

# Registration and Hotel Forms Inside



## Cooling Technology Institute Annual Conference News '06

The Annual Conference News for Manufacturers, Owner/Operators & Suppliers of Evaporative Heat Transfer Systems  
Established 1990 • Published Annually • \$5/Issue

Wyndham Greenspoint Hotel, Houston, Texas, February 5 - February 8, 2006

### This is Your Invitation to the 2006 CTI Annual Conference in Houston, Texas



Glenn Rees, Program Chair

The program committee would like to invite you and your company to the 2006 Annual Conference, this year held, by popular demand in Houston, Texas. This is the home of CTI and its fine staff. Houston is a wonderful city full of heritage and culture with many interesting things to see and do. Along with the outstanding location, we have a great program lined up for you. We have a full offering of information, education and an opportunity to participate in some of the ongoing work on standards and codes.

We believe it is our responsibility to make sure that what we have to offer you can be shared with others at your company. Because of our mission to be a non-profit

technical organization, we are charged to bring the most timely and latest information in the industry.

We have 23 papers being presented in a concurrent format on Monday and Tuesday. Water Treating will have one session and P&T and ES&M will have the other. This is our new approach. We hope you will find this beneficial, we are trying to add more to our programming and offering more information.

**Here is a list of topics being given:** Filtration for Multi-story Office Building HVAC; Environmental Impact of Evaporative Cooling Towers Using Sea Water: Experience and Modeling; Improving Localized Corrosion in a Complex Cooling Water System; Copper Removal from Cooling Tower Blowdown; Realizing the Full Potential of Your Cooling Tower Cold Lime/Soda Ash Blowdown Softener; Advance in Cooling System Treatment,

Monitoring and Control; Cooling Tower Blowdown Limitations: Case Studies of New Wastewater Permit Limits and Their Solids; Optimizing Industrial Cooling Water System Performance with Proper Monitoring and Control; Evaporative Precoolers for Air Cooled Heat Exchangers; Guidelines for Successful Cooling Tower Installations; Seismic and Windload Rated Packaged Cooling Towers; Westar Energy Cooling Tower Rebuilds; Cooling Towers Work as a System; Roulette and Mechanical Vibration Switches: What are Your Odds?; Enhancement of Air Cooled Condenser Operation in Power Plants; High Performance Ceramic Fill; Cleaning of Cooling Tower Basins While Online; A Performance Comparison of Counterflow Reduced Fouling Fills; Responding to a Cooling Tower Emergency; Large Scale Mechanical Equipment Replacement - Simple Steps for Success; Development of an Online Multicomponent Water Treatment Analyzer; Guidelines for Selecting the Proper Fill; and A Review of Drift Eliminator Performance.

We will offer an extended time for committee work to be done. In past annual conferences we had only a very short amount of time set aside to do the committee work. This year we have allowed much more time to do the work so important to the CTI. Please refer to the CTI news for times and committee and work to be done.

#### “TECHNICAL COMMITTEE WORK”

(Tuesday 10:30a – 12:00p / Wednesday 1:30p – 5:00p)

Each of the standing committees will spend time working on current standards and codes. If you have an interest and would like to be a part of this work, please come sit in.

#### “ASK THE EXPERT” (Tuesday 2:00p – 4:30p)

This very popular session is back by demand. Come prepared with your questions for the panel of experts. We will have folks from all the standing committees ready to support your questions with good qualified answers. Jim Baker will moderate this session.

Your Invitation...continued on page 3

CTI  
PO Box 73383  
Houston, TX  
77273

## Message From The President



Jim Baker, President

On behalf of the Board of Directors and the staff at CTI, we would like to thank all of those who attended the Committee Workshop in California. Many codes and standards were either approved or in the final stages of approval, hats off to the Technical Committee Chairs for a successful workshop. Let us never forget the hard work that Vicky and Donna put into the workshop. Many thanks to them.

We are fast approaching a changing of the guard for this President's spot. I must admit that the two years has gone by rather quickly. I will be handing over the reins to Steve Chaloupka of Amarillo Gear, a very qualified individual who has a very good understanding of the CTI and our industry in general. As we originally stated, change will occur. I believe that many changes have occurred for the better of the organization over the past two years. I am sure that Steve will carry forward and make changes he feels are necessary to keep up to pace with the times.

We are very excited about our upcoming Annual Conference at the Wyndham Greenspoint in Houston. Yes, we have been there numerous times over the years, but they treat us well and are affordable. The conference format will

take on a different look, so be sure to examine the agenda closely to make your plans. Our Program Chair, Glenn Rees explains this in more detail in his article. The main message is that you will want to make plans to attend. We will look forward to seeing you.

One piece of business at the Annual Conference in which I will be extremely proud to conduct is the presentation of a CTI Honorary Life Member Award. The Board of Directors voted to give this award to Mr. Ken Gruber, formally of Marley Cooling Towers. Ken worked some 50+ years in our industry. He worked diligently in CTI and served as the CTI President one term. He is one of my mentors and one of the most respected gentlemen every to be a part of this industry. This presentation will take place at the Monday luncheon in Houston.

In closing, I am always appreciative and feel blessed to be apart of this industry and to serve as your President. It has been a great two years I want to thank everyone who has worked with me to make it successful. I look forward to seeing everyone at the Annual Conference and talking with all of you. If anyone has any questions, concerns, complaints, or new ideas to share, always feel free to call. We hope to see you in Houston, and my family and I wish you a safe and happy upcoming Holiday season.

Jim Baker, CTI President 2004 and 2005

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**Your Invitation...continued from page 1**

**“OWNER OPERATOR SEMINAR” w/Lunch** ( Tuesday 10:00a - 2:00p )

A time has been set aside for the owners to talk about current issues, cover future needs at their locations and talk candidly with each other. Lunch will be provided.

**“EDUCATION PROGRAM SESSION”** (Wednesday 8:00a – 12:00p)

**Cooling Tower Design, Operation, and Maintenance**

- Cooling Tower Gearbox Maintenance and Operation - Presented by Craig Burris of Amarillo Gear – 1 hr
- Cooling Tower Performance & Thermal Rating - Presented by Dennis Moran of CM Towers – 1 hr
- Cooling Tower Design – Best Practices and Design Options - Presented by Jim Cuchens of Southern Company Services – 1 hr
- Cooling Tower Operations: Effective Water Treatment - Presented by Mike Trulear of Chemtreat – 1 hr

If you don't attend any other cooling tower related meeting or conference this year, you don't want to miss this. The CTI program committee has put together a program that will offer the best opportunity to inform, educate and expand your knowledge about this industry. We hope you come prepared to take full advantage of everything we have to offer you. A great location, outstanding food, entertainment and a conference that will give back to the membership what you want - **“Information”**

I, Paul Nelissen, Bill Immell and Gary Geiger your program committee, invite and welcome you to the 2006 Annual Conference.

See you in Houston, Texas.

Glenn Rees

CTI Chairman Program 2006



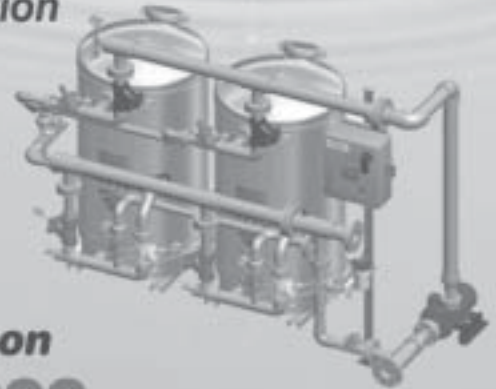
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 e-mail: [hudsonproducts@hudsonproducts.com](mailto:hudsonproducts@hudsonproducts.com)



# Attend the Committee Meeting of Your Choice

## February 6-8, 2006

### Engineering Standards and Maintenance

**Toby Daley** - T Daley and Associates, Inc., Chair  
**Jim Cuchens** - Southern Company, Vice-Chair  
**David Theel** - Universal Utility Services, LLC, Vice-Chair

#### Task Groups:

- *Recommended Guidelines for Portland Cement Concrete* – Tom Toth
- *Industry Cooling Tower Standard* – Dave Knight
- *Chapter 9 - Materials of Construction* – Jess Seawell
- *FRP Pipe for Cooling Towers* – Bill Daugherty
- *Vibration Standard* – Ian Fletcher
- *Wood Standards - Douglas Fir* – Bill Howard
- *FRP Structures* – Glenn Barefoot
- *Safety Guideline* – Julia Taylor
- *Treatment Standard, STD-112*

### Performance & Technology

**Rich Harrison** - Baltimore Aircoil Co., Chair  
**Ken Hennon** - Power Generation Technologies, Vice Chair  
**Paul Lindahl** - SPX Cooling Technologies, Vice Chair

#### Task Groups:

- *Air Cooled Steam Condenser Test Code* – Dave Wheeler
- *Evaporative Condenser Test Code* – Bob Miller
- *STD-146 Liquid Flow Measurement* – Randy Bradley, Evapco
- *ATC-140 Drift Test Code Revision* – Ken Hennon
- *ATC-150 Plume Abatement Test Code Revision* – Paul Lindahl
- *Technology Review* – Tony DePalma
- *Certification Committee* – Tom Weast

### Water Treating Committee

**Doug Murray** - Lonza, Inc., Chair  
**John Zibrida** - ZIBEX, Inc., Vice Chair  
**Ken Mortensen** - SPX Cooling Technologies, Sec.

