. McHale & Associates
16. Waterline Controls
17. SymCom
18. Hewitech GmbH
19. Taylor Technologies
20. Ashland Water Technologies
21. IMI Sensors
22. Glocon
23. Cooling Tower Resources
24. Rain For Rent
25. Special Pathogens Lab
26. Baltimore Aircoil Company
27. Brentwood
28. Structural Group
29. Rexnord
30. Sonitec
31. G&G Marine
32. FasTec
33. Cofimco
34. Hudson Products
35. Proco Products
36. Amarillo Gear Company
37. EvapTech, Inc
38. Aggreko
39. Dynamic Fabricators
40. Bedford Plastics
41. SPX Cooling Technologies

There are plenty of spaces still left for your company to exhibit. Spaces already reserved are indicated by the red boxes. Don’t forget to reserve your space at $1200/space.

For information on reserving your table contact Virginia Manser at 281.583.4087 or vmanser@cti.org
CTI Thanks The Following Sponsors For Their Contributions To The Hospitality Suites For 2014
Full Conference(s) Sponsorship

1. Advance Cooling Towers, Inc
2. Aggreko Cooling Tower Services
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6. Baltimore Aircoil Company, Inc
7. Bedford Reinforced Plastics
8. Brentwood Industries
9. C.M. Towers, Inc
10. ChenTreat, Inc
11. Composite Cooling Solutions LP
12. Cooling Tower Depot, Inc
13. Ecodyne Limited
14. Evapco, Inc; EvapTech, Inc;
   Evapco - BLCT Dry Cooling
15. Evergreen Cooling Technologies, Inc
16. GEA 2H Water Technologies, GEA
   2H Water Technologies GmbH
17. GEA Heat Exchangers, Inc
18. Hudson Products Corporation
19. Infinity Fasteners, Inc
20. John Calvitti Company, Inc
21. Liang Chi Industry Co., Ltd
22. MasterTech Services Inc
23. Midwest Towers, Inc
24. Moore Fans LLC
25. Paharpur U.S.A. Inc
26. Precision Cooling Towers, Inc
27. Rexnord Corporation
28. SPX Cooling Technology, Inc
29. Strongwell
30. Tower Performance, Inc

Press Release

Contact: Chairman, CTI Multi-Agency Testing Committee

Houston, Texas 2-November-2013

Cooling Technology Institute, PO Box 73383, Houston, Texas 77273 - The Cooling Technology Institute announces its annual invitation for interested thermal testing agencies to apply for potential Licensing as CTI Thermal Testing Agencies. CTI provides an independent third party thermal testing program to service the industry. Interested agencies are required to declare their interest by March 1, 2014, at the CTI address listed.
The future of cooling towers, today.

FIELD-ERECTED COOLING TOWERS / NEW & REPLACEMENT INSTALLATIONS
REPAIR & RECONSTRUCTION SERVICES / PARTS

Energy Efficient • Environmentally Friendly • Design and Layout Flexibility
Reliable Year-Round Performance • Simplified Maintenance
Quiet Operation • Extended Service Life

CTI’s Elected President for 2014 & 2015
Frank Michell w/American Electric Power

Frank Michell is Manager of the Applications Engineering and Balance of Plant Mechanical Equipment Group of the Engineering Services Organization of American Electric Power responsible for providing engineering services to AEP’s Fossil Hydro Generating Fleet in the areas of Mechanical Engineering Analysis including fluid mechanics, thermodynamics, heat transfer, stress analysis, CFD modeling and balance of plant mechanical equipment & system expertise/design basis for pumps, heat exchangers, cooling towers, HVAC & dust collection and other misc. equipment. Frank is active in several Industry Organizations including Cooling Technology Institute, EPRI and ASME. Frank is serving as Vice President of the CTI Board of Directors and in 2003 served as CTI President. Frank has previously been Chairman of the ASME Power Division Heat Exchanger Committee and is currently on the ASME Power Division Executive Committee serving as Vice Chair of the Division. Frank holds a BS Degree in Mechanical Engineering from Polytechnic Institute of New York.

DRESS CODE
for the
Annual Conference is-
Business Casual
No Ties!
Cooling Technology Institute
Annual Conference, February 3-6, 2014

HOTEL INFORMATION
HILTON HOUSTON NORTH, HOUSTON, TEXAS

281.875.2222
or CTI WEBSITE
Hotel Cut-Off Date - January 20, 2014

• CHECK-IN TIME IS 3:00PM • CHECK-OUT TIME IS 12:00PM


Earn
PDH Credits
while meeting and
working with
others in
the industry.
(Information when
you register)

Make your plans
to attend
Future Meetings
for CTI

July 13-16, 2014
Sheraton Steamboat
Steamboat Springs, CO

February 8-12, 2015
Sheraton New Orleans
New Orleans, LA

July 12-15, 2015
Tradewinds Island Resort
St. Pete Beach, FL

February 7-11, 2016
Hilton Houston North
Houston, TX
What’s New in Publications?

Our revised Standards are:

STD-137 as of 03/2013: Fiberglass Pultruded Structural Products for Use in Cooling Towers - This specification offers recommendations for classification, materials of construction, tolerances, defects, workmanship, inspection, physical, mechanical and design properties of glass fiber-reinforced pultruded structural shapes intended for use as construction items in cooling tower applications. ............................................................... $20.00

ESG-151 as of 05/2013: Variable Frequency Drive Application Guidelines for Cooling Towers - This standard covers the guidelines for operation of cooling towers at variable speeds. ...................................................................................................................... $8.00

ESG-152 as of 05/2013: Structural Design of FRP Components - This guideline provides minimum design standards and cautionary recommendations to designers of FRP structural cooling towers. ...................................................................................................................... $10.00

STD-202 as of 06/2013: Standard for Publication of Custom Cooling Tower Thermal Performance Test Results - This standard sets forth a program whereby manufacturers of custom cooling towers voluntarily allow the results of their CLTTA tests to be published under the requirements of this program. ...................................................................................................................... $20.00

Each standard and chapter is available through the CTI office. You can order them via the telephone or the internet and they are available to you electronically.

