Bibliography of Technical Papers

Categorized for Technical Content
(May be subject to multiple interest)
Cooling Technology Institute
Bibliography of Technical Papers

The following papers have been presented at conferences of the Cooling Tower Institute and are listed by categories. Efforts are being made to simplify our filing system. The new order number is in the first column with the old order number in parenthesis after the title. This will help in cross referencing numbers. Reproduced copies of these papers are available from the CTI office, PO Box 681807, Houston, TX 77268. Please order by the new order number. Papers are priced at $10/each, plus processing fee. Prepayment is requested on all orders $25 or less. Due to the total number of papers in CTI’s possession any paper written before 1990 (with exceptions) is considered “Historical” and not listed in this printed document. A complete listing can be found on our website – www.cti.org.

ANALYSIS METHOD

David Correlli, IMI Sensors / Vibration Institute

TP10-19 .......... A Systematic Approach to Performing, Documenting and Reporting Inspections of Field Erected Cooling Towers
Casey Yurkovitch, GEA Power Cooling, Inc.; Philip Poll, OBR Cooling Towers, Inc.

TP10-14 .......... Automated Feed of Patented Aseptrol CW Oxidizing Biocide Provides “Best Practice” in Delivery of Chlorine Dioxide to Small-Scale Systems
Keith Hirsch, BASF Corporation; John Byrne, Richard McCaffrey, BASF Catalysts, LLC

TP10-05 .......... Complex Structural Analysis Simplifies Repair Phasing in Restoration of Hyperbolic Cooling Towers

TP10-01 .......... Your Cooling Tower Project On Time, On Budget
David Suptic, David M. Suptic, P.E. LLC

CLEANING SYSTEMS

TP19-14 .......... Underwater Robotic Technology for Online Tower Basin Cleaning
Steve Rydarowski, Joe Leist, and Randi Morgan, Scantron Robotics USA, Inc.

TP19-21 .......... Fluidized Bed Cooling Towers Come of Age
Howard Davis, Fluid Technologies (ENV) Ltd & David Missions Osprey Corporation Ltd

TP18-12 .......... Underwater Robotic Technology for Online Tower Basin Cleaning
Randi Lee Morgan and Joe Leist, Scantron Robotics USA, Inc.

TP16-07 .......... Online Robotic Cleaning Method
Michael Dorsey, Aquacorr Services and Joe Leist, Scantron Robotics

TP10-08 .......... Cooling Tower Water Conservation
Jon J. Cohen and Henry A. Becker, H-O-H Water Technology

TP99-15 .......... Online Cooling Tower Cleaning and Water Division
Cliff Roy and John Foy, Syncrude Canada LTD; Lloyd Olson, International Cooling Towers

TP98-13 .......... New Technology Improves Tower Basin Cleaning
Randy Delenikos and Bill Leizear, LAKOS Filtration System

TP96-02 .......... Online Cooling Tower Cleaning
Mark Coyle and Gordon Barksdale, American Inland Divers, Inc.

CONVERSION

TP99-14 .......... Conversion of a Crossflow Tower to a Double-Level, Multi Fan Counter Flow Tower
Vincent Wiltz, Cooling Tower Specialist

TP97-02 .......... Com Ed Co. Byron Generating Station Unit 1 Crossflow to Counterflow Conversion
James O. Smith, Com Ed Co.; Mark Muder, Marley Cooling Tower

COOLING TOWER WATER BLOWDOWN TREATMENT

TP07-07 .......... Zero Blowdown for Cooling Towers
Sam Owens, Chemico International, Inc.

TP06-14 .......... Copper Removal From Cooling Tower Blowdowns
Christopher Howell and David Christophersen, Crown Solutions, Inc.
TP06-02 .......... Cooling Tower Blowdown Limitations: Case Studies of New Wastewater Permit Limits ............ 2006
Jennifer Cunningham, Air Liquide Large Industries US LP

TP01-10 .......... Hero Process - Recovery Reuse of Cooling Tower Blowdown and as a Preconcentrator for ........ 2001
ZLD Application
Charles H. Fritz, PE, Black & Veatch Corp; V.J. Nathan, Aquatech Int'l Corp

COOLING TOWER WATER CHEMISTRY

Kelly Lipps and Doug McIlwaine, Ph.D.

TP12-06 .......... Forward Osmosis Applied to Evaporative Cooling Make-up Water ........................................ 2012
Peter Nicoll, Neil Thompson, Modern Water PLC

TP10-18 .......... Oil-In-Water UV Fluorescence Sensor in Cooling Tower and Other Industrial Applications ...... 2010
Vadim B. Malkov, Hach Company

TP09-11 .......... Use of New Generation Polymer for Clarification of Water ....................................................... 2009
Sanjay Kumar Dubey, Lim Aun Siong, Genting Sanyen Power Sdn Bhd

TP08-13 .......... Intermittent Feeding of Aseptrol Tablet Redefines the Role of ClO2 in Small and Mid-Sized....... 2008
Cooling Water Systems
Keith Hirsch, BASF Corporation

TP06-13 .......... Experience With Monitoring and Control of Microbiological Growth Due To ......................... 2006
Hydrocarbon Ingress In Open Cooling Water Systems
Arif Jaffer, Fred Chastain, and Jennifer Fichter, Baker Hughes/Baker Petrolite

COOLING TOWER WATER TREATMENT PROGRAMS

TP19-20 .......... Tailoring Scale Prediction Models to a Specific Application: Cooling Water ............................. 2019
Robert J. Ferguson, French Creek Software, Inc.

TP19-22 .......... Using Experience and Six Sigma to Optimize Water Treatment ............................................... 2019
John Morstead, Suez Water Technologies & David W. Anton, Ascend Performance Materials

TP16-26 .......... Cooling Water Scale and Corrosion Monitoring ................................................................. 2016
L.J. Aspinall, Aquatech International and Brian Bloxam, CF Industries

TP15-22 .......... Controlled Hydrodynamic Cavitation for Cooling Tower Water Treatment .............................. 2015
David Burge, Ecowater CHC

Of an Electrodynamic Pulse Field Water Treatment
Paul R. Puckorius, Puckorius & Associates; Richard Ruckstuhl, Jr., CWT Waterhouse Corporation

TP14-25 .......... Noise Control of Water Cooling Towers in Rome’s Hospital Area ............................................ 2014
Augusto Papa, PhD, Italian Workers Compensation Authority

TP14-22 .......... pH Impact on Inhibitor Performance ......................................................................................... 2014
Robert J. Ferguson, French Creek Software, Inc.

TP14-14 .......... Development and application of Phosphorus Free Cooling Water Technology ...................... 2014
Raymond M. Post, P.E. and Richard Tribble, ChemTreat, Inc.

TP14-10 .......... Efficient Polymer Use in Cooling Tower Makeup Water Treatment at Coal-Fired Power Plant ... 2014
Etienne Prehoda and Yong Kim, Prominent Fluid Controls; Emily Vsetecka Sunflower Electric Power Corporation

Trey Cook, Michael Dorsey and Matt Walker, DuPont

TP14-06 .......... Cooling Water Microbial Control Impacts Overall Plant Performance .................................... 2014
Kevin Boudreaux and Aaron Haines, Nalco Company

TP13-20 .......... Condenser Performance Monitoring ....................................................................................... 2013
Daniel M. Cicero, Nalco Company

TP14-07 .......... Restoration of Concrete Cooling Towers Damaged by Reinforcing Steel Corrosion ......................... 2014

TP13-14 .......... A Synergistic Combination of Advanced Separation and Chemical Scale Inhibitor Technologies .... 2012
Jasbir S. Gill, Ph.D., Nalco Company; Yupo J. Lin, Ph.D, Argonne National Laboratory

TP13-07 .......... Microbial Corrosion on Metallic Surfaces ...................................................................................... 2013
Karoline Bohlen, Colorado School of Mines

TP11-12 .......... The Progression of Automation and Process Control for the Management of Open Cooling Water Systems
Kevin Milici and Gary E. Geiger, GE Water & Process Technologies

TP10-17 .......... Corrosion Protection of Concrete for Cooling Towers ...................................................................... 2010
Javier Balma, Ph.D., P.E. and Dilip Choudhuri, P.E.

TP10-12 .......... Copper Corrosion Control and Minimized Copper Discharge from Cooling Tower ....................... 2010
Jasbir S. Gill, Ph.D. and Ed Grodecki, Nalco Company

TP07-23 .......... A New Closed System Treatment Program for Industrial Applications ................................................. 2007
William Beer and Rosa Crovetto, GE Water and Process Technologies

TP07-21 .......... New Liquid Biocide Products for Specific Industrial Water Treatment Requirements ......................... 2007
Christopher J. Nalepa, Farrah Azarnia and Tina Craft, Albemarle Corporation

TP07-08 .......... Corrosion-Induced Concrete Deterioration and Rehabilitation of Natural Draft Hyperbolic ................. 2007
Leandro Etcheverry, Structural Preservation System

TP07-03 .......... Cooling Water - Optimal Control of Admiralty Corrosion Utilizing Multiple Halogen Sources .......... 2007
Gene Dombrowski, Chemtreat, Inc.; John Zimowski, Dupont

TP06-06 .......... Improving Localized Corrosion in a Complex Cooling Water System ............................................. 2006
Michael H. Dorsey and Arthur F. Brunn, DuPont; Kevin Daigle, ChemTreat, Inc.

TP02-15 .......... Corrosion and Biofouling Control in a Refinery Cooling Water System Using Sewage Water .......... 2002
Abdulmohsen Almajnouni, Saudi Arabian Oil Company; Arif Jaffer, Baker Petrolite

Narasimha M. Rao, Donald A. Johnson, and Frank F. Lu, Nalco Chemical Company; N.P. Nghiem, Oakridge National Laboratory

TP96-14 .......... Corrosion Inhibition of Ferrous Metal in Soft Water Under Cooling Water Conditions ..................... 1996
Colin Hogan, FMC Process Additives Division

TP96-12 .......... Analyzing Corrosion Rates of Copper for Open Re-circulating Systems ........................................... 1996
Gary Caplan, Diversey Water Technologies Ltd.

TP96-10 .......... Cathodic Protection of the Palo Verde Cooling Towers ................................................................. 1996
William R. Schutt, Matcor, Inc.