- I. Call to Order/Announcements
- II. Introduction of Attendees
- III. Approval of Annual Winter Meeting Minutes
- IV. Water Reuse Document Status
- V. Task Group Reports
  - A. Environmental Issues – Don Erickson
  - B. Water Re-Use Document – Phil Kiser
  - C. Microbiological Monitoring – Walt Tyler
  - D. Filtration of Cooling Water Systems – Tom Cabezut
  - E. Oxidizing Biocide, WTP-141 - Dwight Emerich
  - F. Ozone Reading Lists, WTP-139 & 139.1 – Ken Mortensen
  - G. Chapter 6 on Water Treatment Chemistry – Art Brunn
  - H. CTI Document Review – Paul Puckorius
  - I. Water Reuse Papers for Cooling Tower Users, WTP-147 – Art Brunn
  - J. Deposit Control Monitoring – Mike Standish
- VI. Liaison Reports
  - ASHRAE •ASM •AWT •EPRI •NACE
  - IWC •WATERTECH Microelectronics Water
- VII. New Business
  - Need for new Task Groups?
  - Technical Paper Subjects for “targeted” symposium topics

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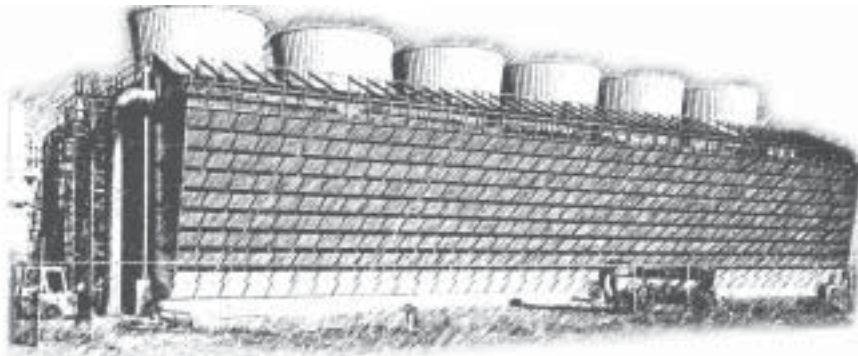
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## New **CTI** Members for 2005

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 Harker Enginuity  
 Holtec International  
 Industrial Cooling Solutions, Inc.  
 Koolaqua Towers Pvt Ltd  
 Lee, Alan H.  
 McHale & Associates, Inc.  
 Metrix Instrument Company  
 MidAmerican Energy Company  
 Mosley, Jeff  
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 Patwardhan, Rashmi  
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## Our Technical Committees

### Engineering Standards and Maintenance



(l-r) Committee Chair - Toby Daley  
 Committee Vice Chair - David Theel  
 Committee Vice Chair - Jim Cuchens (not pictured)

### Performance and Technology



(l-r) Committee Chair - Rich Harrison  
 Committee Vice Chair - Ken Hennon  
 Committee Vice Chair - Paul Lindahl

### Water Treating



(l-r) Committee Secretary - Ken Mortensen  
 Committee Vice Chair - John Zibrida  
 Committee Chair - Doug Murray

**Steven L. Chaloupka**  
**CTI Board of Directors President**  
**for 2006 and 2007**



Steven L. Chaloupka

Steven L. Chaloupka is President of Amarillo Gear Company. Employed since 1993, Steven oversees Amarillo Gear's worldwide operations of their specialized mechanical components for cooling towers and heat exchangers. Prior work history includes being raised on a family owned ranch near Dalhart, Texas, 1 year as a Field Engineer for Dresser Atlas Well Logging in Alice, Texas and 14 years in various technical positions with National-Oilwell in Houston, Texas. Steven graduated with honors in 1978 from Texas Tech University with a B.S. in Engineering.

Steven has been involved with the Cooling Technology Institute for the past twelve years. He has served as Treasurer on the Board of Directors, participated in several task groups within the Engineering, Standards and Maintenance standing committee, and most recently, as Vice-Chairman of the Membership Committee. Steven's interest is in all areas within the CTI, but especially enjoys the people he meets within the cooling industry. He has made many life long friendships. Steven is excited to be President-Elect for the CTI and looks forward to the continued growth and technological advancements ahead for the organization.

Steven is married to Shelley Chaloupka and has two sons, Michael (15) and Carter (9). He has previously served as a Board Member of the Harrington Cancer Center Development Council, Amarillo College Continuing Education Council and is an Elder at First Presbyterian Church, all of Amarillo, Texas. Besides spending time with his family, Steven enjoys hiking, baseball and snow skiing.

**Newly Elected**  
**Honorary Life Member**  
**to be Honored at Luncheon**  
**on Monday, February 6, 2006**



Ken Gruber

One piece of business at the Annual Conference that will be conducted is the presentation of a CTI Honorary Life Member Award. The Board of Directors voted to give this award to Mr. Ken Gruber, formally of Marley Cooling Towers (now SPX Cooling Technologies). Ken worked some 50+ years in our industry. He worked diligently in CTI and served as the CTI President in 1984. He is one of the most respected gentlemen every to be a part of this industry. This presentation will take place at the Monday luncheon in Houston.

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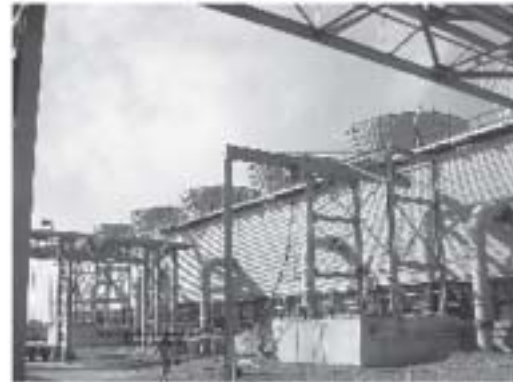


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**Seminar**  
**Tuesday, February 7**  
**2:00p - 4:30p**

**Make your plans  
to attend  
Future Meetings  
for CTI**

**February 5-8, 2006  
Annual Conference  
Wyndham Greenspoint  
Houston, TX**

**July 9-13, 2006  
Committee Workshop  
Sheraton Sand Key Resort  
Clearwater, FL**

**February 4-8, 2007  
Omni Bayfront Hotel  
Corpus Christi, TX**

**July 8-11, 2007  
The Westin La Cantera  
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# "CTI ToolKit Ver 3.0"

## Cooling Tower Software Tools by the Cooling Technology Institute



CTI has created a powerful set of software tools indispensable for anyone responsible for cooling tower performance evaluation, prediction and monitoring.

### Why you need the CTI ToolKit Version 3.0:

- **Thermal Design Worksheet.** An interactive, graphical worksheet designed to speed cooling tower thermal calculations. *New for 3.0: Now all work sheet data can be saved to file and retrieved for later review. New added print preview function.*
- **Performance Evaluator.** Evaluates induced draft counterflow & crossflow cooling tower performance with field acquired data. Fully compliant with the latest CTIATC-105 test code (performance curve method). *New for 3.0 - Now works for induced draft towers and forced draft towers and automatically calculates cold-water temperature deviation. Added print preview function. Easily copy graphs to work processor.*
- **Air Properties Calculator.** Fully ASHRAE compliant, using latest psychrometric property routines. *New for 3.0 - Added print preview function.*
- **Detailed Help Files.** How-to-use help for typical applications is just a click away. *New for 3.0 - revised & expanded.*

for Microsoft<sup>®</sup> Windows<sup>™</sup>

### What does the CTI ToolKit do for me?

- **Predicts off-design performance with the Demand Curve Tab application.**  
Answers what-if questions like, how much will my leaving water temperature change if I increase my waterflow 10%? Decrease my range 15%?

