# TABLE OF CONTENTS

## EQUIPMENT IMPROVEMENTS

New Approach to Optimizing Fired Heaters ................................................................. 1  
*Ashutosh Garg*

Multipollutant Removal with Wowclean® Systems ...................................................... 6  
*Mario Romero*

Practical Solar Thermal Chilled Water ........................................................................ 7  
*Bud Leavell*

## ASPECTS OF ENERGY CONSERVATION FOR COMPRESSED AIR SYSTEMS

Compressed Air Systems Optimized: What Do You Really Need and How to Get it at the Lowest Total Cost ................................................................................................. 22  
*James G. McAuley, Jim McAuley*

Energy Efficiency in Compressed Air Systems ............................................................ 34  
*Anil Hingorani, Alexander Pavlov*

Saving Money with Air and Gas Leak Surveys ............................................................ 42  
*Darren Woodruff*

## EMISSIONS AND PROCESS CONTROL SYSTEMS

Forecasting and Capturing Emission Reductions Using Industrial Energy Management and Reporting Systems ........................................................................................................... 54  
*James E. Robinson, Thomas J. Robinson*

Emissions and Energy: an Integral Approach Using an Online Energy Management and Optimization Model .................................................................................................................. 63  
*Diego Ruiz, Carlos Ruiz, Oscar Santollani, Tyler Reitmeier*

Integrated Energy and Greenhouse Gas Management System ........................................ 71  
*C. Nicholas Spates*

## PROGRAMS: LESSONS LEARNED AND THE FUTURE

Industrial Energy Efficiency Programs: Developments and Trends .............................. 72  
*Anna Chittum, Nate Kaufman, Neal Elliott*

The Results of More Than 250 Industrial Assessments for Manufacturers by the Louisiana Industrial Assessment Center for the Past Ten Years ...................................................... 83  
*Theodore Kozman, Jim Lee*

The Role of Benchmarking in Promoting Strong Energy Management Systems .............. 89  
*Walt Tunnessen*

## ENERGY EFFICIENCY IN STEAM SYSTEMS

Improved Boiler System Operation with Real-time Chemical Control .......................... 90  
*Deborah Bloom, Brian V. Jenkins*

Saving Money with Steam Leak and Steam Trap Surveys .............................................. 99  
*Darren Woodruff*

"greening" Industrial Steam Generation Via On-demand Steam Systems .......................... 113  
*Jason P. Smith*
Generating Electricity with Your Steam System: Keys to Long Term Savings ................................................................. 115
Bill Bullock, Andrew Downing

PROCESS CONTROL AND OPTIMIZATION

Reduced Safety Flaring Through Advanced Control ................................................................. 119
David Hokanson, Keith Lehman, S. Masumoto, N. Takai, F. Takase

The Role of Advanced Process Control in Your Energy Management Solution ................................................................. 120
Kevin Johnson, Lize Van Wyke

Achieving Superior Plant Energy Performance Utilizing Real-time Data ................................................................. 121
Shiva Sabramanya

Saving Megawatts with Voltage Optimization ................................................................................ 128
Tom Wilson, David Bell

Energy Efficiency in BP's PTA Manufacturing Plants ........................................................................ 138
Fred Clark

U.S. DOE PROGRAMS

U.S. Department of Energy Industrial Programs and Their Impacts ................................................................. 139
Steven A. Weakley, Joseph M. Roop

ANALYSIS METHODS

Achieving Superior Energy Performance ........................................................................................ 148
Kathey Ferland

Retrofit of Tehran City Gate Station (C.G.S., No. 2) by Using Turboexpander ................................................................. 149
Ramin Taheri Seresht, Hassan Khodaei Jalalabadi, Babak Rashidian

Energy Use in Distillation Operation: Non-linear Economic Effects ................................................................. 155
Douglas C. White

Use of Statistical Approach to Design an Optimal Duct System for On-demand Industrial Exhaust Ventilation ................................................................................................................................. 156
Ales Litomisky, Krystof Litomisky

DEPLOYMENT OF ASSISTANCE PROGRAMS

The Role of Incentives in Promoting CHP Development ........................................................................ 162
Nate Kaufman, R. Neal Elliott

Paul Bostrom, Robert Bruce Lung, Jeffrey Harris

Author Index