TP94-13 .......... The Control of Ferrous Metal Corrosion in Cooling Water by a Novel Phosphonate Corrosion .......... 1994
Inhibitor
David A. Little, Wayne A. Mitchell and E.S. Lawson, Grace Dearborn

TP94-10 .......... Pitting Corrosion of Cooling Water Systems ................................................................. 1994
Mark A. Lisin, P.E. and Thomas M. Laronge, Thomas M. Laronge, Inc.

TP91-14 .......... Update on White Rust Corrosion and Control ................................................................................ 1991
Keith M. Johnson and Joseph B. Mihelic, Drew Industrial Division


and Fouling Control
Mark J. Giusto, Drew Industrial Division

TP89-11 .......... Investigation of Alternative Inhibitor Programs for Highly Corrosive Alkaline Waters ................... 1989
Greg Simpson and Richard Murtagh, Burnmah Technical Services, Inc.

TP89-01 .......... Reducing Copper Corrosion and Discharge via a Novel Inhibitor and Applications Program .......... 1989
Orin Hollander and Charles Shelton, Betz Industrial; Ronald Griffin, City of Tallahassee Electric Dept.
DRIFT

TP17-11 .......... New Laboratory of the Cooling Tower Research in the Czech Republic ................................................... 2017
Pavol Vitkovic, Czech Technical University in Prague

TP12-09 .......... Alternate Chemical Analysis for Drift Losses Measurements ................................................................. 2012

Vincent Ganzitti, Hamon

William C. Miller, Brentwood Industries, Inc.

TP11-11 .......... New Methods for Drift Eliminators Performance Evaluation .............................................................. 2011
Jan Cizek and Ludmila Novakova, CTU In Prague

Dudley Benton, McHale & Associates

TP09-16 .......... Meteorological Considerations in the Design of Plume Abated Cooling Towers .................................. 2009
Kenneth W. Hennon and David Wheeler, CleanAir Engineering

William C. Miller, Timothy E. Krell, Brentwood Industries, Inc.

TP05-12 .......... An Economical Solution to Cooling Tower Drift ................................................................................... 2005
G.C. Pederson, Frank Power and Arthur Braren, KIMRE, Inc.

TP03-08 .......... Cooling Tower Emissions Quantification Using The Cooling Technology Institute Test Code ............ 2003
ATC-140
Kenneth W. Hennon and David Wheeler, Power Generation Technologies

TP99-13 .......... A Non-Metallic Air Cooled Heat Exchanger for Cooling Tower Plume Reduction .............................. 1999
David M. Suptic, The Marley Cooling Tower Company

TP98-16 .......... The Relationship Between SP and HGBIK Drift Measurement Results - New Data Creates a Need.... 1998
for a Second Look

TP98-08 .......... Cooling Tower Plume Abatement at Chicago's O'Hare Airport ............................................................. 1998
Romesh K. Kansal, P.E., Dept of Aviation, City of Chicago

TP96-05 .......... Prediction of the Plume From a Cooling Tower ..................................................................................... 1996
Kazutaka Takata, Kiyoshi Nasu, and Hiroyuki Yoshikawa, Shinko Pantec Co., Ltd.

TP94-16 .......... Drift Eliminators and Fan System Performance ..................................................................................... 1994
Dr. Bryan R. Becker, P.E., Assoc. Professor of Mechanical Engr., Univ. of Missouri;
Larry F. Burdick, P.E. Project Engineer, The Marley Cooling Tower Company

TP94-01 .......... Drift Testing - Scale Up From Test Cell To Field Acceptance Test ....................................................... 1994
David Brill, Black & Veatch; Joe H. Lander, Florida Power Corp.

TP93-07 .......... Simultaneous Comparison of the CTI HBIK and the EPA Method 13A Isokinetic Drift Test ............ 1993
Procedures
Michael R. Whittemore, Brentwood Industries, Inc.; Thomas E. Weast, Midwest Research Institute

TP93-01 .......... Plume Abatement and Water Conservation With The Wet/Dry Cooling Tower ................................ 1993
Paul A. Lindahl, & Randall W. Jameson, The Marley Cooling Tower Company

TP92-10 .......... Reduction of Cooling Tower PM10 Emissions Due to Drift Eliminator Modifications at a .......... 1992
Chemical Refining Plant
Thomas E. Weast, P.E. and Nicholas M. Stich, Midwest Research Institute;
Gordon Israelson, P.E., Westinghouse Electric Corporation

TP90-12 .......... Comparison of Two Isokinetic Drift Measurement Methods ................................................................. 1990
Paul Lindahl and O.L. Kinney, The Marley Cooling Tower Company

TP87-08 .......... An Economical Solution to Cooling Tower Drift ................................................................................. 1987
George C. Pedersen, P.E., Kimre, Inc.; V. Keith Lamkin, P.E., Engineered Processes, Inc.;
Mike Seich, The Dow Chemical Company
TP86-01 Comprehensive Drift Measurements on a Circular Mechanical Draft Cooling Tower ........................................ 1986
Karl Wilber, Environmental Systems Corp; Ken Vercauteren, Arizona Public Service

DRY COOLING

Efficiency and Unit Operation
Trevor Hegg, Gordon Struder, Jennifer Hamilton, Chad Nagle & Pat Strine, Evapco Inc.

TP18-11 .......... Cost/Performance Tradeoffs Among Wet, Dry and Hybrid Cooling Systems ................................. 2018
John S. Maulbetsch, Maulbetsch Consulting and Michael N. Difilippo, Difilippo Consulting

TP16-27 .......... Use of Large Diameter Fans on Air Cooled Heat Exchangers ..................................................... 2016
Richard J. DesJardins, DesJardins Consulting and Kevin Kitz, U.S. Geothermal, Inc

Ryan Parker and Bruce R. White, University of California Davis

TP15-26 .......... Hybrid Cooling Towers – Water Savings Calculations and Measurements .................................... 2015
Jean-Pierre Libert, Evaptech, Inc.

TP15-07 .......... Wind Barrier Effectiveness on Aircooled Condensers ............................................................... 2015
John S Maulbetsch, Maulbetsch Consulting

TP15-01 .......... Numerical Study on Erosion at the Tube Entry Region of an Air Cooled Condenser ......................... 2015
Donghyouck Han, Department of Mechanical Engineering, Korea University

TP14-19 .......... Advanced Cooling Solutions for Water Conservation ........................................................... 2014
Jean-Pierre Libert and Tom Bugler, Evapco, Inc.

TP13-05 .......... Air Cooled Steam Condenser Test Laboratory ........................................................................ 2013
Mark Huber and Jean-Pierre Libert, Evapco, Inc.

TP06-09 .......... Enhancement of Air Cooled Condenser Operation in Power Plants ............................................. 2006
Ram Chandran, Holtec International

TP06-07 .......... Evaporative Pre-Coolers for Air Cooled Heat Exchangers ......................................................... 2006
Matt Smith, L.S. Enterprises; Rich Aull, Brentwood Industries; Robert Giannaruti, Hudson Products Corporation

TP05-06 .......... Pressure Recovery Effects in Air-Cooled Installations ................................................................. 2005
Henk Van Der Spek, Howden Cooling Fans

TP04-13 .......... Performance Improvement to Existing Air-Cooled Heat Exchangers ............................................. 2004
Robert Giannaruti, Hudson Products Corporation

TP03-01 .......... Why Every Air Cooled Steam Condenser Needs A Cooling Tower ........................................... 2003
Luc DeBacker, PhD and William M. Wurtz, Hamon Dry Cooling

TP98-15 .......... The New Wet/Dry Cooling Tower Without Finned Tube Dry Section (NWD) ................................ 1998
Toshio Miura and Osamu Gotoh, Ishikawajima Plant Engineering & Construction Co., Ltd.

ENERGY EVALUATION

In Fresh Air Pre-Cooling Applications in Hot and Humid Climatic Conditions
Moe Salem, Air2O Cooling LLC; Ayman Youssef, Saudi Aramco

Thomas P. Carter, P.E. and James W. Furlong, P.E., Johnson Controls, Inc.

TP10-16 .......... Water/Energy Nexus, Comparing the Relative Value of Water Versus Energy Resources ................. 2010
Jennifer Hamilton, Tom Bugler and John Lane, Evapco, Inc.

TP10-15 .......... Enhanced Cooling Tower for Colder Water, Energy Savings and Reduced Evaporation ............. 2010
Jarrell Wenger, Engineering Economics, Inc.

TP08-02 .......... Evaluating Your Cooling Tower ................................................................................................. 2008
Richard DesJardins, DesJardins Consulting

TP07-22 .......... Variable Frequency Drives: Operation and Application with Evaporative .................................... 2007
Benjamin Cohen, Baltimore Aircoil Company