"The Performance curve method is widely recognized as a more accurate method of determining tower capability from measured test data. The new CTI ToolKit Application provides a quick and easy method for anyone to evaluate a performance test using this more accurate method." -Rich Harrison, Jr. ATC-105 Task Group Chairman

Ship To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Signature \_\_\_\_\_

Product	Unit Price	Quantity	Total
CTI ToolKit Version 3.0 (single user license)			
CTI Member	\$395		
Non-member	\$450		
CTI ToolKit Version 3.0 (Upgrade from V1.0)			
CTI Member	\$ 95		
Non-member	\$120		
PerfCurv 1.0 (Stand alone Performance Curve application)			
CTI Member	\$195		
Non-member	\$240		
Any of the above applications with original hard copy of the CTI Performance Curve (3-Ring Binder)			
CTI Member (add)	\$100		
Non-member (add)	\$140		
Shipping for CD-Rom (from California): Priority mail \$6; 2 <sup>nd</sup> Day Air \$15; Overnight Domestic \$25; US Priority International \$20			
Shipping for BlueBook 3-Ring Binder (from Texas): UPS Ground \$7; UPS 2 <sup>nd</sup> Day Air \$15; UPS Next Day \$27; Air Mail International \$30			
Please allow 1-2 weeks for delivery		<b>Total:</b>	
<b>Multi-user site licenses and educational institution pricing available on request</b>			

- **Evaluates cooling tower performance & acceptance tests.**
- **Performance Curve Tab** application allows the automatic calculation of cooling tower performance using the performance test method of the CTI ATC-105. Automatically solves the iterative calculations for the exit air temperature and psychrometric properties to compute the test L/G as required by CTI ATC-105. Accurately interpolates between curves and generates all the necessary crossplots to determine the overall Tower Capability.
- **Demand Curve Tab** application speeds the evaluation of the characteristic curve method. This application allows the calculation of the overall Tower Capability when manufacturer's performance curves are unavailable. High quality demand curve pages produced on any printer for your exact set of design conditions at any altitude.
  - **Produces your own performance curves from field test data.** Using the Demand Curve Tab application and a single test point, create a set of performance curves along with any spreadsheet.
  - **All without picking up a pencil!**

#### System Requirements:

Microsoft Windows<sup>®</sup> 95/98, Windows NT 4.0 or higher/2000/xp, minimum 8 MB Ram (16 MB recommended), 3 MB minimum of free disk space



**Seminar**  
**Tuesday, February 7**  
**2:00p - 4:30p**



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# THE 2006 CTI ANNUAL

Again this year the Technical Sessions will run congruently

## Sunday, February 5, 2006

- 1:00 - 2:30p - New Board of Directors' and Committee Chairs Meeting 101 (2005 & 2006 Board Members invited)
- 3:00p - 5:00p - Board of Directors' Meeting with Committee Chairs
- 4:00p - 8:00p - Registration
- 5:00p - 12:00a - Hospitality Suite Open (Bar Closes @ 9:30p)
- 6:00p - 8:00p - Speaker Ready Room

## Monday, February 6, 2006

- 7:00a - 10:00a - ☕ Service
- 7:00a - 5:00p - Registration and Paper Sales
- 7:00a - 5:00p - Speakers' Breakfast, Photo Session & Prep Room
- 8:00a - President's Address - Jim Baker, Ballroom A
- 8:15a - Multi Agencies Report - Mark Shaw, Ballroom A
- 8:30a - Certification Report - Tom Weast, Ballroom A
- 8:45a - 9:00a - ☕ Service

## Monday's Technical Sessions running congruently between Ballrooms A & B

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

9:00a - 9:30a

#### TP06-01 - Cooling Towers Work as a System

Richard DesJardins, DesJardins Consulting



Richard J. DesJardins is a Cooling Tower and Evaporative Cooling consultant. He received his BSME from the University of Colorado in 1959 and MBA from the University of Missouri at Kansas City in 1965.

Prior to formation of his own company in 1984 Mr. DesJardins worked for twenty-five years with the Marley Company and its subsidiaries. For the last 21 years he has represented several different cooling tower, heat exchanger and industrial equipment manufacturers, been Principal Engineer for an air pollution control company, and designed and fabricated several different types of evaporative cooling equipment. He has provided cooling tower and evaporative cooling consulting services to many major engineer-constructors, power companies, refineries, cooling tower manufacturers, and the air conditioning industry. He has authored cooling tower thermal performance and psychrometric computer programs and CTI paper TP92-01.

There are two principal concepts that often confuse people that are not familiar with cooling towers and how they operate: One, the cooling tower is a part of a bigger system: It does not set the heat load; the paper will explain how the tower interacts with the system. Two, the cooling tower and its components work as a system. The paper will explain how changes to one part of the tower can affect all the other parts of the tower: Such as selecting the economic size of the tower, affect of changing fill dimensions and type, heights, fan or stack size or type, inlet heights, location of louvers, nozzle type, choice of materials, temperature limits, definition of "tough" and "easy duties", and many more. It will define normal limits for air velocities throughout the tower, water loadings, fan power, and other good practice limitations. It will explain how pressure drop changes power, and other good practice limitations. It will explain how pressure drop changes affect a fan's performance. It will discuss aftermarket changes that make things worse, not better. Comments will be general, not specific to any one product or type.

9:30a - 10:00a

#### TP06-03 - Large Scale Mechanical Equipment Replacement - Simple Steps for Success

David M. Supti, David M. Suptic PE LLC



David M. Suptic is a member of AMSE and ASHRAE and a consulting engineer specializing in cooling tower field operations. His experience includes over twenty years of service with a major cooling tower manufacturer in Engineering and Marketing management positions. Mister Suptic is a profession engineer with degrees in Mechanical Engineering and an MBA from the University of Kansas.

Mister Suptic has served the Cooling Technology Institute as Co-Chair of the Engineering Standards and Maintenance Committee and as Chairperson of the Mechanical and Electrical Technology Committee and Program Committees.

Faced with multiple gear reducer failures on two large cooling towers, an international power generation facility replaced twenty-eight sets of gear reduction drives and supporting structure with new upgraded equipment. A description of the unique nature of this large scale equipment replacement project provides the reader with several key steps to insure success on construction projects of a similar nature.

10:00a - 10:30a

#### TP06-05 - Responding to a Cooling Tower Emergency

Billy Childers, Aggreko LLC



Billy Childers has been a part of the cooling tower industry for sixteen years and has experience therein including manufacturing, field construction, product development, sales, and management. He has written numerous technical papers and articles that have been published in trade magazines including the CTI Journal and is currently responsible for Aggreko's rental cooling tower business

### Ballroom B (Water Treating Sessions)

9:00a - 9:30a

#### TP06-02 - Cooling Tower Blowdown Limitations: Case Studies of New Wastewater Permit Limits and their Solids

Jennifer Cunningham, Air Liquide America



Jennifer graduated from Auburn University with a degree in Chemical Engineering. She worked as a Technical Sales Rep for Calgon Corporation. Jennifer currently is the Water Utilities Manager for Air Liquide.

For many Air Liquide facilities, the wastewater permit limitations have become stricter (Total suspended solids, total dissolved solids, total residual chlorine, copper, and arsenic). This paper will describe the new wastewater permit parameters, the method(s) that were used to resolve the issues, and the cost of justification.

9:30a - 10:00a

#### TP06-04 - Filtration for Multi Story Office Buildings HVAC

Dr. Marcus N. Allhands, Amiad Filtration Systems and Victoria, TNT Technology Company



Marcus Allhands received his Engineering BS from Purdue University. After twelve years of industrial product design experience, he began graduate work obtaining his Engineering PhD from the University of Florida in Agricultural Engineering majoring in soil and water with minors in environmental engineering (water and wastewater treatment) and hydrogeology. Marcus is a registered Professional Engineer in Florida and Illinois and spent seven years as Water Quality Manager for an engineering and environmental consulting firm in South Florida. He was president of that firm for three of those years. Marcus has worked for Amiad Filtration Systems for eight years and presently holds the position of Senior Application Engineer working closely with engineering design firms and municipalities across North America. Marcus assists engineering firms with applications and specifications on special projects, presents educational seminars to engineers and water specialists, and writes for and presents papers to professional conferences.

HVAC systems on high-rise office buildings in the Arizona desert and constantly abused by sand and dust. The timely removal of such debris from the cooling towers is essential. Automatic filtration systems with smart PLC logic provide reliable labor-free protection to the roof mounted cooling tower and other HVAC components. A reliable filtration system requires the proper design and installation. This paper will follow the design process and installation then follow up with detailed results.

10:00a - 10:30a

#### TP06-06 - Improving Localized Corrosion in a Complex Cooling Water System

Michael H. Dorsey - DuPont; Kevin Daigle, ChemTreat, Inc.; and Art Brunn - DuPont



Michael Dorsey is an applications specialist with DuPont Engineering and provides consulting and other services to various businesses within DuPont. Mike has been with DuPont over 27 years and has held various positions. His area of expertise is primarily in corrosion improvement applications, design and installation of on-line instrumentation for monitoring of cooling water systems and other processes.

A DuPont plant has experienced severe localized corrosion from a complex corrosion phenomenon in its cooling water system. A large semi-closed cooling water system was created ten years ago and since has had aggressive corrosion attack particularly on carbon steel surfaces. A new treatment program has been applied and is currently providing improvement. The paper will present performance data on the treatment program and other steps that have been taken to upgrade system performance. This program is in progress and additional data will be included as it is developed.





# CONFERENCE PROGRAM



between Ballrooms A & B. Look closely to see which paper you want to attend.

## Monday's Technical Sessions running congruently between Navarro Ballrooms A & B

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

### B (Water Treating Sessions)

continued from page 10

This paper is intended to explore the "typical" path that businesses go down when an unexpected cooling tower failure occurs. Review the time and resources spent in planning and executing a recovery plan. Then review an alternative path that could be chosen to expedite the recovery and avoid any needless losses. The paper will also explore the need for, and the value of having, a good executable contingency plan in place.