CALL FOR PAPERS

2015 Annual Conference
February 9-12 2015
Sheraton New Orleans
New Orleans, Louisiana

The following schedule will begin the process for papers presented at the 2015 Annual Conference:

2014

May 9: Deadline for Abstracts
June 20: Authors Notified by Program Chair
Aug 8: Copy of the first draft must be sent to CTI office for review
Nov 7: Final draft, based on review comments and slides due in the CTI office

Abstract Forms can be obtained by contacting the CTI office at 281.583.4087 or email: vmanser@cti.org

Earn PDH Credits

while meeting and working with others in the industry.

(Information when you register)
# Registration Form for the
## CTI 2014 Annual Conference
### February 3-6, 2014

© Complete and send this form to: Cooling Technology Institute • PO Box 73383 • Houston, TX 77273  
281.583.4087 • Fax: 281.537.1721 • email: vmanser@cti.org

**Early Bird Registration Ends: January 24, 2014**

---

Please type or print clearly all information. A separate form must be completed for each registrant. Photocopies of this form may be used.

## 1. REGISTRATION INFORMATION:

I was invited to the conference by: (If applicable give name of the person and their company responsible for your attendance)

<table>
<thead>
<tr>
<th>Aware of the conference after seeing (please check one):</th>
<th>Annual Conference News</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name:</td>
<td>First Name:</td>
<td>First-time Attendee:</td>
</tr>
<tr>
<td>Company:</td>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>City/State/Province:</td>
<td>Zip or Postal Code/Country:</td>
<td></td>
</tr>
<tr>
<td>Phone (Country Code/Area/Number):</td>
<td>Fax (Country Code/Area/Number):</td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td>First Name or Nickname (as you wish it to appear on your badge)</td>
<td></td>
</tr>
</tbody>
</table>

Spouse’s Name Only if they accompany you to the Conference: ___________

**.Rendering Technologies**

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## 2. SPECIAL NEEDS:

Dietary:   _____ Vegetarian  
Physical:  _____  Please check here if you require special accommodations to participate and email a description of your needs by January 24, 2014 to vmanser@cti.org. We cannot guarantee we can accommodate your request but will do our best.

## 3. IN CASE OF AN EMERGENCY DURING CONFERENCE, PLEASE CONTACT:

Name (Please print clearly): ________________________  
Daytime Phone: ___________________________  
Evening Phone: ___________________________

---

## 4a. REGISTRATION FEES: (Full-conference or one-day registrants)

<table>
<thead>
<tr>
<th>Check Appropriate Category:</th>
<th>Early Bird Rate by: January 24, 2014</th>
<th>Conference Rate after: January 24, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTI Member (Includes technical sessions Monday, Tuesday &amp; Wednesday)</td>
<td>$695</td>
<td>$795</td>
</tr>
<tr>
<td>Non-Member (Includes technical sessions Monday, Tuesday &amp; Wednesday)</td>
<td>$795</td>
<td>$895</td>
</tr>
<tr>
<td>One day Mon Tues Wed (circle one)</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>Exhibit Hall Pass Only</td>
<td>$75</td>
<td>$75</td>
</tr>
<tr>
<td>Speaker (one for each paper only)</td>
<td>N/C</td>
<td>N/C</td>
</tr>
<tr>
<td>Press (one attendee per company only)</td>
<td>N/C</td>
<td>N/C</td>
</tr>
<tr>
<td>Honorary Life Member</td>
<td>N/C</td>
<td>N/C</td>
</tr>
</tbody>
</table>

**Section 4a Subtotal US$** _____________

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## 4b. CONFERENCE EVENTS / OTHER FEES: (Full-conference or one-day registrants)

<table>
<thead>
<tr>
<th>Check Appropriate Category:</th>
<th>Conference Rate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional luncheon ticket(s), Monday, Feb 3, 2014 (for spouse/guest)</td>
<td>$30</td>
</tr>
<tr>
<td>Monday Night Dinner (February 3, 2014)</td>
<td>$70</td>
</tr>
<tr>
<td>Set of Papers - Hard Copies</td>
<td>$150</td>
</tr>
<tr>
<td>Set of Papers - CD (w/PDF file of each paper) Available after conference</td>
<td>$150</td>
</tr>
<tr>
<td>Mailing for papers and/or CD sent to Mexico and/or Canada</td>
<td>$10*</td>
</tr>
<tr>
<td>Mailing for papers and/or CD sent to all other countries</td>
<td>$15*</td>
</tr>
</tbody>
</table>

**Section 4b Subtotal US$** _____________  
**Total Amount Due US$** _____________

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## 4c. CONFERENCE EVENTS (Full-conference or one-day registrants)

- I will attend the Water Treating Panel Discussion on Monday afternoon
- I will attend the New Member Breakfast on Tuesday morning
- I will attend the Owner/Operators’ Seminar on Tuesday noon
- I will attend the ‘Ask the Expert’ Seminar on Tuesday afternoon
- I will attend the Educational Seminar on Wednesday morning

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## 5. PAYMENT (Please check one)

- Enclosed is Check# _______ in the amount of US$ _______ (Please write the registrant’s name on the check)

  Credit Card: Please Charge US$ _______ to the following credit card. [ ] Visa  [ ] MasterCard  or  [ ] AmEx

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Exp. Date ______________________  
CVC Code: ______________________

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