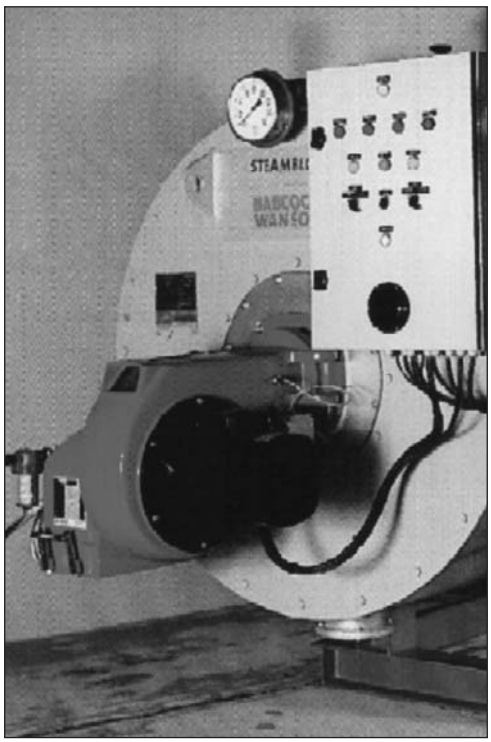
Practical

BOILER CONTROL AND INSTRUMENTATION

for Engineers & Technicians



WHAT YOU WILL LEARN:

- **The key features of basic boiler control loops & systems**
- **Boiler combustion control – to optimise combustion efficiency for burning liquid, gaseous, solid or pulversied fuels**
- **Principles & design concepts governing:**
  - **boiler feed water control**
  - **steam demand & firing control**
  - **main steam & reheat steam temperature control**
  - **importance of boiler & unit interlocks**
  - **boiler draft systems & controls**
  - **flue gas analysis & fuel combustion trimming controls**
- **Artificial intelligence & expert systems for improved boiler plant efficiency**

WHO SHOULD ATTEND:

- **Senior Boiler Plant Operators, Repairers & Installers**
- **Boiler Plant Construction Managers**
- **Plant Engineers**
- **Operation, Maintenance, Inspection & Repair Managers, Supervisors & Engineers**
- **Mechanical Engineers & Technicians**
- **Design Engineers**
- **Insurance Company Inspectors**
- **Consulting Engineers**

IDC TECHNOLOGIES

Technology Training that Works

THE WORKSHOP

This one-day Practical Boiler Control Systems workshop focuses on efficient and cost effective start-up and shutdown procedures, safety interlocks and on-line operations of boilers.

PRE-REQUISITES

A fundamental knowledge of basic boiler plant and operation thereof and some understanding of control systems.

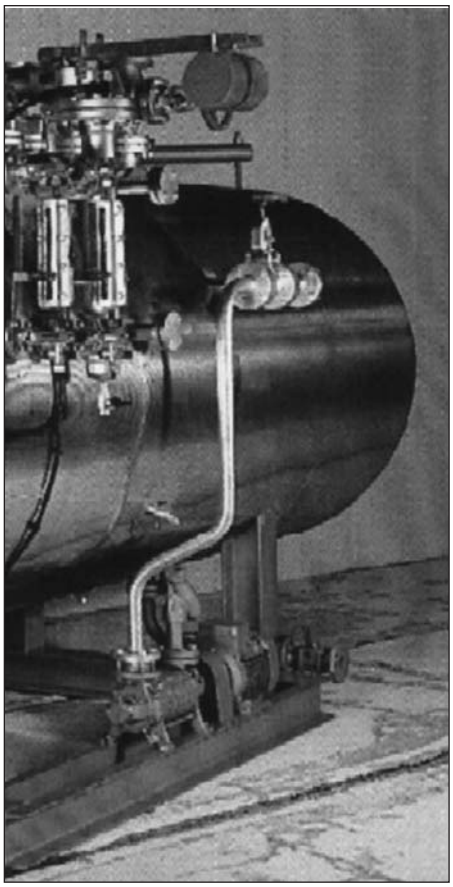
WORKSHOP OBJECTIVES

After attending this practical ONE-DAY workshop, you will be able to:

- recognise key features of basic boiler control loops & systems
- examine boiler combustion control for optimisation of combustion efficiency with burning liquid, gaseous, solid or pulverized fuels
- identify principles & design concepts governing:
  - boiler feed water control
  - steam demand & firing rate control
  - main stream & reheat steam temperature control
  - importance of boiler control & unit interlocks
  - boiler draft systems & controls
  - flue gas analysis & fuel combustion trimming controls
- explore artificial intelligence & expert system for improved boiler plant efficiency

THE PROGRAM

DAY ONE



INTRODUCTION

- Objectives of boiler control
- Basic control loops & their interconnections
- Feedforward plus feedback controls
- Cascade/ratio controls
- Process dynamics - generic control response
- Factors affecting control system or loop applications

BOILER FUEL COMBUSTION CONTROLS FOR

- Liquid fuels
- Gaseous fuels
- Solid fuels both graded & pulverized
- Combustion chemistry & products of combustion
- Stoihiometric air & excess air requirements

CONTROL PRINCIPLES & DESIGN CONCEPTS

- Boiler water level indicators & measuring devices
- Feed water control objectives
- Single, two or three element feed water controllers
- Associated problems & refinements
- Steam demand & firing rate control relationships
- Relationship between boiler load & temperature
- Temperature of & strategies for superheated steam
- Measurement of furnace draft
- Feedforward/feedback controls
- Impact of dew point & nitrous oxides & sulphur oxide pollutants
- Protection against implosion
- Pros & cons of measurement methods & gases selected
- Digital interlocks within control systems

Practical session & questions

> ***Valuable overview and industrial perspective.***
>
> Barry Jones

> ***I like the practicality of the workshop.***
>
> Karl Arnfield

ON-SITE TRAINING

- ✔ **SAVE** over 50% by having an IDC workshop presented at your premises.
- ✔ Customise the training to **YOUR** workplace.
- ✔ Have the training delivered when and where you need it.

Contact us for a **FREE** proposal.