10:30a - 11:00a

#### TP06-07 - *Evaporative Pre-coolers for Air Cooled Heat Exchangers*

Matt Smith, L.S. Enterprises and Rich Aull, Brentwood Industries



*Math Smith graduated from the University of Florida in 1976 with a BS in Chemical Engineering. He is the owner and founder of L.S. Enterprises, the primary focus of which is the design of direct contact heat and mass transfer devices such as water cooling towers, evaporative coolers, air pollution control scrubbers and other similar equipment*

Evaporative pre-cooling of air cooled heat exchangers provides the thermodynamic advantages of water cooling towers plus the reduced maintenance of air cooled heat exchangers. In areas where water conservation, cooling tower plume abatement, or water discharge permits are a problem, evaporative pre-cooling of the air going to the heat exchanger can be the answer. This paper discusses the advantages of pre-coolers and presents some basic design considerations.

11:00a - 11:30a

#### TP06-09 - *Enhancement of Air Cooled Condenser Operation in Power Plants*

Ram Chandran, Holtec International



*Ram Chandran received his Bachelor's degree in Chemical Engineering from Madras University, India and his Doctorate from Salford University, England. He has been in the Air Cooling Systems industry for thirty years. Ram has worked for ABB Lummus Heat Transfer, Hamon Cooling Towers and Balcke Durr in various capacities as Design Engineer, Product and Project Manager, Director of Sales & Marketing and Manager of Operations, and is currently with Holtec International as Program Manager, Air Cooled Condensers.*

This paper discusses the impact of velocity in the design of ACCs. The velocity at design point and change at other operating points affect the duct and tube bundle design. Combined with the varying ambient temperature, it affects and/or limits the range or turbine operation. This can affect the plant electric output. This has also an effect on condensate temperature. This requires energy which is redirected from generating capacity which is often ignored. The paper will illustrate the effect of velocity on 1) duct design, 2) tube bundle design, 3) performance limitation, 4) control system capability, 5) range of condensate sub cooling, 6 cost impact.

11:30a - 12:00p

#### TP06-11 - *A Review of Drift Eliminator Performance*

William C. Miller, Brentwood Industries, Inc.



*Bill Miller is a Sales Engineer with Brentwood Industries, Inc., based in Reading, Pennsylvania, and has been in the Cooling Tower industry since 1998. In 1993 he graduated with a Bachelor of Science in Aerospace Engineering from the Pennsylvania State University. His duties at Brentwood include daily quoting and order processing activities as well as application engineering of Brentwood's vast array of cooling tower products to his customers' requirements. He is a member of Tau Beta Pi, the National Engineering Honor Society. Bill and his wife of over ten years Christy reside in Lancaster County, Pennsylvania.*

Drift eliminators and the technology behind them continue to evolve as drift specifications grow more stringent and tower operators strive for the best performing products available to the marketplace. As such, the choice of best product for the application becomes more critical. One important aspect of drift performance is the pressure loss characteristic of a drift eliminator and the difference between dry and wet measurements. The differences between various eliminator configurations highlight the benefits of the new technology and theory applied to drift eliminators to achieve the best performance and lower pressure drop. This yields continued improvements for the tower operator.

There is a cost effective method of cleaning sludge from a cooling tower basin while it is in operation, no need for shutdown. Removal of heavy debris and thorough inspection of the basin's floor, walls, screens and valves is presented.



### Group Luncheon

12:15p - 1:45a

Ballroom C

10:30a - 11:00a

#### TP06-08 - *Realizing the Full Potential of your Cooling Tower Cold Lima/Soda Ash Blowdown Softener*

Robert Strandberg, Covanta Energy and Terry McCoy, ChemTreat, Inc.



*Robert Strandberg has a Bachelor of Science in Biology/Chemistry from the University of Pittsburgh and is currently a Regional Water Systems Engineer. He is the co-author of papers presented at both IWC and CTI.*

A concise and practical review of the softening process chemistry, including a review of the many chemical additive options for different influents emphasizing simplified chemistry maintenance is discussed. Several useful mechanical maintenance recommendations and chemical application modifications for often problematic operations will be provided based on long term zero discharge experiences. A "bonus" value proposition, the diversion of various plant waste streams other than tower Blowdown to the softener for processing to characteristics suitable for tower makeup and other plant uses, is described. Lime/soda ash softener function, enhancement of the quality of the tower circulating water is included.

11:00a - 11:30a

#### TP06-10 - *Environmental Impact of Evaporative Cooling Tower using Sea Water: Experience and Modeling*

Jean-Pierre R. Libert, Anemos Consulting Engineers LLC and Ali Kebir, Fluor Corporation



*Jean-Pierre R. Libert, Principal of Anemos Consulting Engineers LLC, has a Master's Degree in Mechanical Engineering from Faculté Polytechnique de Mons, Belgium (Polytechnic College of Mons).*

*In twenty-four years with a Company dedicated to cooling technologies, with offices worldwide, Jean-Pierre Libert progressed from the technical area to the sales area and to general and technical management positions in different offices in Belgium, the USA and Mexico.*

*Since 1985, he has regularly attended the annual meetings of the Cooling Technology Institute and actively participated in Performance & Technology task group meetings. In 1992 and 1994, he co-authored two technical papers presented at CTI annual meetings: "The Latest Worldwide Technology in Environmentally Designed Cooling Towers" and "Testing Procedures for Wet-Dry Plume Abatement Cooling Towers". He is a member of the American Society of Mechanical Engineers (ASME) and member of ASME PTC-30.1 Committee on the Testing of Air Cooled Steam Condensers. Since 2004, Jean-Pierre Libert is a consulting engineer in the field of cooling technologies.*

The selection of evaporative cooling towers using sea water is the result of an economic evaluation of water availability, water treatment, environmental impact assessment and the costs associated with the selection of materials adapted to this particular application. Our experience with combined-cycle power plants has led us to narrow down our specifications to select the most appropriate, state-of-the-art materials and to carry out a series of detailed studies of the environmental impact of the drift emissions and the seal deposits resulting from the drift. A computer model was used to determine the optimum drift rate and drift droplet distribution, as well as the best orientation of cooling towers under local wind conditions, so that the seal deposit pattern would have a minimum environmental impact on equipment inside the power plant and in its vicinity. Specific recommendations will be given as a result of our experience.

11:30a - 12:00p

#### TP06-12 - *Advances in Cooling System Treatment, Monitoring and Control*

Daniel M. Cicero, Nalco Company



*Daniel Cicero is a 1987 graduate of the University of Michigan. After graduation, he served in the US Navy in a variety of engineering billets. He joined Nalco Chemical Company as a field sales representative in 1991. Since 1994, Daniel has worked in water treatment product line management and new product development roles. He is currently Senior Product Manager in Nalco Company's Product Life Cycle Management group. Most recently, he has been working on the development and commercialization of Nalco's 3D TRASAR program for industrial cooling water treatment, monitoring and control.*

Every cooling system operates under stress. As stress varies, the potential for scale corrosion and fouling changes. The ability to monitor the changing potential for these operational problems, detect upsets and take appropriate corrective action becomes increasingly important as systems are pushed harder to reduce total cost of operation. Over the past two years, new methods of managing open industrial cooling water systems based on the actual stresses placed upon them have been developed in and evaluated in the field. This paper will discuss three applications where variation in system stress presented potential for scale, corrosion, and microbial fouling. Operational data will be presented explaining how these stresses were managed using a comprehensive treatment, monitoring and control strategy.

continued on page 12



# THE 2006 CTI ANNUAL CONFERENCE

## PROGRAM continued



Monday's Technical Sessions running congruently between Ballrooms A & B

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

Ballroom B (Water Treating Sessions)

continued from page 11

2:00p - 2:30p

**TP06-13 - Cleaning of Cooling Tower Basins while On-line**

David Landin, MB Western Industrial Contracting

There is a cost effective method of cleaning sludge from a cooling tower basin while it is in operation, no need for shutdown. Removal of heavy debris and thorough inspection of the basin's floor, walls, screens and valves is presented.

2:30p - 3:00p

**TP06-15 - Guidelines for Successful Cooling Tower Installations for Campus District Energy Systems**

Frank T. Morrison, Baltimore Aircoil Company



Frank Morrison is currently manager, Product Marketing – Commercial and Industrial Systems for Baltimore Aircoil Company. At BAC, Frank has worked in both Product Engineering and Research and Development. He has a BS in Mechanical Engineering, an MBA from Loyola Colleges, and is a member of ASHRAE 90.1 Energy Committee, TC8.6 Cooling Tower Technical Committee, and TC3.6 Water Treatment Technical Committee.

Water cooled systems provide many advantages for campus district energy systems, including low first cost, low energy cost, and reduced space requirements. A well-designed evaporative cooling tower installation is critical to achieving the maximum benefit from the system investment. This paper provides insight into key considerations for these large cooling tower installations, including proper selection, layout, sound, plume, water use, control strategies, and maintenance.

