SADC COMBUSTION SEMINAR

SAGA
Southern African Gas Association

27 & 28 March 2018

CSIR International Conference Centre,
Lynnwood, Pretoria

PROGRAM DAY 1

07:00 **Registration & Refreshments**

Chair – Roy Lubbe

07:30 **Welcome**

08:00 **Key Note Speaker**
New fundamentals, initiatives, trends and technology changes in the combustion and environmental applications throughout the industrial world.
Werner Liere-Netheler – Honeywell Thermal Solutions International

09:00 **Fundamentals of Combustion**
- Terminology – *Law, words, history, ignition, installation and explosions*
- Combustion chemistry – *chemical reactions, water treatment, emission and temperature*
- Characteristics of different fuels and how they burn – *gas, coal, oil and bio mass waste*
- Proper fuel/air ratio and combustion limits – *control of fuel air ratio, types of burner, space and time*
- Flame temperature - *fuel and matches*
- Flame geometry and operational applications – *furnaces opposed firing, front firing and fluid bed*

Dr Tony Biddlestone

10:45 **Mid-morning Refreshments**

11:15 **Combustion Systems and the Environment**
- The mechanisms and variables that influence NOx formations
- Environmental impact and control techniques are described.
- Flame temperature, combustion control, burner design, process variables and post combustion control of emissions

Carl Bothma – Combustion Group

12:00 **Lunch**

Chair – Riaan van der Walt

13:00 **Modern Combustion Controls**
- What is Combustion Control?
- What is the Chief Objective of Combustion Control?
- The Key Ingredients of "Good" Combustion.
- Stoichiometric ratio
- What we need to focus on to Achieve our Objectives!
- How modern Controls achieve these in Industrial Steam Boilers and Furnace Burners

Grant Reneclé – Combustion Technology

13:45 **Burner Management System - Electrical Parts thereof**
- Flame guarding unit
- Safety interlocks & critical safety devices
- Process input
- Standards, Electrician & CoC

Dave de Wit – Pro Thermal

14:30 **Flame Safety and Sequence Control**
- Discussion of the function and the need for flame monitoring equipment, technique for flame detection and the features of flame safety equipment

Peter Pape, Fireye

15:15 **Close of Day 1 of Conference & Mid-afternoon Refreshments**

PROGRAM DAY 2

07:00 **Registration & Refreshments**

Chair – Grant Reneclé

07:30 **Welcome**

07:45 **Heat Application**

- High/Low Temperature Heat Application
- Optimizing heat transfer of furnace combustion systems by relating current burner types and resultant flames to a number of industrial heating configurations

TBC

08:30 **Practical Fluid Flow & Piping Practices for Combustion Systems**

- Workshop: Problem and Solution of a typical combustion-sizing problem will be presented for analysis by the participants

Riaan van der Walt – Henley Gas

09:15 **Fuel/Air Ratio Control**

- Atmospheric premix (proportional, mechanical I & II), ratio regulator, linked valves and control.

Don Forsyth – Combustion Group

10:00 **Mid-morning Refreshments**

10:30 **The Basics of IR / IR Applications**

- How infrared works, the characteristics, temperature & wave length
- Types of IR heaters and different types of absorption
- Processes/applications that have been successful utilizing IR (energy reduction, quality improvement, increased throughput, etc.)

Paul G. Hopwood – PG Hopwood & Associates

11:15 **Combustion Protective Systems**

- ISO 13577-4

Adriaan van Wyk - Proconics

12:00 **Lunch**

Chair – Eddie Cooke

13:00 **Furnace and Process Controls**

- The application process controls with emphasis on furnace and combustion system controls to optimise efficiency, product quality and productivity

Aresh Mohabeer – Engineered Thermal Systems

13:45 **Combustion Troubleshooting**

- Optimizing Combustion Systems Performance - A typical manufacturing plant using melting, heating and heat treating furnaces and boiler issued as an example to illustrate how to organize and implement an energy use optimization program, designed to reduce total operating costs. The overall impact on NOx and CO2 emissions is tracked

TBC

Discussion Combustion System Maintenance

- To complete the seminar's comprehensive coverage of combustion systems, time is allocated for an open discussion of practical furnace maintenance activities. Participants will have an opportunity to ask questions and share experiences and concerns with other attendees (Panel & Floor participation)

Riaan van der Walt, Dave de Wit & Adriaan van Wyk

15:15 **Close of Conference by Chairperson**

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