TP01-07 .......... Cooling Towers and VFD's ....................................................................................................... 2001
Rick Foree, Danfoss Drives
<table>
<thead>
<tr>
<th>TP</th>
<th>Title</th>
<th>Year</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Developing the Worth of Colder Water in a Steam Turbine Generating Station</td>
<td>2000</td>
<td>Thomas H. Hamilton, P.E., Consulting Engineer</td>
</tr>
<tr>
<td>03</td>
<td>Variable Speed Fan Drives for Cooling Towers</td>
<td>1996</td>
<td>William F. Immell, The Marley Cooling Tower Company</td>
</tr>
<tr>
<td>10</td>
<td>Strategies For Improved Cooling Tower Economy</td>
<td>1991</td>
<td>Steve Adams, Ecodyne Cooling Tower Services; John Stevens, Film Cooling Towers</td>
</tr>
<tr>
<td>18</td>
<td>Cybersecurity and Cooling Technology: What You Need to Know</td>
<td>2019</td>
<td>Aldo Leiva &amp; Adam Green, Baker, Donelson, Bearman, Caldwell &amp; Berkowitz</td>
</tr>
<tr>
<td>15</td>
<td>Revision of the Best Available Technique (BREF) for Industrial Cooling Systems</td>
<td>2015</td>
<td>Martin Cordelle, Electricite De France (EDF)</td>
</tr>
<tr>
<td>06</td>
<td>Sustainability in Cooling System Operation</td>
<td>2014</td>
<td>Roy Holliday, GE Water &amp; Process Technologies</td>
</tr>
<tr>
<td>26</td>
<td>How “Green” is the Cooling Systems</td>
<td>2012</td>
<td>Roy Holliday, Gary E. Geiger, Peter Geuns, GE Water &amp; Process Technologies</td>
</tr>
<tr>
<td>13</td>
<td>Design Considerations for Cooling Tower Systems with Critical Demands</td>
<td>2010</td>
<td>Frank Bowman and Mike Bickerstaff, Composite Cooling Solutions, L.P.</td>
</tr>
<tr>
<td>09</td>
<td>Plume Abatement – The Next Generation</td>
<td>2010</td>
<td>Paul Lindahl and Ken Mortensen, SPX Cooling Technologies</td>
</tr>
<tr>
<td>20</td>
<td>Hurricane and Crawfish - A Unique Clarification Problem</td>
<td>2009</td>
<td>Mike Dorsey, DuPont</td>
</tr>
<tr>
<td>05</td>
<td>Atmospheric Emissions from Evaporative Cooling Towers</td>
<td>2005</td>
<td>Wayne Micheletti, Wayne C. Micheletti, Inc.</td>
</tr>
<tr>
<td>06</td>
<td>Molybdate Use in Cooling Towers: Impact of the New EPA Sludge Rule and Alternative Approaches</td>
<td>1994</td>
<td>Brian Lee and Brian Vaska, Drew Industrial Division</td>
</tr>
<tr>
<td>02</td>
<td>The Latest Worldwide Technology in Environmentally Designed Cooling Towers</td>
<td>1992</td>
<td>Gary R. Mirsky, Jean-Pierre Libert, and Kathy Bryant, Hamon Cooling Towers; Franz Boulton, Hamon Sobelco, S.A.</td>
</tr>
<tr>
<td>02</td>
<td>The 3 R’s of Sustainable Water Cooled Systems Operation</td>
<td>2011</td>
<td>Allen Wilson, Fluid Treatment Solutions, Inc.</td>
</tr>
<tr>
<td>20</td>
<td>Sea Water Cooling System Design</td>
<td>2007</td>
<td>Naresh Shah, Ph.D., Worley Parsons</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL IMPORTANCE**

<table>
<thead>
<tr>
<th>TP</th>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>The 3 R’s of Sustainable Water Cooled Systems Operation</td>
<td>2011</td>
</tr>
<tr>
<td>20</td>
<td>Sea Water Cooling System Design</td>
<td>2007</td>
</tr>
</tbody>
</table>

**FANS & ASSOCIATED EQUIPMENT**

<table>
<thead>
<tr>
<th>TP</th>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Using Direct Drive Technology for Improved Reliability and Efficiency in Wet Cooling Towers</td>
<td>2017</td>
</tr>
<tr>
<td>23</td>
<td>Design Considerations for Axial Flow Fans</td>
<td>2017</td>
</tr>
<tr>
<td>13</td>
<td>FRP Cooling Tower Fan Blades – Inspection, Repair and Maintenance</td>
<td>2017</td>
</tr>
</tbody>
</table>
Craig Burris, Amarillo Gear Company

TP97-12 .......... Maximizing Fan Performance ................................................................................................................ 1997
Robert C. Monroe, Hudson Products Corporation

Used on Cooling Towers
Larry F. Burdick, The Marley Cooling Tower Company

TP93-03 .......... Reduction of Noise Generation by Cooling Fans ................................................................................... 1993
Ir. Henk F. van der Spek, Ventilatoren Sirocco Howden B.V.

TP88-14 .......... Hydraulic Cooling Tower Driver the Innovation.................................................................................... 1988
John A. Dickerson, Hem, Inc.

Charles Chittom, Chittom International

TP97-10 .......... Mechanical Damage Caused by EMF Generated From Fast Bus Reclosure .......................................... 1997
James T. Heard, Addax, Inc.

TP91-11 .......... Composite Couplings for Cooling Towers ............................................................................................. 1991
Dennis Van Laarhoven, Consultant

TP13-26 .......... Accurately Determining Drive Shaft Natural Frequencies ..................................................................... 2013
Duane Byerly, Rexnord Corporation

TP05-04 .......... Natural Frequency Characteristics of Drive Shafts ................................................................................ 2005
Robert Poling, Amarillo Gear Co.

TP97-10 .......... Mechanical Damage Caused by EMF Generated From Fast Bus Reclosure .......................................... 1997
James T. Heard, Addax, Inc.

TP91-11 .......... Composite Couplings for Cooling Towers ............................................................................................. 1991
Dennis Van Laarhoven, Consultant

Encountered During On-Site Testing
Kevin Boudreaux and Aaron Haines, Nalco Company

TP12-25 .......... Wind Effects on the Structural Integrity of Large Diameter Axial Fans in Air Cooled Condensers ...... 2012
Paul J.M. Nelissen, Howden Cooling Fans

TP19-15 .......... Deformation Behavior of Cooling Tower Fills ....................................................................................... 2019
Nina Woicke, Enexio Water Technologies GmbH

TP18-29 .......... Fundamentals of Compression Testing Cooling Tower Fill Packs for Load Capacity ........................... 2018
Joe Evans and Bob Petterson, SPX Cooling Technologies
TP93-06 .......... Research of Fouling Film Fill

Michel Monjoie, Hamon-Sobelco, S.A., Russell Noble, Southern Company Services;
Gary R. Mirsky, Hamon Cooling Tower

TP92-09 .......... Cleaning and Maintenance of Film Fill at Florida Power Corporation

David Pearson and Jim Witherow, Florida Power Corporation; Barbara McClung, Calgon Corporation

TP92-06 .......... Cooling Tower Film Fill Water Quality/Operations Guidelines For Successful Utilization


TP91-03 .......... Evaluation of Plastic Fill For High Temperature Service

Steven C. Blue, Paducah Gaseous Diffusion Plant; Martin Marietta, Energy Systems, Inc.

TP90-11 .......... Film Fill Recent Research and Application Data

Gary R. Mirsky, Hamon Cooling Towers and Michel Monjoie, Hamon-Sobelco, S.A.

TP90-07 .......... Determination of the Turbulent Lewis Number From Experimental Data for Wet Cooling Tower Fill

Dudley J. Benton, Tennessee Valley Authority

TP88-09 .......... The Usage of Fiber Cement as a Film Type Fill Media in Evaporative Cooling Towers

John W. Cooper, Jr., Heinz Treuberg and Dr. Heiko Klauss, Toschi USA, Inc.

TP88-05 .......... Comparative Evaluation of Counterflow Cooling Tower Fills

Robert D. Fulkerson, Cooling Tower Technology

FIRE PROTECTION

TP14-21 .......... Cooling Tower Fire Protection Materials Evaluation in a Fossil Plant

Matt Wangerin and Emery Lange, Ashland Water Technologies

TP13-01 .......... Fire Protection in FRP Cooling Towers

James L. Baker, Composite Cooling Solutions, LP

TP10-21 .......... Fire Resistant Wall Systems for Water Cooling Tower Systems

Mike Bickerstaff, Composite Cooling Solutions, L.P.

FOULING

TP14-24 .......... Pairing Two Proprietary Technologies Key to Power Plant Efficiency Increases

Darcy Dauterive and Jeff Kisty, Ashland Water Technologies

TP07-17 .......... Anionic Compatible Quat?

Philip Sweeney and Doug Murray, Lonza, Inc.

TP02-06 .......... Designed To Fail (Heat Exchanger Designs That Lead To Failure)

T.J. Tvedt, Puckorius & Associates, Inc

TP02-04 .......... Anatomy of Enhanced Heat Exchanger Tubing

Thomas M. Laronge, Thomas M. Laronge, Inc; Mark A. Lisin, Lisin Metallurgical Services

TP01-15 .......... High Efficiency 0.5 Micron Sand Filtration

Bryan Hayward, Chemworks Filtration Inc.

TP01-08 .......... An Innovative Biodetergent for Fouling Control

F. Philip Yu, Nalco Chemical Company; Yu-May Lu, Taiwan Nalco Chemical Company, Ltd.

TP98-14 .......... Film Fill Fouling in Counterflow Cooling Towers: Experimental & Field


TP96-09 .......... Optical Monitor for Improved Fouling Control in Cooling Systems

R.L. Wetegrove, R.H. Banks and M.R. Hermiller, Nalco Chemical Company

TP94-14 .......... Fouling of Film Forming Cooling Tower Fills - A Mechanistic Approach

J.S. Gill, M.A. Yorke, R.M. Donlan and D.L. Gibbon, Calgon Corporation

TP94-05 .......... Film Fill Fouling in Counterflow Cooling Towers: Mechanism and Design

Kenneth P. Mortensen and Stephen N. Conley, The Marley Cooling Tower Company

TP88-15 .......... New Application Technology For Controlling Algal Fouling in Recirculating Cooling Systems

Water Systems

A.L. Smith, R.A. Muia & M.O. Clancy, Calgon Corporation

HISTORY OF COOLING TOWERS

TP91-01 .......... Evolution of the Water Cooling Tower

James L. Willa, Willa, Inc.
TP71-04 .......... The Cooling Tower Institute Origin - Evolution - Future (TP-35A) ...................................................... 1971
C.D. Carlson, The Dow Chemical Company

HVAC APPLICATIONS
TP18-15 .......... Closing the Loop – Which Method is Best for Your System ................................................................. 2018
Frank Morrison and Andrew Rushworth, Baltimore Aircoil Company

TP05-01 .......... Optimization of Water Cooled Chiller-Cooling Tower Combinations................................................. 2005
James W. Furlong and Frank T. Morrison, Baltimore Aircoil Company

TP09-13 .......... The Determination of the Effectiveness of the Coolpuck in the Mitigation of Biofilms in HVAC-Utilities .............................................................................................................. 2009
Shawn H. Glinter and Jan De Rijk, Aquafinesse Industrial Water

IRON ROT ATTACK
TP95-14 .......... Iron Rot - The "New" Nemesis, .............................................................................................................. 1995
James L. Willa, Willa, Inc.

LEGIONELLA
TP19-06 .......... Impact of Legionella Regulations on Water Treatment Programs and Control - An Observational Prospective Survey .................. 2019
Patrick Racine, P. Eng, CEM, Klenzoid Canada – A Dubois Company

TP19-12 .......... Control of Ozone Based on Water Temperature for Reduction of Legionella in Cooling Towers 2019
Dave Gilbert, EMO3 Inc.

TP18-22 .......... Strategies for Reducing Uncertainty in Legionella Analysis ................................................................. 2018
Brian Swalla, IDEXX Laboratories, Inc.