3:00p - 4:00p - Break

3:00p - 3:30p

**TP06-17 - Westar Energy Cooling Tower Rebuilds**

David Spacek, Westar Energy, Inc.



David Spacek has a Bachelor of Science in Mechanical Engineering from Kansas State University. He has thirteen years experience as a staff engineer at the Jeffrey Engineer Center as well as twenty-six years service with Westar Energy, Inc.

The Westar Energy Jeffrey Energy Center is to rebuild the rings of fill sections and accompanying structural support for two rounds series 600 Marley Cooling Towers during the fall maintenance outage of Unit 3. This job is scheduled to be completed in five and a half weeks. This represents double the amount of work attempted in previous rebuilds.

3:30p - 5:00p

**Technical Committee Meetings**

- **Engineering Standards & Maintenance**
  - Main Meeting
  - Task Groups
- **Performance & Technology**
  - Main Meeting
  - Task Groups
- **Water Treating**
  - Main Meeting
  - Task Groups

5:00p - 12:00a

Hospitality Suite (Bar Closes @ 9:30p)

6:00p - 9:30p

Dinner and Casino Night

**Dress code for the Annual Conference is Business Casual**  
**No Ties!**



12:15p - 1:45p - Group Luncheon - Ballroom C

2:00p - 2:30p

**TP06-14 - Copper Removal from Cooling Tower Blowdowns**

Christopher Howell – Crown Solutions, Inc.



Chris Howell is the Equipment Sales Manager, New Business Development for CROWN Solutions, Inc. He was previously a senior project engineer and project manager, and started the Design/Build Division, of CROWN. Chris joined CROWN Solutions in 1993, and prior to that, he was a senior station chemist at the Davis Besse Nuclear Power station and was in the Naval Nuclear Power Program. Mr. Howell holds a University Degree in Nuclear Engineering Technology.

Cooling tower Blowdown discharge limits for inorganic metals are being lowered more and more. This paper will document a case of a large cooling tower application in the Gulf Coast that had a 17 parts per billion (ppb) discharge limit placed on it and how ultra filtration membrane technology was used successfully to lower the cooling tower Blowdown copper concentration from 400 ppb to less than 17 ppb.

2:30p - 3:00p

**TP06-16 - Optimizing Industrial Cooling Water System Performance with Proper Monitoring and Control**

Jean M. Gucciardi, Gucciardi Consulting, Inc. & Loraine Huchler, P.E., CMC, MarTech Systems, Inc.



Jean M. Gucciardi is president of Gucciardi Consulting, Inc., a water treatment consulting firm, providing technical marketing and product development services to specialty chemical companies. Her firm also provides water treatment technical services for manufacturing and industrial facilities. Jean's previous work included an 18 year tenure at a major water treatment company with technical marketing and engineering assignments in the US and Europe. She holds a Bachelor degree in Science and a Master of Science degree in Environmental Engineering from the University of Wisconsin, Milwaukee. She has presented technical papers at the American Power Conference and the Intertech Conference on Coagulants and Flocculants. Jean has also published articles in a number of technical journals including Chemical Engineering and Chemical Processing and authored the June 2003 "Ask the Experts Column" in Chemical Engineering Process. She belongs to several technical societies including CTI and AWT.

Proper monitoring and control are the keys to cooling water system optimization. Technological developments in monitoring equipment and data acquisition systems have increased the options and reduced the cost of modernization to maximize cooling water system reliability in industrial systems. The benefits of proper control are measurable and translate to improved system efficiency and reliability. This paper will discuss the use of on-line instrumentation, water quality analyses and data management methods to document the historical operation, identify problems, troubleshoot and optimize the cooling system operation.

3:00p - 4:00p - Break

3:00p - 3:30p

**TP06-18 - Development of an Online Multicomponent Water Treatment Analyzer**

Richard H. Tribble, Michael G. Trulear, John Richardson and Rich Geisler, ChemTreat, Inc.



Richard Tribble holds a Bachelor of Science in Chemistry from Virginia Commonwealth University and is an expert from ChemTreat, Inc. Research and Development in cooling and boiler water treatment online analysis and product feed and control.

A new online analysis platform for water treatment systems is discussed. This new platform has the ability to measure multiple system analytes including water treatment active components such as anionic polymers. The impact of measuring key actives in cooling water treatment is demonstrated through improved system performance and control. Several laboratory studies and case histories are presented which demonstrate the capabilities of this new analysis platform.

3:30p - 5:00p

See schedule in left hand column

5:00p - 12:00a

Hospitality Suite (Bar Closes @ 9:30p)

6:00p - 9:30p

Dinner and Casino Night



**Tuesday's Technical Sessions running congruently between Ballrooms A & B**

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

**Ballroom B (Water Treating Sessions)**

*continued from page 12*

**Tuesday, February 7, 2006**

**Tuesday, February 7, 2006**

**7:00a - 8:00a - New Member's Breakfast**

**7:00a - 9:30a -  Services**

**7:00a - 5:00p - Speakers' Breakfast, Photo Session & Prep Room**

**7:00a - 5:00p - Registration and Paper Sales**

**8:00a - 8:30a**

**TP06-19 - *Guidelines for Selecting the Proper Fill***

Donald Zelak – Brentwood Industries



*Don has been in the cooling tower industry for 17 years. He has worked for Brentwood Industries since 1988 as their service manager. He has a BS degree in Electrical Engineering from Wilkes University and an MBA from Kutztown University.*

For many years PVC film fills have been the most popular choice of heat transfer media for use in cooling towers. Throughout this history, design features of these fills have continued to evolve from the first cross corrugated products through vertical flow fills to today's popular combination designs. Some of these features are not obvious to the casual observer and if not chosen correctly can adversely affect tower performance, product cost, lifespan, or ease of installation. This paper traces the history of these fill designs while providing guidelines as to the proper fill selection.

**8:30a - 9:00a**

**TP06-21 - *A Performance Comparison of Counterflow Reduced Fouling Fills***

Toby L. Daley P.E. – T. Daley & Associates, Inc.



*Toby Daley, President of T. Daley & Associates, Inc., holds a Bachelors of Science in Chemical Engineering from the University of Texas at Arlington and is a registered professional Structural Engineer. He is a CHI EPSI LON Civil Engineering Honor Society and TAU BETA PI National Engineering Honor Society member. Toby has served as an Adjunct Professor and developed a graduate level course in Composite Structures at the University of Texas at Arlington and as Vice Chair of the Civil*

*Engineering Faculty Advisory Council at the University of Texas at Arlington Civil Engineering Department. He has thirty-two years experience in the cooling tower industry, thirty years with Ceramic Cooling Tower Company where he was Vice President of Engineering and Research and Development and subsequently Chief Operating Officer, has served as Past President, Treasurer, Performance and Technology Committee Chair, and on the Board of Directors of CTI. Mister Daley is currently the Engineering Standards and Maintenance Committee Chair.*

This paper will present recent resting results of counterflow film and splash type reduced fouling fill configurations. It will present a comparison of the relative performance of the fills. This recent resting program provides a today's performance perspective of the most commonly used fills of this type.

**9:00a - 9:30a**

**TP06-23 - *Roulette and Mechanical Vibration Switches: What are your Odds?***

Gene Ort



*Gene Ort holds a Bachelor of Science in Mechanical Engineering and two patents. His relevant experience includes working for a major gas turbine and AC motor manufacturer and major manufacturers of instrumentation for vibration monitoring of rotating equipment including cooling towers. Gene has had the training for vibration analyst and successfully led a project that outfitted an entire grassroots refinery in Thailand with all of the installed vibration monitoring instrumentation as*

*well as the portable vibration data loggers and analysis software. He is currently a consultant on internet marketing of industrial instrumentation.*

You have a better chance winning at roulette than protecting your cooling towers with mechanical vibration switches. What are the odds at roulette? You put your money on the table enough times and the casino takes 5.76% of it. The switches are not even close.

Cooling towers are no longer "balance of plant" (BoP) equipment, and have increasing significance in facility operations. With any reasonable definition of "protection", mechanical vibration switches, called earthquake switches by those who know, may offer no protection from the most likely causes of cooling tower problems. Better alternatives (non-commercial) are presented for consideration.

**9:30a - 9:45a -  Break**

**10:00a - 12:00p - Technical Committee Work**

**10:00a - 2:00p - Owner Operator Seminar (w/lunch) - information on page 4**

**12:00p - 2:00p - Lunch on your own**

**2:00p - 3:00p -  Services**

**2:00p - 4:30p - Seminar to.....**

**4:30p - 9:30p - Table Top Exhibits and Hospitality Suite - Salon C**



**7:00a - 8:00a - New Member's Breakfast**

**7:00a - 9:30a -  Services**

**7:00a - 5:00p - Speakers' Breakfast, Photo Session & Prep Room**

**7:00a - 5:00p - Registration and Paper Sales**

**8:00a - 8:30a**

**TP06-20 - *High Performance Ceramic Fill***

Peter Fay – Consultant and Ann Engh – Sandkuhl Clay Works, Inc.



