

International Conference on Thermal Treatment Technologies and Hazardous Waste Combustors 2012

**San Antonio, Texas, USA
21-23 October 2012**

ISBN: 978-1-62276-880-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

The opinions expressed in these papers are solely of the authors and should not be considered as having the endorsement or support of the Association.

Compilation Copyright © 2012 by the Air & Waste Management Association.
Copyright of the individual papers are retained by the authors. Published in July 2012

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact the Air and Waste Management Association
at the address below.

Air and Waste Management Association
One Gateway Center, 3rd Floor
420 Fort Duquesne Blvd.
Pittsburgh, Pennsylvania 15222-1435

Phone: 800 270 3444
Fax: 412 232 3450

www.awma.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

KEYNOTE:

The Quest for Clean Air - The Southern California Experience	1
<i>Laki Tisopulos</i>	

SESSION 1A: PYROLYSIS GASIFICATION W2E

The Changing Face of Hazardous Waste Combustion in Cement Kilns.....	28
<i>Charles D. Kellett</i>	
Gas Cleaning Equipment Performance Update for Gasification Project	43
<i>David C. Meier</i>	
Destruction of Ozone Depleting Substances Using Steam Plasma.....	44
<i>Andrew Carkner, Lakshminarayana Rao, Aida Kaldas, Pierre Carabin, Arnold Ross</i>	
Plasma Augmentation to Achieve Zero Waste Coal-Fired Power Plants.....	53
<i>Louis J. Circeo</i>	

SESSION 1B: R&D

Co-Firing Performance of Hydrothermally Treated Municipal Solid Waste with Coal.....	71
<i>Kunio Yoshikawa</i>	
Incineration as an Option of Irradiated Reactor Graphite Treatment.....	87
<i>V. Kascheev, P. Poluektov, O. Ustinov, Y. Voskresenskaya</i>	
Experimental Research of NO_x Removal by NH₃ on Admixtures of Iron Ore and Iron Catalyst in a Magnetically Fluidized Bed.....	97
<i>Keting Gui, Fang Wang, Guihuan Yao</i>	
Reduction of Dioxins Emission in Thermal Process by Total Oxidation.....	109
<i>Audrey Tritz, Isabelle Ziegler-Devin, Christelle Perrin, Paul-Marie Marquaire</i>	

SESSION 2A: PYROLYSIS GASIFICATION W2E

A Thermodynamic Analysis of Waste-to-Energy Systems Using Plasma Gasification Melting Technology	120
<i>Qinglin Zhang, Leonie Arnold, Chunguang Zhou, Yueshi Wu, Weihong Yang, Wlodzimierz Blasiak</i>	
Experiences with Alternative Thermal Treatment Processes - Reliability of New Technologies.....	137
<i>Markus Gleis</i>	
Co-incineration of Waste in the Sulfuric Acid Regeneration Process	148
<i>Rick Ullrich</i>	
Environmental Life-Cycle Assessment of Waste-to-Energy Technologies.....	159
<i>Zachary A. Coventry, Ronald Tize, Arunprakash T. Karunanithi</i>	
EST Environmental Systems and Treatment	175
<i>Ron Elkana</i>	

SESSION 2B: TRADE ASSOCIATION PANEL

When is a Cement Kiln "NOT" A Cement Kiln?	176
<i>Mike Benoit</i>	
Clean Air Act Impacts on Coal-Fired Electric Generation.....	185
<i>Rae Cronmiller</i>	
ICI Boilers: Boiler MACT and Regulatory Renovations	192
<i>Lisa M. Jaeger</i>	
A Comparison Across MACT Rules	198
<i>Melvin E. Keener</i>	

SESSION 3: BIOMASS

Performance of Biomass Direct Chemical Looping with Iron Oxide Based Oxygen Carrier	210
<i>Nobusuke Kobayashi, Yasuriho Tanabe, Yoshinori Itaya</i>	

Catalytic Performance of Char from Gasification of Biomass for the Reformation of Toluene as a Model of Tar	219
<i>Alexsandra Guerra, Naomi Klinghoffer, Marco J. Castaldi, Ange Nzihou</i>	
Investigation of the Combustion Behavior of Pulp Pellets in a Domestic Pellet Boiler	223
<i>Daniel Bernhardt, Kathrin Gebauer, Martin Pohl, Michael Beckmann</i>	

ASME & WTERT PRESENTATIONS / DISCUSSION

ASME Research Committee on Energy, Environment, and Waste New Programs, New Subcommittees, New Agenda	235
<i>Robert E. Sommerlad</i>	
Leveraging Strengths: IT3/WTERT/ASME	245
<i>Marco J. Castaldi</i>	

SESSION 4A: SPECIFIC APPLICATIONS

A Capstone Analysis of the Anniston Chemical Agent Disposal Facility	260
<i>Tim Garrett, Lisa Douglas, Leslie H. Ware, Jim Martin</i>	
Development of a Multi-fuel Burner	273
<i>Anatoli Borissov</i>	
Primary NO_x Reduction and Bottom Ash Improvement for Waste Incineration Plants	289
<i>Hans Hunsinger, Helmut Seifert, Jessica Persson, Sven Andersson</i>	
Combustion Technology for Water-fuel Mixtures	305
<i>Sergey Alekseenko, Igor Kravchenko, Leonid Maltsev</i>	

SESSION 4B: RENEWABLE ENERGY – GGR

Energy Recovery Strategies for a Medical Waste Incinerator	324
<i>Michael Mannuzza</i>	
A Systems Analytical Evaluation of the Utilization of Coal Fly Ash as Alkaline Resource for Manufacturing New CaCO₃-based Cements	345
<i>Matthias Achternbosch, Ulrich Dewald, Christel Kupsch, Eberhard Niek, Gerhard Sardemann</i>	
Coal Dryer Scrubber for Integrated Gasification Combined Cycle (IGCC) Power Plants	359
<i>Andrew C. Bartocci</i>	

SESSION 5A: OPERATION ISSUES

PM Spiking for PM CEMS	369
<i>Robert W. Baxter, E. Lee Salter</i>	
An Improved Technological Approach to the Performance of Destruction and Removal Efficiency (DRE) Demonstration Testing Using Naphthalene as the Principal Organic Hazardous Constituent	377
<i>Chris E. McBride, William C. Anderson, Patti B. Bales, R. Scott Neal</i>	
Chemical Considerations in the Thermal Desorption Remediation of Soils	394
<i>John T. Tucker, Nick Platts</i>	

SESSION 5B: AIR POLLUTION CONTROL

Dioxins/Furans – Pitfalls in Compliance Accuracy	406
<i>Kimberly Mace, Yves Tondeur, Jerry Hart</i>	
Dry Sorbent Injection Options for Controlling Emissions of HCl and Related Acid Gases	413
<i>Melissa R. Sewell, Jim Dickerman</i>	
The Study of Hazardous Gas Removal Efficiency for Semi Dry Reactor Using Computational Fluid Dynamics	426
<i>M. T. Cho, Seung Hwan Lee</i>	

ADDITIONAL PAPER

Effective Methane Abatement and Carbon Credit Generation from Coal Mines Utilizing Regenerative Thermal Oxidation	444
<i>Jim Stone, Jason Schroeder</i>	
Author Index	