TP17-08 .......... Design Cooling Tower System to Reduce the Risks of Transmitting Legionnaires’ Disease Mario Bellavance, Blue Heron Cooling Tower Inc.

Janet E. Stout, Ph.D., Special Pathogens Laboratory and University of Pittsburgh

TP15-12 .......... Can Total Bacteria Measurement Be Used to Predict Legionella Presence? 2015
Janet E. Stout, Ph.D and Scott Duda, Special Pathogens Laboratory

TP15-08 .......... Upgrading Existing Cooling Tower’s Maintenance Programs to Prevent Legionella Transmission Mario Bellavance, Blue Heron Cooling Tower Inc.

TP12-14 .......... Biocide Treatments for Controlling Amoeba Amplified Legionella in Cooling Towers ................. 2012
Jana Rajan, Paul Schook, Dow Microbial Control

TP12-08 .......... An Update on ASHRAE Standard 188P; Prevention of Legionellosis Associated With Building Systems William F. McCoy, Phigenics; Paul Lindahl, Jr., SPX Cooling Technologies

TP09-25 .......... A Systematic Review of Biocides Used in Cooling Towers for the Prevention and Control of Legionella spp. Contamination, Kelly Rangel, University of Texas

LEGIONNAIRES’ DISEASE
TP18-26 .......... Legionnaires’ Disease Risk Management: First Requirement for Cooling Tower Systems Mario Bellavance, Blue Heron Cooling Tower Inc.

TP18-20 .......... What is the Best Metallurgy for My Package Evaporative Cooling Device ............................................. 2018
Robert J. Cunningham, International Water Consultants, Inc.; Zan Liu, Johnson Controls

TP18-18 .......... Legionella Litigation: How Cases are Won and Lost the Microbial Level ........................................... 2018
Janet Stout, Ph.D., Special Pathogens Laboratory

TP18-16 .......... A Landmark Legionella Lawsuit: A Case Study Highlighting the Legal, Mechanical and Microbiological Factors Adam Green and Amy Champagne, Baker, Donelson, Bearman, Caldwell & Berkowitz, PC; Janet Stout, Ph.D., Special Pathogens Laboratory; Robert Cunningham, International Water Consultants, Inc.

TP09-05 .......... Chemical Free Bacteria & Legionella Control: A Case Study Using Hydrodynamic Cavitation ........... 2009
Phil Vella, Ph.D., VRTX Technologies
TP08-11 .......... A New Method to Measure Viable Legionella and Total Heterotrophic Aerobic Bacteria.................2008
William F. McCoy, Phigenics LLC

TP03-09 .......... One Company's Legionella Standard.................................................................2003
J.W. Smith, Shell Global Solutions; Jerry Ransdell and Jim McLean, Shell Chemical Company

TP02-13 .......... The Control of Bacteria On Surfaces: Effectiveness of Bromine-Based Biocides Towards Microbial...2002
Biofilms and Biofilm-Associated Legionella Pneumophila
C.J. Nalepa, J.N. Howarth and E.W. Liimatta, Albemarle Corporation; H. Ceri and C.A. Stremick,
The Biofilm Research Group, University of Calgary; J.E. Stout and Y. E. Lin, VA Medical Center, Pittsburgh, PA

TP87-18 .......... Microbicidal Efficacy of BNPD Against Legionella Pneumophila......................................................1987
Michael Coghlin and Gary Caplan, Bird Archer, Inc.

TP82-03 .......... Concentration, Serotypic, Profiles and Infectivity of Legionnaires’ Disease Bacteria Populations.......1982
in Cooling Towers (TP-249A)
R.L. Tyndall, Zoology Dept., University of Tennessee

LIGHTNING PROTECTION

TP05-09 .......... Lightning Protection for Cooling Towers...........................................................................................2005
James F. Blake, Jr., American Lightning Protection Systems, Inc.;
Bill Howard, American Cooling Tower, Inc.

MATERIALS

James L. Baker and Jamie Wilde, Galebreaker Industrial Limited

TP18-21 .......... Visual Inspection by Drone...................................................................................................................2018
Anne Vacque, EDF

TP18-13 .......... From Reactive to Proactive: A Circulating Water Pipeline System Owner’s Change in Philosophy.....2018
Mark Larsen and Anna Pridmore, Structural Technologies

TP18-07 .......... Managing Pipe Stresses and End Loads Utilizing Rubber Expansion Joints .....................................2018
Lloyd B. Aanonsen, P.E., General Rubber Corporation

TP17-27 .......... Non-Destructive Evaluation of Structural Elements of Cooling Towers........................................2017
Narendra Gosain, Ph.D., Ray Drexler, P.E. and Mark Williams, Ph.D., Walter P Moore And Assoc.

Andreas Streng, PhD, CTS Cooling Tower Solutions GmbH

TP14-23 .......... Structural Modification of a Power Plant’s River Water Intake to Minimize Ice Blockage................2014
Frank Michell, American Electric Power; Marcela Politano and Yushi Wang, IIHR-Hydroscience &
Engineering, University of Iowa; Jeff Stallings, Electric Power Research Institute

TP14-03 .......... Composite Materials Selection for Structures in Seismic Regions....................................................2014
Andrew Green and Andrew Beyle, Lamar University, College of Engineering

Ken Mortensen, and Robert W. Petterson, SPX Cooling Technologies

TP11-19 .......... AEP’s Experience With Polyester FRP Structure Cooling Towers...................................................2011
Bob Cashner, American Electric Power

TP10-24 .......... An Investigation of Pin Bearing Strength on Composite Materials.................................................2010
Dustin L. Troutman and Jeremy D. Mostoller, Creative Pultrusions, Inc.

TP10-07 .......... New Cooling Tower Nozzle Features and Performance.................................................................2010
Andreas Streng, Ph.D., CTS Cooling Tower Solutions GmbH

TP10-04 .......... Simultaneous Removal of Waterborne Bacteria and Total Suspended Solids Using an Antimicrobial .2010
Media in a Crossflow Filter System
James W. Stephens, Sontec, Inc.; Mark B. Miller, A.S. Filtration, LLC

TP05-03 .......... The Impact of Veil Thickness and Coating Tower FRP Composites....................................................2005
Clint Smith, Strongwell

TP03-18 .......... Internal Pipe Seals for Repair of Cooling Water Piping.................................................................2003
John A. Charest, Universal Utility Services

TP01-14 .......... Safe Erection Procedure for Fiberglass Cooling Towers.................................................................2001
Jacob Moneta and Brian O'Leary, Hamon Cooling Towers
TP99-02 ........... Diagonal Bracing Connections in Fiberglass Cooling Tower ................................................................. 1999
Jamie Bland, Ceramic Cooling Tower Company

TP98-07 ........... Implementing Regulations Under The Fastener Quality Act (FQA) ...................................................... 1998
Rodrick Williams, All-Pro Fastener, Inc.

TP96-11 ........... Strength-Degradation Based Life Expectancy of Wood Cooling Towers .............................................. 1996
Joszef Bodig and Arun K. Pandey, Engineering Data Management, Inc.;
Jeff Hofacre, American Electric Power Serv. Corp; Mark Holmberg, Northern States Power Company;
Robert Martirosian, Potomac Electric Power Company

TP94-02 ........... Development of FRP Structural Frame For Industrial Cooling Tower ................................................... 1994
Kanji Kato and Kesaaki Mochizuki, Ishikawajima Plant Engineering & Construction Co., LTD.
Akira Hamamoto, Ishikawajima-Harima Heavy Ind. Co., LTD.;
Hideto Yabumoto, Nippon Shokubai Co., LTD.

TP95-02 ........... Partial Collapse and Rebuild of the Conesville Unit 4 Mechanical Draft Cooling Tower ..................... 1995
Frank L. Michell and Walt Demjanenko, American Electric Power Service Corporation

TP87-03 ........... Design Consideration For the Installation of RTRP Piping for Cooling Tower Hot Water ................... 1987
Distribution Systems
Michael F. Luckenbill, Fibercast Company

TP86-05 ........... The Selection and Testing of Plastics Tower Fill ................................................................................... 1986
Steven C. Blue, Martin Marietta Energy Systems, Inc.

MECHANICAL DRAFT TOWERS

TP18-17 ........... Changes Through the Years, Great River Energy Coal Creek Station ................................................... 2018
Pat Schwartz, Great River Energy; John Ahern, EvapTech, Inc.; Chris Ahern,
Kansas State University

TP15-13 ........... Outside/Inside Approach to Evaluating Concrete Elements in Natural & Mechanical Draft ............. 2015
Cooling Towers
Thomas Kline, Structural Technologies

TP09-08 ........... Cooling Tower Basin Evaluation and Repair, ..................................................................................... 2009
Tom Kline, Structural Preservation Systems

TP03-17 ........... Feasibility of Seawater Cooling Towers for Large-Scale Petrochemical Development ..................... 2003
Dr. Shahriar Eftekharzadeh and Dr. Muin M. Baasiri, Bechtel Corp;
Paul A. Lindahl, Marley Cooling Technologies

TP95-02 ........... Partial Collapse and Rebuild of the Conesville Unit 4 Mechanical Draft Cooling Tower ..................... 1995
Frank L. Michell and Walt Demjanenko, American Electric Power Service Corporation

MISCELLANEOUS

TP16-24 ........... Applying Ultrasound Prevents Scale Formation in Heat Exchangers ................................................... 2016
K. Casey Youn, Weeco International Corp and Simon Kim, Morko America Inc

TP11-20 ........... Traveling Water Screen Options – Innovations in the Industry ............................................................. 2011
Kristen Bridge, Superior Water Screen Company

TP11-09 ........... Seismic Qualification – Fact and Fiction ............................................................................................. 2011
Robert Simmons, Petra Seismic Design

TP10-03 ........... The Importance of an ISO 9001 Component Supplier for Cooling Tower Companies ........................ 2010
Clint Smith, Strongwell

TP00-02 ........... Experiment Investigation of an Evaporative Cooling Tower ................................................................. 2000
Kuo-Hsiang Chien, Energy & Resources Laboratories Industrial Technology Research Institute

TP96-16 ........... Helper Cooling Towers at the Bang Pakong Power Station ................................................................. 1996
David J. Brill, David Copeland and Thomas E. Kalin, Black & Veatch;
Worawit Khamkanist, Electricity Generating Authority of Thailand

TP90-05 ........... Estimating Operational Service Time of Heat Exchangers ................................................................. 1990
J. Fred Wilkes, Consultant; Flavio Bianchi and Mauro C. Ramirez, Aquatec Quimica, S.A.