*Peter Fay is a Mechanical Engineering graduate of Purdue University. He worked for Douglas Aircraft for number of years in the development of both commercial aircraft and ballistic missiles. He then became involved in the development of nuclear power plants with Aerojet-General Nucleonics and later with General Atomic. In 1976 Peter joined GEA Power Cooling in San Diego and was responsible for Product Applications and later Product Development of the entire product line. He continues to work in this field as an independent consultant and holds a number of patents related to this sphere of activity. In the recent past he has worked with Sandkuhl Clay, a supplier of ceramic cooling tower fills, on the development of the fill that is the topic of today's paper. Peter is an avid photographer, tennis player, and world traveler.*

The cooling tower industry has long sought without success to find the ideal fill. Such a fill would have high performance, low fouling tendency, durability, non-flammability, elevated temperature capability, non-hazardous environmental characteristics, freeze-thaw capability and good economics.

Traditional cellular ceramic fill blocks provide many of the above attributes with the high performance criterion being the one glaring exception. A vertical flow ceramic film type fill that meets all the attributes set out above is now available to the industry and is discussed in the paper.

**8:30a - 9:00a**

**TP06-22 - *Seismic and Windload Rated Packaged Cooling Towers***

Daniel S. Kelly – EVAPCO



*Daniel Kelly has five years experience with Evapco, Inc. where he is currently a Global Product Manager. He worked previously in the Mechanical Equipment Group at the Technical Headquarters of Praxair, Inc. where he was a specifying engineer for mechanical equipment such as cooling towers, pumps, vessels, and compressors.*

Changes to national building codes and state building codes in California and Florida have given rise to special requirements for cooling towers to be able to withstand windload and seismic forces.

This paper will review the state and national codes as they apply to cooling towers with emphasis on what must be communicated to specifying engineers, owners and building inspectors with the goal of getting unit acceptance at the jobsite and also design of units that meet the code.

**9:30a - 9:45a -  Break**

**10:00a - 12:00p**

**Technical Committee Work**

**10:00a - 2:00p**

**Owner Operator Seminar (w/lunch) - information on page 4**

**12:00p - 2:00p**

**Lunch on your own**

**2:00p - 3:00p**

** Services**

**2:00p - 4:30p**

**Seminar to.....**

**4:30p - 9:30p**

**Table Top Exhibits and Hospitality Suite - Salon C**





# THE 2006 CTI ANNUAL CONFERENCE PROGRAM continued

Wednesday, February 8, 2006

7:00a - 10:00a



Service

7:00a - 5:00p

Registration and Paper Sales

7:00a - 8:00a

Speakers' Breakfast

8:00a - 12:00p

Educational Seminar

12:00p - 1:30p

Lunch on your own

1:30p - 5:00p

Technical Committee Meetings

• Engineering Standards & Maintenance

Main Meeting

Task Group

• Performance & Technology

Main Meeting

Task Group

• Water Treating

Main Meeting

Task Group

2:00p - 3:00p



Services

5:00p - 8:00p

Hospitality Suite (Bar closes @ 8:00p)

Thursday, February 9, 2006

7:30a - 8:15a

Board of Directors' (includes Committee Chairs) Breakfast

8:30a - 2:00p

Board of Directors' Meeting

## Dinner and Casino Games

Monday Night, February 6, 2006, 6:00p - 9:30p  
at the Wyndham Hotel



Come and enjoy a wonderful Mexican dinner and a night at the tables! After eating a wonderful Mexican dinner you will be able to try your hand at Texas Poker, Black Jack, Roulette or Craps! Prizes will be given (sorry no money)!



Dinner will be:

Roasted Napoleon Green Salad with Margarita Vinaigrette

Black Bean Salad Tossed with Squash, Zucchini, Jicama,

Green Onion and Red Chili Vinaigrette

Spicy Hurricane Baby Shrimp Ceviche

~~~~~

Chili Roasted Chicken Quesadillas

Chicken and Beef Fajitas served with Pico De Gallo, Guacamole,

Jack Cheese, and Flour Tortillas

Cheese Enchiladas

Borracho Black Beans Topped with Monterey Jack Cheese

Mexican Rice

~~~~~

Coconut Caramel Flan

Chocolate Tres Leches

Maple Pralines



Cost is \$70/per person (includes 2 drink tickets and poker chips).



## Education Seminar

**"Cooling Tower Design, Operations, & Maintenance"**

Wednesday, February 8, 2006

8:00a - 12:00p

The 2006 CTI education program will include 4 sessions on cooling tower design, operation, and maintenance. The sessions will particularly focus on gearbox operation and maintenance, tower thermal performance, and design considerations including structural, thermal performance, environmental, and reliability.

The program will include 4 - 1 Hrs Session as follows:

1. Cooling Tower Gearbox Maintenance & Operation - presented by Craig Burris, Amarillo Gear Company
2. Cooling Tower Performance/Thermal Rating - presented by Dennis Moran, C.M. Towers, Inc.
3. Cooling Tower Design - Best Practices and Design Options - presented by Jim Cuchens, Southern Company
4. Effective Water Treatment - presented by Mike Trulear, ChemTreat, Inc.

The above order does not necessarily reflect order of presentations.

**Jim Cuchens of Southern Company, CTI Education Chairman and moderator for the program.**



## Owner/Operator Seminar

Tuesday, February 7, 10:00a - 2:00p

(lunch will be included)



Cunningham

Meet Jennifer Cunningham of Air Liquide, Chairperson for the Owner/Operator Council. Jennifer has lined up a terrific program for the Owner/Operators on Tuesday, February 7th from 10:00a - 2:00p (lunch is included). Be sure to check on the registration form that you will be attending so we will have enough seating and enough lunches for everyone. This year's seminar will cover:

### How-to Inspect Your Mechanical Equipment:

- Hands-on inspection from fan motor, to drive shaft, to gearbox and fan assembly
- Two companies will represent each product for further discussion:  
Fans - Hudson/Howden  
Drive shaft - Addax/Amarillo  
Gear box - Amarillo/SPX
- Trouble Shooting Failures
- Vibration Analysis

### How-to Inspect Structural Members:

- Case study of a cooling tower collapse

### How-to Inspect Your Piping:

- Case study on a piping failure

**Be sure to check on the registration form that you will be attending this seminar**



# Cooling Technology Institute Licensed Testing Agencies



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. By providing such information on a specific tower installation, the CTI Multi-Agency Testing Program stands in contrast to the CTI Cooling Tower Certification Program which certifies all models of a specific manufacturer's line of cooling towers perform in accordance with their published thermal ratings.

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

License Type*	Agency Name Address	Contact Person Website / Email	Telephone/ Fax
A, B	<b>Cooling Tower Technologies Pty Ltd</b> PO Box N157 Bexley North, NSW 2207 AUSTRALIA	Ron Rayner coolingtwrtech@bigpond.com	61 2 9789 5900 61 2 9789 5922
A,B	<b>Cooling Tower Test Associates, inc.</b> 15325 Melrose Dr. Stanley, KS 66221	Thomas E. Weast www.cttai.com cttake@aol.com	913.681.0027 913.681.0039
A, B	<b>Power Generation Technologies</b> div. Environmental Systems Corp. 200 Tech Center Drive Knoxville, TN 37912	Ken Hennon www.envirosys.com/perf_services/coolingtowerthermaltesting.php khennon@envirosys.com	865.688.7900 865.687.8977

\* 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.

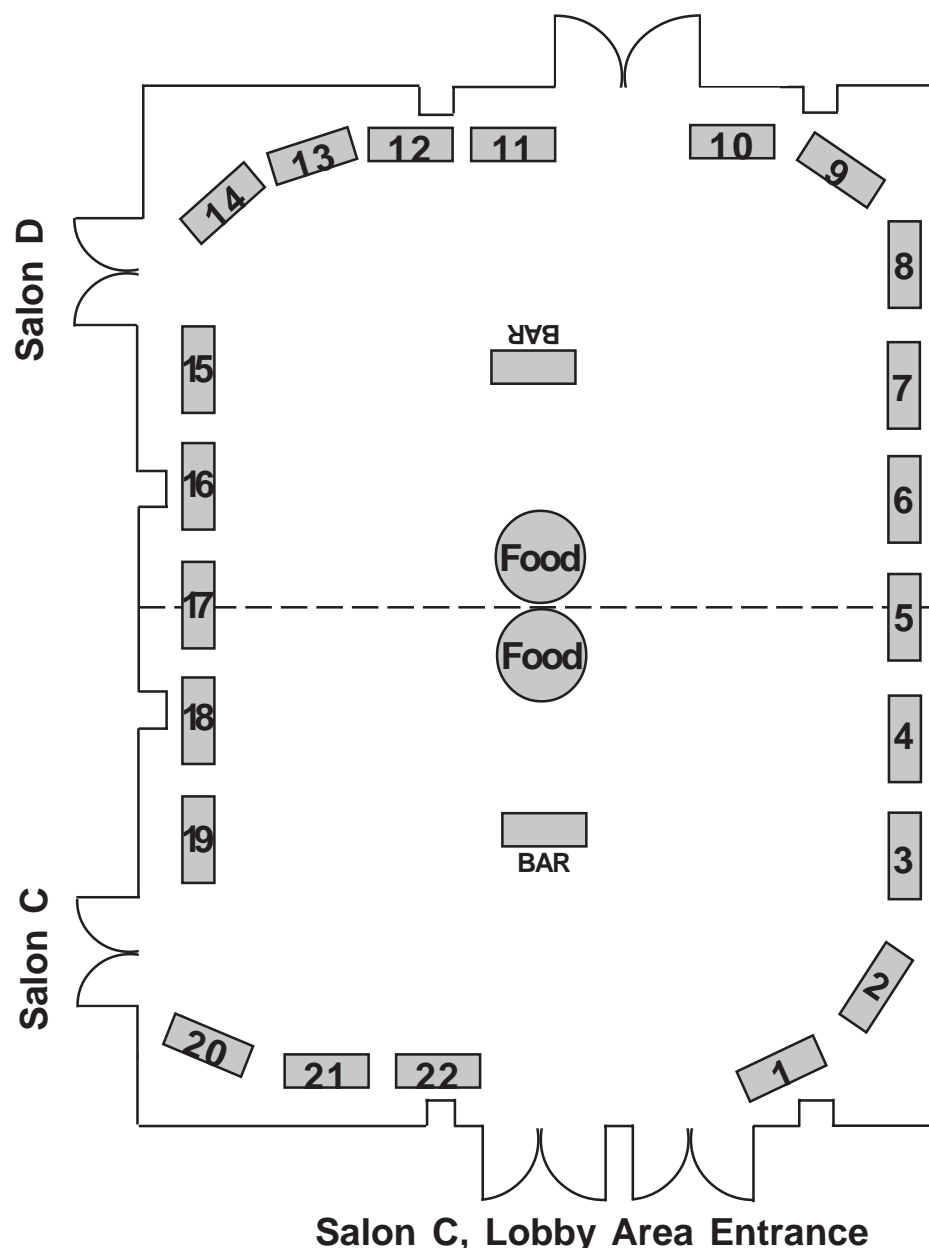
## Licensed CTI Drift Testing Agencies

Agency Name	Contact Person Website / Email	Telephone/ Fax
<b>Power Generation Technologies</b> div. Environmental Systems Corp. 200 Tech Center Drive Knoxville, TN 37912	Ken Hennon www.envirosys.com/perf_services/coolingtowerthermaltesting.php khennon@envirosys.com	865.688.7900 865.687.8977

## Table Top Exhibits and the Exhibitors

Tuesday, February 7, 2005 • 4:30p - 9:30p

1. Dynamic Fabricators
2. Rexnord/Addax
3. Cooling Tower Resources
4. Brentwood Industries, Inc
5. Amarillo Chittom AirFlo
6. ERICO, Inc.
7. Amarillo Gear Company
8. Midwest Towers
9. Industrial Cooling Tower
10. C.E. Shepherd
11. Aggreko Cooling Tower Services
12. Biosan Laboratories, Inc.
13. Rohm and Haas
14. The Mur-Tex Company
15. Strongwell
16. ChemTreat, Inc.
17. Baltimore Aircoil Company
18. Hudson Products Corp.
19. Bedford Reinforced Plastics
20. Dober Group
21. SPX Cooling Technologies
22. Ashland Specialty Chemical



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The following questions were sent through our website to the “Ask The Expert” Committee. This is just a sampling of the types of questions we get from those of every walks of life. Thanks to the committee the CTI is able to reach out in another way to help those in the industry and those who have interest in our industry.

### Question 1

How does one come across reducing the amount of water lost through evaporation on natural draught cooling towers?

### Reply to Question 1

The basic principle of heat removal using an Evaporative Cooling Tower (Natural Draft or Mechanical) is through the evaporation of water. The evaporation rate of a cooling tower is determined by ambient conditions of the area. The only way to reduce the evaporation rate is to reduce the heat load on the cooling tower.

There are several ways to reduce make-up to a cooling tower:

- Increase cycles of concentration - optimum usage of chemicals is 7 cycles of concentration. Higher cycles of concentration needs to be carefully evaluated due to potential for fouling of condenser,
- reduction in losses in the unit. (Many designs waste water through oil coolers, open coolers etc. Finding the sources of fugitive losses allows better control cycles of concentration thus allowing water savings), or
- reduce the amount of drift loss from cooling tower (if the cooling tower has high drift loss, more efficient drift eliminators can be installed to reduce drift again allowing better control of blowdown and cycles of concentration.)



a question go to  
[www.cti.org](http://www.cti.org)

### Question 2

We want to add a dry pipe system to a fire retardant FRP cooling tower. This option does not state that it would meet NFPA 214 requirements - it is just some extra water flow over the fire retardant tower for added insurance in case of a fire. The question - does 214 now apply by default? We are told that many towers just place sprays over the motor and gear box, and that concept doesn't meet 214 - so it is my opinion that 214 does NOT automatically have to be the basis of the design unless we state that it does. Any comments?

### Reply to Question 2

NFPA 214 describes the correct way to install a sprinkler system if a sprinkler system is deemed necessary. Chapter 4 describes the fire risk analysis that can be performed to determine the extent and method of fire protection systems that may be required. Is the FRP tower proposed fire retardant (flame spread less than 25) and also self extinguishing? If the FRP is not self extinguishing then a fire could spread. Is the tower a cross flow or counterflow design? Does the FRP tower have fire walls (partitions) between cells and

*continued on page 17*





are they fire rated for 20 or 30 minutes? This point has a major affect on sprinkler design and water loading required. Are the towers located near a possible fire source? Is the tower FM or IRI approved for installation without a sprinkler? All of these questions will help determine risk.

A dry pipe system is acceptable per NFPA 214. The extent of coverage is determined by the potential fire risk. If you state the sprinkler system is to be installed per NFPA 214, then you will get a fully designed system that would be acceptable on a wood tower.



The owner can certainly specify a modified sprinkler system with reduced spray heads in only certain areas of the tower if that modification satisfies their risk analysis and their Insurance Company agrees with the proposal and they are not violating any local fire codes. Hopefully these comments will be useful to the inquirer.

**Dress code for the Annual Conference is Business Casual No Ties!**



## Cooling Technology Institute's MISSION STATEMENT

To advocate and promote the use of environmentally responsible Evaporative Heat Transfer Systems (EHTS) for the benefit of the public by encouraging:

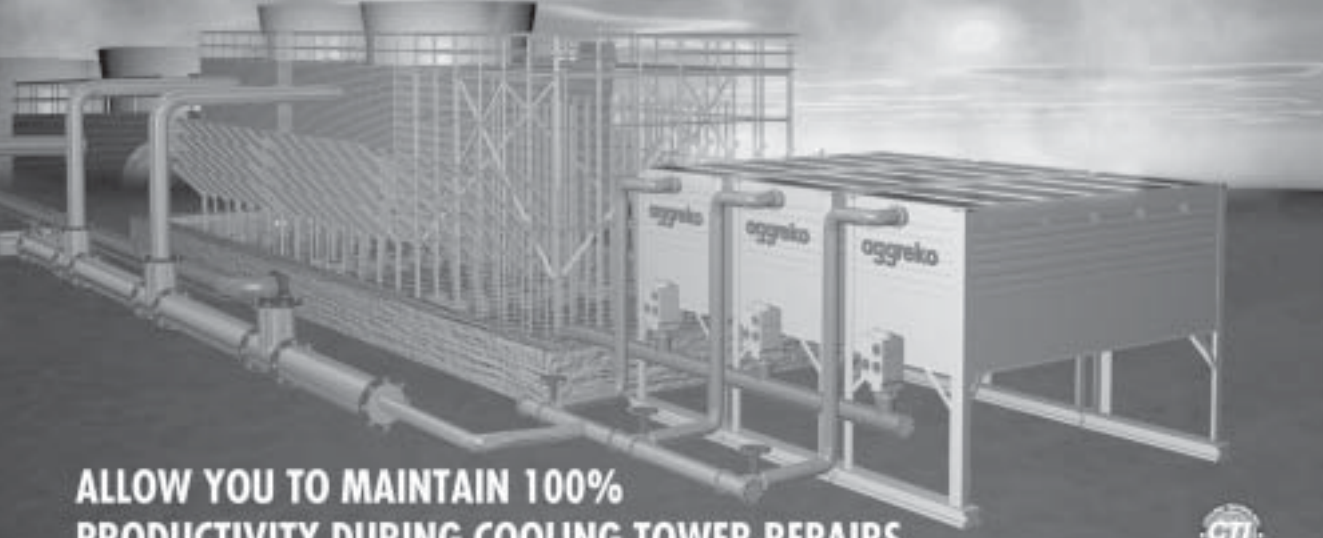
- Education
- Research
- Standards Development and Verification
- Government Relations
- Technical Information Exchange

### Objectives


- Maintain and expand a broad base membership of individuals and organizations interested in Evaporative Heat Transfer Systems (EHTS).
- Identify and address emerging and evolving issues concerning EHTS.
- Encourage and support educational programs in various formats to enhance the capabilities and competence of the industry to realize the maximum benefit of EHTS.
- Encourage and support cooperative research to improve EHTS technology and efficiency for the long-term benefit of the environment.
- Assure acceptable minimum quality levels and performance of EHTS and their components by establishing standard specifications, guidelines, and certification programs.
- Establish standard testing and performance analysis systems and procedures for EHTS.
- Communicate with and influence governmental entities regarding the environmentally responsible technologies, benefits, and issues associated with EHTS.
- Encourage and support forums and methods for exchanging technical information on EHTS.