NATURAL DRAFT TOWERS

TP16-13 ........... CFD Modeling of Wind Velocity and Direction of Exit Air in Performance of Cooling Tower .............. 2016
Ram Kumar Jha, Performance Analyst Pvt Ltd and Suresh Sarma, SS Cooling Tower Consultant

TP13-15 ........... Experimental Characterization of Wind Effect on Natural Draft Cooling Towers .............................. 2013
Christophe Duquennoy, EDF
TP13-03 Evaluation of the Effect of Damages of Drift Eliminators on Their Efficiency .................................2013
Helene Troncin, EDF

TP12-01 Natural Draft Cooling Tower Ring Replacement: Unique Construction Challenges and Solutions.....2012
Gregory S. Mailen, Darin Baugher, EvapTech, Inc.; Rory C. McCormick, PPL Generation

TP11-15 Breakthrough Cooling Tower Shell for FGD Discharge Piping .....................................................2011
Vladislav Grebik, REKO PRAH, A.s.

TP09-23 Structural Modeling and Analysis of Natural-Draft Cooling Towers .................................................2009
Leandro Etcheverry and Prasad Samarajiva, Walter P. Moore Associates

TP98-10 On-Line Performance Monitoring of the Natural Draft Cooling Tower at Cardinal Plant ..............1998
Frank L. Michell, Mathew J. Miller, American Electric Power

TP98-03 Upgrading and Repacking Two 460 MW Natural Draft Cooling Towers ..............................................1998
Peter Bosman, Knight Piesold Energy LLC; Dave Stables, Knight Piesold (Pty) Ltd

TP96-08 Oriented Spray-Assisted Cooling Tower ...........................................................................................1996
Charles F. Bowman, Chuck Bowman Assc., Inc.; Dudley J. Benton, Ph.D., Environmental Consulting Engineers, Inc.

NON-OXIDIZING BIOCIDES

TP17-04 Biofouling Control in Industrial Water Systems .................................................................2017
Brian Corbin, The Dow Chemical Company

TP11-16 New Biocide Options for Biofouling Control ..............................................................................2011
Jeffrey Kramer, BWA Water Additives

TP95-03 The Devil You Know Versus The Devil You Don't - An Evaluation of Chlorine Versus a............1995
Non-Oxidizing Biocide for Zebra Mussel Control
Patrick H. Gill and Alan L. Smith, Calgon Corporation

TP92-13 Biocide Efficacy vs. Acid Producing and Iron Oxidizing Bacteria ................................................1992
Lawrence A. Grab, Union Carbide Chemical and Plastics; Leonard A. Rossmoore, Bioxon Laboratories, Inc.

TP90-14 A New Bromine Oxidizing/Nonoxidizing Antimicrobial Combination Product for Industrial Water ...1990
Treatment
C.R. Ascolese, Betz Industrial

TP90-06 Tris (Hydroxymethyl) Nitromethane: An Evaluation of a Versatile Cooling Water Treatment........1990
Microbiocide
Kenneth Soeder, Jamestown Chemical Company; Dr. Frederick J. Passman, Angus Chemical Co.

OXIDIZING BIOCIDES

TP12-24 Novel, Mild Oxidant Improves Cooling Water Treatment Performance Relative To Traditional......2012
Oxidizers
Chris Baron, Ashland Inc.

TP00-09 First Field Trials of Single-Feed, Liquid Bromine Biocide for Cooling Towers ................................2000
Jon Howarth and Chris Nalepa, Albemarle Corporation

TP89-14 The Use of Chlorine Dioxide to Control Microbiological Growth in an Ethylene Glycol ...............1989
Contaminated Cooling Tower...A Case History
Raj Dhillon and Charles Edward, Hoechst Celanese

OZONE

TP05-20 Reducing Cooling Tower Costs With Ozone Technology ...............................................................2005
Andrew Conner, Cleanwater Ozone Systems, Inc

TP95-12 Guidelines and Examples of Ozone in Cooling Tower Applications ..............................................1995
Lee C. Ditzler, TriOx

TP94-07 Design Consideration for Ozone Water Treatment Systems in Cooling Towers ............................1994
Carl Nebel, PCI Ozone & Control Systems, Inc.

TP92-07 Biocidal Aspects of Ozone for Cooling Water Treatment - Probable Impacts of Bromide Ion ........1992
Rip G. Rice, Ph.D., Rice Int'l Consulting Enterprises; J. Fred Wilkes, Consultant

PLUME ABATEMENT

TP17-29 Cooling Tower Plume .....................................................................................................................2017
Jan Cizek, Czech Technical University in Prague
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet-Dry Technology to Abate the Visible Plume From an Existing Cooling Tower</td>
<td>Mark Scholl, Alliant Energy; Jean-Pierre Libert, Evapco Inc.</td>
<td>2017</td>
</tr>
<tr>
<td>Cooling Tower Plume</td>
<td>Jean-Pierre Libert, Evaptech, Inc.</td>
<td>2011</td>
</tr>
</tbody>
</table>

**PSYCHROMETRICS**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychrometry Insights</td>
<td>Magose Abraham Eju</td>
<td>2014</td>
</tr>
</tbody>
</table>

**REPAIR AND CONSTRUCTION**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilizing New Technology to Provide Comprehensive Asset Management for Cooling Tower Maintenance</td>
<td>Glenn Schaefr &amp; Eric Koehler, Structural Technologies</td>
<td>2019</td>
</tr>
<tr>
<td>Bolted Structural Connections in Fiberglass Materials</td>
<td>Mark Martich, Cyrco, Inc.</td>
<td>2019</td>
</tr>
<tr>
<td>A Case for Structural Health Monitoring for Cooling Towers</td>
<td>Mark E. Williams, Ph.D., P,E., Narendra Gosain, Ph.D., P.E., Matthew Pavelchak, P.E., Walter P Moore and Associates</td>
<td>2018</td>
</tr>
<tr>
<td>Project Neptune: International Collaboration for High Wind Load Cooling Tower Design Solutions</td>
<td>Paul Cerullo, Energy Development Corporation and Andjelko Piskuric, SPX Cooling Technologies</td>
<td>2017</td>
</tr>
<tr>
<td>Hope Creek Circulating 144-inch Water Pipeline Carbon Fiber Upgrade</td>
<td>Anna Pridmore, Ph.D., Structural Technologies, LLC</td>
<td>2016</td>
</tr>
<tr>
<td>AEP’s Experience with Failure Modes in FRP Cooling Towers</td>
<td>Bob Cashner, American Electric Power; Hota Gangarao, West Virginia University</td>
<td>2014</td>
</tr>
<tr>
<td>Expedited Field Erected Cooling Tower Replacement/upgrade with Limited Site Access</td>
<td>And Available Tow Al Feltzin, Linde Gas; Philip Poll, OBR Cooling Towers, Inc and Casey Yurkovitch, GEA Heat Exchangers</td>
<td>2013</td>
</tr>
<tr>
<td>How Stripping Biofilm From the Cooling Water Loop Impacts Power Plant Production Output</td>
<td>Cem Candir and Tom Muijlenberg, MIOX Corporation</td>
<td>2013</td>
</tr>
<tr>
<td>Understanding Mast Climber Systems</td>
<td>Kevin O’Shea, Mastclimbers, LLC</td>
<td>2012</td>
</tr>
<tr>
<td>Replacement of the Concrete Cooling Tower by Steel Structure Cooling Tower During The Operation</td>
<td>Martin Kubicek, FANS, A.s.; Mohan Krishna Myneni, FANS Asia Pvt Ltd</td>
<td>2012</td>
</tr>
<tr>
<td>Hyperbolic Repack on the Run</td>
<td>James Cuchens and Chris Lazenby, Southern Company Services, Inc and James L. Baker, Composite Cooling Solutions, LLP</td>
<td>2011</td>
</tr>
<tr>
<td>Natural Draft Hyperbolic Cooling Towers Concrete Rehabilitation &amp; Cathodic Protection</td>
<td>Nick Nowell and Bill Blennerhassett, Structural Preservation Systems</td>
<td>2011</td>
</tr>
<tr>
<td>Structural Integrity of Hyperbolic Cooling Towers in Seismic Zones During Concrete Veil Repair</td>
<td>Narendra Gosain and Farouk Mahama, Walter P Moore And Associates, Inc.</td>
<td>2011</td>
</tr>
<tr>
<td>Cooling Tower Basin Leakage Assessment &amp; Mitigation</td>
<td>Thomas R. Kline, Structural Group, Inc.</td>
<td>2010</td>
</tr>
</tbody>
</table>
TESTING

TP18-23 ........... Comparative Evaluation of Pitot Tube Designs for Water Flow Measurement Devices ....................... 2018
Kenneth W. Hennon, P.E., and David E. Wheeler, P.E., CleanAir Engineering

TP17-19 ........... Should EDF Switch EN 14705 Long Term Performance Tests to ATC-105 Short Term .................. 2017
Performance Test
Christophe Duquennoy, EDF

TP15-23 ........... Wet Bulb Measurement With Psychrometers and Hygrometers Field Test Comparison 2015
Marion Floret, Electricite De France (EDF) DTG; Jared Medlen, McHale & Associates, Inc.

TP09-20 ........... Affecting Test Uncertainty .............................................................................................................. 2009
Benjamin Goddard and Eugene Culver, McHale & Associates

TP09-12 ........... Reynolds Number Correction for Pitot Measurements ............................................................... 2009
Dudley Benton, McHale & Associates

TP08-20 ........... Seismic Qualification of Cooling Towers by Shake-Table Testing ................................................ 2008
Panos G. Papavizas, Baltimore Aircoil Company

TP04-14 ........... Selected Diagnostics to complement a Cooling Tower Performance Test or Status Test ................... 2004
Charles W.H. Foster, Diagnostic Cooling Solutions Inc.

TP00-07 ........... Demonstrating the Effectiveness of Field Testing Evaporative Vapor Condensers ....................... 2000
Glenn D. Comisac, Baltimore Aircoil Company

TP19-29 ........... Profiling, Diagnostics and Evaluation of Cooling Towers ............................................................... 2019
Jure Smrekar, JS Energy Ltd & Marko Hoceval, University of Ljubljana

TP19-11 ........... Cold Water Data Collection Method for an Individual Cell of a Multicell Tower .............................. 2019
Navneet Kishor Dubey & Arushi Shukla, Brentwood Industries India Pvt Ltd

TP19-05 ........... A Fouling and Thermal Performance Test Rig for Cooling Tower Fill Selection ............................ 2019
Johannes P. Kotze, TF Design & Ockert Augustyn, Eskom Soc Ltd

TP19-01 ........... Lessons Learned During a Lifetime of Cooling Tower Operations ................................................... 2019
David W. Anton, Ascend Performance Materials

TP18-19 ........... Rental Cooling Towers and CTI Certification ................................................................................... 2018
Billy Childers and Atul Swamy, Aggreko Cooling Tower Services

TP18-09 ........... Thermal Performance Assessment Through Cooling Tower Modeling: Refinery Case ............... 2018
Salvador Avila Filho, Jean Marcel Prazeres Silva, Ivan Costa Passos and Jade Spinoal Avila
Federal University of Bahia

TP18-02 ........... Efficient Water Use to Boost the Air-Cooled Condenser Performance ............................................ 2018
Luc De Backer, Ph.D., Enexio

TP17-03 ........... Distribution – Distribution – Distribution .......................................................................................... 2017
James L. Willa, Willa, Inc.

TP16-05 ........... Safety in Cooling Tower Maintenance .............................................................................................. 2016
Magose Abraham Eju, Energy Business Total Solutions, Ltd

Partha Nag, AGM (Cenpep), NTPC Ltd

TP14-13 ........... Preventive Maintenance for Cooling Towers Utilizing Gamma Scanning Technology .................... 2014
Paul Chila, Quantum Technical Services, LLC

TP13-25 ........... Mathematical and Experimental Modeling of a Rain Zone .............................................................. 2013
Lukas Dvorak and Pavol Vitkovic, Czech Technical University in Prague

TP13-19 ........... Experimental Methods for Cooling Tower Research ...................................................................... 2013
Jan Cizek and Michal Stepnicka, Czech Technical University in Prague

TP13-13 ........... Research on Reducing Recirculation Influence of Warm, Saturated Air Discharged from ............. 2013
Cooling Towers
Liu Zhenyan, Jiangsu Seagull Cooling Tower Co., Ltd

TP13-11 ........... Impact of Cooling Water Temperature on Plant Performance ......................................................... 2013
Magose Abraham Eju, Nigeria Liquefied Natural Gas (NLNG)

TP13-04 ........... Good Practices in Cooling Towers: Comparison Between Industrial Audits ............................... 2013
Salvador Avila Filho and Zara Marques Rodrigues De Jesus, Universidade Federal Da Bahia

THERMAL PERFORMANCE

TP19-29 ........... Profiling, Diagnostics and Evaluation of Cooling Towers ............................................................... 2019
Jure Smrekar, JS Energy Ltd & Marko Hoceval, University of Ljubljana

TP19-11 ........... Cold Water Data Collection Method for an Individual Cell of a Multicell Tower .............................. 2019
Navneet Kishor Dubey & Arushi Shukla, Brentwood Industries India Pvt Ltd

TP19-05 ........... A Fouling and Thermal Performance Test Rig for Cooling Tower Fill Selection ............................ 2019
Johannes P. Kotze, TF Design & Ockert Augustyn, Eskom Soc Ltd

TP19-01 ........... Lessons Learned During a Lifetime of Cooling Tower Operations ................................................... 2019
David W. Anton, Ascend Performance Materials

TP18-19 ........... Rental Cooling Towers and CTI Certification ................................................................................... 2018
Billy Childers and Atul Swamy, Aggreko Cooling Tower Services

TP18-09 ........... Thermal Performance Assessment Through Cooling Tower Modeling: Refinery Case ............... 2018
Salvador Avila Filho, Jean Marcel Prazeres Silva, Ivan Costa Passos and Jade Spinoal Avila
Federal University of Bahia

TP18-02 ........... Efficient Water Use to Boost the Air-Cooled Condenser Performance ............................................ 2018
Luc De Backer, Ph.D., Enexio

TP17-03 ........... Distribution – Distribution – Distribution .......................................................................................... 2017
James L. Willa, Willa, Inc.

TP16-05 ........... Safety in Cooling Tower Maintenance .............................................................................................. 2016
Magose Abraham Eju, Energy Business Total Solutions, Ltd

Partha Nag, AGM (Cenpep), NTPC Ltd

TP14-13 ........... Preventive Maintenance for Cooling Towers Utilizing Gamma Scanning Technology .................... 2014
Paul Chila, Quantum Technical Services, LLC

TP13-25 ........... Mathematical and Experimental Modeling of a Rain Zone .............................................................. 2013
Lukas Dvorak and Pavol Vitkovic, Czech Technical University in Prague

TP13-19 ........... Experimental Methods for Cooling Tower Research ...................................................................... 2013
Jan Cizek and Michal Stepnicka, Czech Technical University in Prague

TP13-13 ........... Research on Reducing Recirculation Influence of Warm, Saturated Air Discharged from ............. 2013
Cooling Towers
Liu Zhenyan, Jiangsu Seagull Cooling Tower Co., Ltd

TP13-11 ........... Impact of Cooling Water Temperature on Plant Performance ......................................................... 2013
Magose Abraham Eju, Nigeria Liquefied Natural Gas (NLNG)

TP13-04 ........... Good Practices in Cooling Towers: Comparison Between Industrial Audits ............................... 2013
Salvador Avila Filho and Zara Marques Rodrigues De Jesus, Universidade Federal Da Bahia
    Ken Quigley, Ecodyne Cooling Tower Services; Karl Wilber, Research Cottrell Companies
TP91-02 .......... A More Nearly Exact Representation of Cooling Tower Theory .............................................................................. 1991
    Allen E. Feltzin, Airco Industrial Gases/The BOC Group; Dudley Benton, Tennessee Valley Authority

TOWER TESTING
TP19-23 .......... ATC-105 and Cold End System Performance ............................................................................................................... 2019
    Upendranath Bhupal, Spectrum Consultants Pvt Ltd
TP08-10 .......... A Simplified Method to Evaluate Cooling Tower and Condenser Performance Using the CTI ToolKit........... 2008
    Luc DeBacker and Natasha Peterson, Bechtel
TP03-02 .......... Flow Measurement and All That Jazz .......................................................................................................................... 2003
    Mark S. Huber and Robert Miller, Baltimore Aircoil Company
TP02-01 .......... Analysis of Thermal Performance Test Data of Large Cooling Towers Using CTI ToolKit Software ............. 2002
    Frank Michell, American Electric Power; Rich Aull, Brentwood Industries, Inc.
TP01-13 .......... Circulating Water Flow Measurements - A Study ....................................................................................................... 2001
    Eugene D. Culver, Ceramic Cooling Tower Corporation
TP00-06 .......... A New Look at Recirculation Analysis Including Measure of a 50 Cell Cooling Tower .................................................. 2000
    Michel Monjoie and Franz Bouton, Hamon Thermal Europe
TP97-05 .......... Accuracy and Linearity of Diamond Shaped Averaging Pitot Tubes ......................................................................... 1997
    Susan Mahoney, Dieterich Standard
    Jack R. Missimer and David Wheeler, Power Generation Technologies
    Michel Monjoie and Jean-Pierre Li bert, Hamon Sobelco
    R.N. Partghasarathy, Robert Ettema and V.C. Patel, Iowa Institute of Hydraulic Research
TP92-11 .......... Dye Dilution Flow Rate Measurements for Cooling Towers .................................................................................. 1992
    Jack R. Missimer, Ph.D., P.E., Environmental Systems Corporation

TREATMENT CONTROL
TP19-04 .......... Discfiltration for Cooling Water Treatment .................................................................................................................. 2019
    William Willersdorf, Veolia Water Technologies
TP17-16 .......... Modeling Scale Inhibitor Upper Limits: In Search of Synergy .................................................................................. 2017
    Robert J. Ferguson, French Creek Software, Inc.
TP16-17 .......... Polyvinyl Chloride Use in Cooling Towers ................................................................................................................... 2016
    Ken Mortensen and Robert Petterson, SPX Cooling Technologies
    Cyril Marconnet, EDF-Ce idre
TP14-16 .......... Calcium Removal From Cooling Tower Water by Ion Exchange .................................................................................. 2014
    Patrick Littlejohn, PhD, Alex West and David Kratochvil, PhD, Bioteq Environmental Technologies
TP11-06 .......... Optimizing Treatment Cost Performance ..................................................................................................................... 2011
    Robert J. Ferguson, French Creek Software
TP10-06 .......... Physical Water Treatment Utilized in Food Manufacturing and Distribution .............................................................. 2010
    David McLachlan, Fluid Treatment Solutions, Inc.
TP07-05 .......... Material Balance Chemical Control and Information Systems for Cooling ................................................................. 2007
    Charles Kuhfeldt, Ashland Water Technologies
TP05-15 .......... Finally, An Alternative to Azoles ................................................................................................................................. 2005
    Eric Ward, Alco Chemical
TP04-15 .......... Development of an On-Site Hypobromite Generation ............................................................................................... 2004
    Timothy Keister and Pat Gill, ProChemTech International
TP02-07 .......... New All Organic Chemistry For Treatment of Closed Cooling Systems ................................................................. 2002
    John Richardson and Michael G. Trulear, ChemTreat, Inc
TP02-02 .......... Field Experience With A New, Novel Series of High Performance, Environmentally Friendly Programs .......... 2002
S.J. Colby, D.E. Emerich and M.C. Wangerin, Ashland Specialty Chemical Company

TP01-12 .......... Water Treatment Can be Bid Successfully ............................................................. 2001
Thomas M. Laronge and Roland A. Leathrum, Thomas M. Laronge, Inc.

TP01-11 .......... Removal of Copper During Start-Up of Cooling Tower ................................................................. 2001
Karen F. Pedraza and Dennis P. Shea, Solutia, Inc.

TP01-09 .......... Extend the Life of Wetted Surfaces ...................................................................................... 2001
Mark A. Lisin, Lisin Metallurgical Services; Thomas M. Laronge, Thomas M. Laronge, Inc.