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## What's New in Publications?

CTI's committees are working on a 5-year revision program for each of our Standards and Chapters by looking at each every 5-years and revising and reprinting those that need to be updated with new and better information and reprinting those that are correct as stand. As you may realize with the number of Standards and Chapters that CTI has, this will take some time to have each completed and viewed on a 5-year rotation but our standing committees are well underway. Soon you will be seeing information printed in each Standard and Chapter located on the second page left hand corner that shows when it was revised and the year it will be reviewed again.

**Our latest reviewed and revised Standard and Chapter are:**

**ATC-128 revised 7/2005: Code for Measurement of Sound From Water Cooling Towers** - This code applies to mechanical and natural draft towers. Test and measurement procedures, operating conditions and instrumentation are specified. .... \$15.00

**Chapter 13 revised 7/2005: Inspection of Cooling Towers** ..... \$15.00

**Our newest Standard is:**

**STD-203 as of 10/2005: Industrial Cooling Tower Standard** - this standard covers the design, fabrication and inspection of crossflow and counterflow mechanical cooling towers. \$10.00

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

2007 Annual Conference

February 4-8, 2007 • Omni Bayfront Hotel • Corpus Christi, Texas

The following schedule will begin the process for papers presented at the 2007 Annual Conference:

### 2006

- May 3: Deadline for Abstracts
- June 24: Authors Notified by Program Chair
- Aug 2: Six (6) copies of draft must be sent to CTI office for review
- Nov 1: 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**





# CTI 2006 Annual Conference, February 5-8, 2006 Registration Form

Complete and mail this form to: Cooling Technology Institute • PO Box 73383 • Houston, TX 77273  
281.583.4087 • Fax: 281.537.1721

No. \_\_\_\_\_

## REGISTRATION FEES:

CTI Members prior to January 6 - \$595 (cost includes lunch Monday); Non-Members prior to January 6 - \$695 (cost includes lunch Monday); One Day: CTI Members and Non-Members - \$500; fees must be paid prior to the Meeting or at the registration desk. **Sorry, no invoicing!** In the event of cancellation, full refund will be made if notice is received prior to January 14. 50% of the fee will be refunded if cancellation is made between January 14-27. Fee is non-refundable after January 27. Fee includes entrance to all technical sessions Monday through Wednesday, luncheon on Monday and cocktail receptions in the CTI Suite Sunday through Wednesday evenings. Badges will be required for all events. Tickets will be collected at the luncheon on Monday. **Additional luncheon tickets (whether for spouse or guest) are \$30 each.** Copies of the papers presented will be available at the meeting for \$5 per copy. A complete set may be purchased at the meeting for \$95 (add postage for outside the states) or you may purchase a CD with a PDF file of each paper presented for \$100 (includes postage). This will be mailed to you after the meeting. You may reserve your set of the papers or CD by checking the appropriate place on this form.

HOSPITALITY SUITE HOURS: Sunday - 5 pm to midnight; Monday - 5 pm to midnight; Tuesday - 5 pm to midnight; Wednesday - 5 pm to 8 pm (Bar closes @ 9:30 pm each evening, except for Wednesday when it closes at 8 pm).

**CTI POLICY DOES NOT PERMIT HOSPITALITY SUITES OR SIMILAR PRIVATE ENTERTAINING HOSPITALITY SUITES TO ANY OF OUR MEMBERS.**

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

Name: \_\_\_\_\_ Nickname for Badge: \_\_\_\_\_  
*First MI Last*

Company: \_\_\_\_\_ Spouse's Name if Attending \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (include area code) \_\_\_\_\_ Fax (include area code) \_\_\_\_\_ Email: \_\_\_\_\_

## Check Appropriate Category:

\_\_\_\_\_ **CTI Member**, registration and payment received by Jan 6 - \$595  
(Includes technical sessions Monday, Tuesday & Wednesday)

\_\_\_\_\_ **CTI Member** after Jan 6 - \$695  
(Includes technical sessions Monday, Tuesday & Wednesday)

\_\_\_\_\_ **Non-Member**, registration and payment received by Jan 6 - \$695  
(Includes technical sessions Monday, Tuesday & Wednesday)

\_\_\_\_\_ **Non-Member**, after Jan 6 - \$795  
(Includes technical sessions Monday, Tuesday & Wednesday)

\_\_\_\_\_ **One day** registration \$500 - Mon Tues Wed (circle one)

\_\_\_\_\_ **Speaker** (one for each paper only) No Charge

\_\_\_\_\_ **Press** (one attendee per company only) - No Charge

\_\_\_\_\_ **Honorary Life Member** - No Charge

\_\_\_\_\_ Please check here if you have a **disability** and require special accommodations. You will be contacted for details.

\_\_\_\_\_ I will attend the **Educational Seminar** on Wednesday

Referred by: \_\_\_\_\_

\_\_\_\_\_ I Will / \_\_\_\_\_ I Won't attend the **Owner/Operators' Seminar**  
on Tuesday (Owner/Operator Category only - lunch included)

\_\_\_\_\_ I Will / \_\_\_\_\_ I Won't attend the **New Member Breakfast** (2-7-05)

\_\_\_\_\_ **Additional luncheon** ticket(s) (for spouse/guest) Mon - \$30/ea

\_\_\_\_\_ **Monday night dinner** and casino night - \$70/per person

\_\_\_\_\_ **Set of Papers** - \$95 (includes postage for the USA, add \$10 postage  
Mexico & Canada, add \$15 postage for all other countries)

\_\_\_\_\_ **CD** with PDF File of each paper - \$100 (includes postage) Available  
after the conference

You may charge Registration to: [ ] Visa [ ] MasterCard or [ ] AmEx

Card# \_\_\_\_\_ Exp. Date \_\_\_\_\_

Cardholder \_\_\_\_\_

**Amount Due: \$ \_\_\_\_\_ Amount Enclosed: \$ \_\_\_\_\_**

**Amount Charged: \$ \_\_\_\_\_**

**There will be a 15% charge on any credit card refund made - no exceptions!**

## HOTEL RESERVATIONS FORM - (Hotel Cut-Off Date - January 6, 2006)

### Cooling Technology Institute (CTI) - Annual Conference • February 5-8, 2006

To assure proper reservations, please complete this reservation request and return it to the hotel before January 6, 2006. Requests received after this date will be accepted based on availability. Reservations requests must be guaranteed by a credit card number or first night's room and tax (currently 15%) deposit. If a deposit or credit card guarantee is not received 7 days prior to your arrival date, your reservation is subject to cancellation. Notice of cancellation is required 48 hours in advance of the arrival date to obtain a refund or avoid credit card billing for one night's stay.

**Send to: The Wyndham Greenspoint Hotel (Attn: Reservations) • 12400 Greenspoint Dr, Houston, TX 77060, 281.875.2222, or Fax: 281.875.1652**

Name: \_\_\_\_\_ Sharing With: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone Number \_\_\_\_\_ Fax: \_\_\_\_\_

Arrival Date: \_\_\_\_\_ Departure Date: \_\_\_\_\_

Special Room Requests: [ ] Smoking [ ] Non-Smoking [ ] Single Occupancy [ ] Double Occupancy

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

**Standard Accommodations: • [ ] Single - \$132 • [ ] Double - \$142**

Prices do not include the applicable taxes and fees for each room. (A portion of the room rate will be used to offset other costs of the conference.)

Please include first night's deposit with your reservation, or you may use one of the following cards: [ ] AmEx [ ] Visa [ ] Mastr Crd [ ] Dnr's Club

[ ] Crt Blnch [ ] Dscvr Card# \_\_\_\_\_ Exp. Date \_\_\_\_\_ Cardholder \_\_\_\_\_

[ ] Deposit enclosed Amount: \$ \_\_\_\_\_

Signature \_\_\_\_\_

I understand that I am liable for one night's room rate plus room and occupancy taxes which will be covered by my deposit in the event that I do not arrive, cancel less than 24 hours prior to arrival, or depart earlier than scheduled.



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**DO NOT SEND HOTEL RESERVATIONS FORM TO CTI!**



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