TP01-06 .......... Mixed-Oxidant Use in Cooling Tower Maintenance ................................................................. 2001
Wesley L. Bradford, Los Alamos Technical Assoc., Inc.; Paul Petersen, Trident Technologies, Inc.

TP00-14 .......... Recent Advances in High Alkaline Cooling Water Treatment ..................................................... 2000
John Richardson and Michael G. Trulear, ChemTreat, Inc.

TP00-04 .......... Bugs and Bugaboos of Cooling System Components .......................................................... 2000
Thomas M. Laronge, Thomas M. Laronge, Inc.

TP97-15 .......... The Advancing Evolution of Centrifugation ................................................................................ 1997
William R. Leizear, Randall D. Delenikos, LAKOS Filtration Systems

TP97-11 .......... A New Treatment for Calcium Carbonate Control in Alkaline Conditions ........................................ 1997
Jasbir S. Gill, Jennifer R. Parson and Robert C. Gordon, Calgon Corporation

TP97-08 .......... Twenty Minutes with Molybdate ............................................................................................... 1997
M.H.L. Garnaud, Climax Molybdenum UK, Ltd; Thomas J. Risdon, Climax Molybdenum Marketing Corporation

TP95-09 .......... Highly Effective New Polymer For Calcium Phosphate Control in Cooling Water Systems ............. 1995
Anne B. Austin and Michael L. Standish, Alco Chemical

TP95-04 .......... Fractures in Cooling Water System Components ............................................................................. 1995
Thomas M. Laronge & Mark A. Lisin, Thomas M. Laronge, Inc.

TP93-11 .......... Silica Stabilization in Industrial Cooling Towers: Recent Experiences and Advances ...................... 1993
Paul R. Young, Christine M. Stuart and Phillip M. Eastin, Nalco Chemical Company; Marshall McCormick, Chevron

TP93-10 .......... A New On-Line Monitoring and Control Capability for Cooling Water Programs .......................... 1993
J. Richardson, K.D. Heinz and M.A. Reinsalu, Grace Dearborn, W.R. Grace

TP93-04 .......... Fingerprints of Errors - Failures in Cooling Water Systems ............................................................ 1993
Arthur J. Freedman, Ph.D., Mark A. Lisin, P.E. and Thomas M. Laronge, Thomas M. Laronge, Inc.

TP93-02 .......... Control of Microbiological Contaminants in Small Cooling Systems .............................................. 1993
Daniel H. Pope, Ph.D., Bioindustrial Technologies, Inc.; William T. Osborne, Baltimore Aircoil Company

TP92-14 .......... Evaluation of Alternatives to Gaseous Chlorine for Cooling Water .................................................. 1992
Marcus Vaska & Winston Go, Microbiological Control Drew Industrial Division

TP92-08 .......... Automated Oxidant Control ....................................................................................................... 1992
Phil Kiser, Stranco, Inc.

TP92-03 .......... Practical Considerations in High Cycle Cooling Water Operations ................................................. 1992
Arthur J. Freedman and Thomas M. Laronge, Thomas M. Laronge, Inc.; Chester M. Malewski and Craig W. Williams, Sierra Pacific Power Company

TP91-08 .......... Precise Prediction of Cooling Water pH ....................................................................................... 1991
Craig W. Ballard and Jack V. Matson, Ph.D., P.E., University of Houston

TP91-04 .......... Fail-Safe Cooling Water Operations ............................................................................................. 1991

TP90-13 .......... Effects of Molybdate in Cooling Water Treatment Programs .......................................................... 1990
Kenneth P. Fivizzani and Sang-Hea Shim, Nalco Chemical Company

TP90-10 .......... Problems and Pitfalls in Water Treatment Specifications .............................................................. 1990

TP90-01 .......... Practical Applications of Tracers - Beyond Product Monitoring ..................................................... 1990
John E. Hoots, Nalco Chemical Company
TREATMENT EVALUATION

TP18-30 .......... A Robust Non-Phosphorous Corrosion and Scale Control Program for Cooling Systems ..................... 2018
  Bingzhi Chen, Nalco Water, An Ecolab Company

TP17-24 .......... How to Choose a Biocide Program for a Recirculation Cooling System ............................................... 2017
  Christopher Baron, ChemTreat, Inc.

TP16-16 .......... The Evolution and Practical Application of Scale Inhibitor Modelling and Dosage Optimization ........ 2016
  Robert J. Ferguson, French Creek software, Inc

TP16-14 .......... Controlled Hydrodynamic Cavitation: A Physical Water Softening and Disinfection Method ............. 2016
  Joshua Beach-Leventre and Carl Steffen, Ecowater CHC

TP15-20 .......... Alternative to Bromine Improves Cooling Water Microbial Control and Overall Treatment ................ 2015
  Andrew Boal, PhD, MIOX Corporation

TP15-04 .......... The Impact of Ionic Strength Upon Inhibitor Speciation and Efficacy .................................................. 2015
  Robert J. Ferguson, French Creek Software, Inc.

TP13-22 .......... Application of Controlled Releasee Chemistry to Cooling Towers ......................................................... 2013
  Kevin Emery, ChemTreat, Inc. and Miles Stoffer, Dober

TP13-10 .......... Chemical Cleaning Techniques for Galvanized and Stainless Cooling Towers ........................................ 2013
  Jon J. Cohen and Sean Parmelee, H-O-H Water Technology

TP13-18 .......... Film Formation, Stability and Corrosion Inhibition of Surface Deposited Film Inhibitors .................... 2013
  Kevin Emery and Rob Bedniger, ChemTreat, Inc.

TP12-10 .......... Field Evaluation and Verification of Biological Control in Operating Cooling Tower Water ............... 2012
  Paul Puckorius, Puckorius & Associates, Inc.

TP11-14 .......... Practical Evaluation of Treatment Chemicals for Scale Inhibition in Open Evaporative Sea Water Cooling 2011
  Roy A. Holliday and Gary E. Geiger, GE Water & Process Technologies

TP11-10 .......... AWT’s ASHRAE Liaison Report: NCDs and Biological Control in Cooling Water Systems .............. 2011
  Bill Pearson, Southeastern Laboratories, Inc.

  Dennis Kelly and Dan Dobrez, Dober Group

TP07-09 .......... Twenty-Years of Cooling Water Treatment Experience in Manhattan ................................................ 2007
  Marcus N. Allhands and Carmine Puglisi, Orival, Inc.

TP03-21 .......... Condenser Water Treatment Using Pulsed-Power ................................................................................. 2003
  John Lane, Clearwater Systems and David Peck, Eichleay Engineers & Constructors

TP03-16 .......... Multipurpose Water Treatment in Cooling Towers ................................................................................ 2003
  Sukjun Kang and Jasper Lee, EEKO Bio Corporation; Jeyong Yoon and Min Cho,
  Seoul National University

TP03-15 .......... Practical Approach to Solving Cooling Water Treatment Problems Using Customized Chemical Formulation 2003
  Daniel P. Curnock and Edward W. Cocetti, ChemCentric

TP96-07 .......... A Laboratory Method for Evaluating Biocidal Efficacy on Biofilms ................................................................................. 1996
  Michael Ludynskiy, Steven J. Colby, Lonza, Inc.

TP88-12 .......... Pilot Cooling System Evaluation of Treatment Program Effectiveness in a Refinery Environment ......... 1988
  Beatrise A. Bross and Robert J. Ferguson, Chemlink, Inc.

TP88-03 .......... A Comprehensive Evaluation of Molybdate-Based Cooling Water Treatment Technology ........... 1988
  Joseph S. Roti and Kenneth F. Soeder, Drew Industrial Division

TP87-06 .......... Methods For Evaluating the Efficacy of Biocides Against Sessile Bacteria ...................................... 1987
  Carol A. Jones, Jane H. Leidlein and Jeff G. Grierson, Dow Chemical Company

TP86-07 .......... Microbiological Test Methods in Association with Cooling Towers .............................................. 1986
  Helen E. Crandall, Hercules, Inc.
USE OF BIOCIDES

TP15-16 An Alternative Approach to Disinfection Using Chlorine Dioxide ........................................................ 2015
Ingmar Hermans and Vincent Van Camp, Twinoxide International B.V.

TP99-16 Unique Biodispersant Removes Biofilms and Increases Biocides Efficacy ........................................... 1999
Melvin H. Czechowski and Kurt W. Whitekettle, BetzDearborn Inc.

TP98-09 A Comparison of Bromine-Based Biocides in a Medium-Size Cooling Tower ..................................... 1998
Christopher J. Nalepa, Robert M. Moore, Albemarle Corporation

TP98-06 A New Biocide for Control of Algal Biofouling in Cooling Towers .................................................... 1998
K. Mark Wiencek, Terry M. Williams and Robert F. Semet, Rohm And Haas Company

UTILITY INDUSTRY

TP11-18 Assessment of Existing Galvanic Corrosion Protection Systems ........................................................... 2011
Javier Balma and Dilip Choudhuri, Walter P Moore and Associates, Inc.

TP00-11 Circular Hybrid Cooling Towers ............................................................................................................. 2000
Andreas Streng, Ph.D., Balcke-Duerr Energietechnik GmbH

TP00-10 With "New-Age Brands" Into a "Brand-New Age"... ........................................................................... 2000
Leo Vonk, Bis Both Industrial Services BV

TP90-03 Operating Feedback of French Cooling Towers Civil Work and Equipment ......................................... 1990
P. Coic, Electricite De France

WATER MANAGEMENT

TP19-24 Clean and Green Approach to Cooling Tower Water Management ....................................................... 2019
Bee Keong NG, Innovative Polymers P/L

TP19-02 Reclaim Water for Cooling Tower Makeup; Not as Simple as Perceived .............................................. 2019
Ray Post, P.E. & Brad Buecker, ChemTreat, Inc.

TP16-10 A CMIT/MIT Surfactant Blend to Control Biofilms to Industrial Water Systems ................................ 2016
Brian Corbin, Ph.D., The Dow Chemical Company

TP15-02 Managing Reliability in Industrial Cooling Systems .............................................................................. 2015
Kevin Emery and Joe Keating, ChemTreat, Inc.; Al Feltzin, Linde Gases

TP14-18 A Detailed Independent Field Site Evaluation of Electrodynamic Field Generation Results ............... 2014
As the Cooling Water Treatment
Paul R. Puckorius, Puckorius & Associates, Inc.; John E. Dresty, Jr., Griswold Water Systems; Richard Ruckstuhl, Jr., Waterhouse Corporation

TP14-02 Lessons Learned from a Hero-Based ZLD System .............................................................................. 2014
Brad Buecker, Kiewit Power Engineers

TP11-24 Potable Water Reduction Strategies ...................................................................................................... 2011
Jon J. Cohen and Henry A. Becker, H-O-H Water Technology

TP08-17 The Conversion From Gas to Tablet Chlorination: A Case Study........................................................... 2008
Austin Looper, PPG Industries; Billy Smith, ChemTreat, Inc.

Bernie Wieck, Universal Utility Services

TP05-18 Low Cost Cooling Tower Biocide Alternative ....................................................................................... 2005
David Evans and Nidhal Dossary, Saudi Aramco

TP03-20 Power Plant Restores Cooling System Performance With Bio-Detergent Cleanup ........................... 2003
Charles W.H. Foster and Trevor Gent, ONDEO Nalco Canada Co.

TP03-14 San Antonio Water System's Cooling Tower Audit Program Results in Significant Water Savings .... 2003

TP03-04 Automating the Cooling Water Triangle ................................................................................................. 2003

TP99-12 Cooling Tower Water Conservation Using Solubility Chemistry ...................................................... 1999
Stephen E. Mitchell, S & S Consulting Services

TP99-09 Get the Limits of Cooling Tower Design: Low Approach-Large Range-Cold Water 38°F ...................... 1999
Michel Monjoie, Hamon Thermal; Rob Schwalbe, Barrick Goldstrike

TP97-03 An Effective Method for Non-Chemical Control of Microbial Activity in Cooling Towers ............... 1997
John Dresty, Environmental Research Institute; James Fitzpatrick, Warner Lambert Corp.
TP90-02 ........ Designing a Cooling Water Program With the Aid of a Three-Dimensional Cost Optimization .......... 1990
Mei H. Hwang, Charles J. McCloskey and John A. Hvizdos, Calgon Corporation

TP86-09 ........ Enhanced Water Management Using Bromine Chemistry ................................................................. 1986
Rodney H. Sergent, Great Lakes Chemical Corporation

TP84-02 ........ The Importance of Water Management in Plant Design ................................................................. 1984
Bruce M. Webber and Albert D. Owens, Calgon Corporation

WATER REUSE

TP18-04 ........ Investigation About Wastewater Profile to Reuse in Cooling Tower, an Operational ......................... 2018
Risk Discussion
Salvador Avila Filho, Jean M.P. Silva, Jose R.N. Lopez, Marco A.B. Araujo and
Maria B.M.M. Nobrega, Federal University of Bahia

TP16-02 ........ Increasingly Complex Cooling Tower Makeup Water Issues ............................................................. 2016
Brad Buecker and Behrang (Ben) Pakzadeh, Ph.D., P.E., Kiewit Engineering and Design Co

TP15-14 ........ From vision to Practical and Cost Effective Design ............................................................................. 2015
Roy A. Holliday, GE Water & Process Technologies, Europe; Shereif Alsayed, GE Water & Process
Technologies, Middle East and Africa; Amr Eladawy, Abu Qir Fertilizers Co., Egypt

TP13-12 ........ Water Reuse – As Time Goes By D The Less Attractive Approaches or Options Now Look .............. 2013
More Attractive
Mark Huber and Jean-Pierre Libert, Evapco, Inc.

TP12-22 ........ A State-Of-The-Art Chemistry Based Toolset for Developing and Optimizing Power Plant Water Balance Models
Daniel J. Robinette, Rocky Mountain Water Engineering, LLC

TP09-09 ........ An Integrated Approach to Water Reuse ........................................................................................ 2009
Pete Elliott and Gary Geiger, GE Water & Process Technologies

TP08-03 ........ Recycled Water for Cooling 4000°F Melted Sand ........................................................................... 2008
Dr. Marcus N. Allhands and Tom Broderick, Orival, Inc.

TP08-01 ........ Water Reuse in Cooling Towers - Current Experiences and Guidelines for Success in Refineries,...... 2008
Power Plants, and HVAC Systems
Paul Puckorius, Puckorius & Associates, Inc.

TP07-19 ........ Efficient One Step Phosphorous & Suspended Solids Removal from Municipal Wastewater .......... 2007
Ben Gould, Ashbrook Simon-Hartley; Clarence Melancon, Water Filtration Technologies, Inc

TP05-17 ........ Monitoring Cooling Water for Potential Reuse .................................................................................. 2005
Phil Kiser, Hach Company

TP05-16 ........ Bacterial Resistance to Biocides in Recirculating Cooling Water Systems ....................................... 2005
Dr. Chris L. Wiatr, Buckman Laboratories, Inc.

TP05-13 ........ Evaluation in to the Use of Mine Drainage to Supplement Cooling Water ....................................... 2005
Dr. A. Harriram and D.G. Nieuwenhuis, Sasol Technology

TP04-01 ........ Denver's Cooling Tower Water Conservation Program ................................................................. 2004
Paul R. Puckorius and David A. Puckorius, Puckorius & Associates, Inc.; Jim Reed, Denver Water Board

TP03-03 ........ Water Reuse Experiences With Cooling Tower Systems in San Antonio, TX ...................................... 2003

TP02-17 ........ Cooling Tower Systems Components and the Impact of Re-Use Water ........................................... 2002

TP01-04 ........ Water Reuse in Refineries, Chemical Plants, and Utilities: Experiences Throughout the USA – .......... 2001
Guidelines and Case Histories

TP95-15 ........ Reclaimed Water as Cooling Tower Makeup for Refinery/Petrochemical Plants – Southern .......... 1995
California's Activities and Time Table
Paul R. Puckorius, Puckorius & Associates, Inc.; Kris Helm, West Basin Municipal Water District;
Chris Surrrell, Chevron U.S.A.

TP95-11 ........ Re-Use of Reclaimed Municipal Waste Water as Cooling Water Make-Up - Challenges and .......... 1995
Solutions
Narasimha M. Rao, Nalco Chemical Company

TP95-05 ........ Water Conservation via New Cooling Water Technology ............................................................... 1995
Nicholas J. Alfano, Calgon Corporation; Dennis J. Sherren, Enron Power Corporation
TP94-09 .......... Innovative Thinking in Water Conservation ........................................................................................... 1994
  Mikel E. Goldblatt, Betz Industrial

TP94-08 .......... Reuse of Industrial Waste Stream as Cooling Tower Makeup ............................................................... 1994
  Everett C. Phillips and Richard J. Strittmatter, Nalco Chemical Company

TP93-09 .......... Water Reuse Within a Refinery .............................................................................................................. 1993
  K.S. Eble and J. Feathers, Betz Industrial

WATER TREATMENT

TP19-16 .......... The Rest of the Story: You Have Treated your Cooling Tower – What Can go Wrong? ....................... 2019
  Adam Green, Baker, Donelson, Bearman, Caldwell & Berkowitz, Robert J. Ferguson, International
  Water Consultants, Inc.

TP19-10 .......... Metal and Organic Solutions for Reduced Phosphorous Applications................................................. 2019
  Paul R. Frail & Claudia Pierce, Suez Water & Technologies Solutions

TP19-08 .......... Use of Carbon Dioxide as Antiscalant for Cooling Water Circuits ................................................... 2019
  Christophe Vanscheepdael, Engie Laborelec

TP18-08 .......... System Failures Unrelated to Water Chemistry ...................................................................................... 2018
  Pat Guccione, Chem-Aqua, Inc. and Adam Green, Baker, Donelson, Bearman, Caldwell & Berkowitz, PC

  Adam Green with Baker, Donelson, Bearman, Caldwell & Berkowitz, PC and Robert J Cunningham,
  Arthur Freedman Associates, Inc.

TP17-14 .......... Improved Clarification in Cooling Water Treatment by Efficient Polymer Mixing....................... 2017
  Yong Kim, Ph.D., UGSI Solutions, Inc.

TP17-10 .......... Advantages of Mixed Oxidant Solution (MOS) in Cooling Water Systems ......................................... 2017
  Mike Dorsey, Aquacorr Services; Matt Walker, Design Controls

TP16-20 .......... Predicting the “Time to Clean”: Avoid Unscheduled Outages and Extend Asset Life Through......... 2016
  Operational and Chemistry Modelling, Monitoring and Optimization
  Edward S. Beardwood, Solenis LLC

TP16-08 .......... A Solid Isothiazolone Biocide Microbial Growth in Industrial Water Treatment Systems ............ 2016
  Brian D. Corbin, Ph.D., The Dow Chemical Company

WINTER OPERATION

TP19-07 .......... High Efficiency Heat Exchanger for Ice Energy Storage and Beyond................................................. 2019
  Mitchell Ishmael & Levon Atoyan, Active Energy Systems

TP12-11 .......... Safe Cooling Tower Winter Operation ................................................................................................... 2012
  Michel Monjoie, Monjoie Cooling

TP96-04 .......... Cold Weather Operating Guidelines and Experience for Natural Draft Cooling Towers on the............ 1996
  American Electric Power System
  Frank L. Michell and Dan H. Drew, American Electric Power

TP88-18 .......... Anti-freezing System on Natural Draft Crossflow Cooling Towers - Cattenom Nuclear Plant ........... 1988
  Jean Barbaud, Electrique de France

TP84-09 .......... Cold Weather Operation of Mechanical Draft Cooling Towers ............................................................ 1984
  N.E. Dolan, Ecodyne Cooling Products

WOOD ATTACK

TP02-18 .......... Evaluation of a Simplified Procedure to Determine the Condition of Wood Cooling Tower ............ 2002
  Components
  Matthew E. Anderson, Wood Advisory Services, Inc.; Yelena S. Golod, DuPont Engineering

TP98-12 .......... Creosote Revisited .................................................................................................................................. 1998
  James L. Willa, Willa, Inc.

TP96-01 .......... Wood Preservation and How It Pertains to the Cooling Tower Industry ............................................. 1996
  Darrell R. Smith, Conrad Wood Preserving Company; Jeffrey J. Morrell, Oregon State University

ZERO DISCHARGE

TP93-05 .......... Chemical Approaches to Zero Blowdown Operation ............................................................................. 1993
  Gary E. Geiger and M.R.Hatch, Betz Industrial; J. Ogg, Stanford Linear Accelerator