



Effective Operation of the HRSG

8-10 June 2010 in Sophia Antipolis, France

Tetra Engineering will present its annual European training course *Effective Operation of the HRSG* over three days in June 2010.

The course gives attendees a comprehensive yet in-depth survey of a broad range of topics relating to the design, operation and maintenance of the HRSG and associated steam cycle systems. While primarily intended for O&M staff at all levels of experience working in combined cycle power plants, it would also be of interest to engineers and managers involved in new project development.

Drawing on our field experience working at power plants throughout the world, the objective is to provide attendees with clear instruction on the operator actions and design issues that impact HRSG reliability, efficiency and operating life.

Registration:

The registration fee for the course is 900 Euros per person and includes all course materials, lunches and a special dinner on Day 2.

Register through our web site (see www.tetra-eng.com/courses_index.php) or contact Carlos Garcia at our office in France (carlos.garcia@tetra-eng.com, +33 4 92 96 92 54) to register or for more information.

Course Location:

The course will be held at our offices* in the Sophia Antipolis technology park near Nice, France. There are numerous hotels in the area and we are located 20 minutes by car from Nice airport.

Course Agenda:

Introduction and Historical Perspective

- Comparison of Different Boilers & Cycles
- Materials Used in Boiler Construction

HRSG Design Basics

- Thermodynamics & Heat Transfer Review
- Natural and Forced Circulation
- Supplemental Firing
- Basic Construction Details

HRSG Design Variations

- Types of HRSG
- Variations

Flow Path Descriptions

- Waterside Flow Paths
- Gas Side Flow Paths

Key Components

- Feedwater: Preheaters, Recirculation, Deaerators,
- Economizers: Low, High Pressure
- Evaporators & Drums
- Relief and Safety Valves
- Superheaters, Reheaters, Attemperators
- Drains, Vents
- Casing/Setting

Power Piping

- Codes and Standards
- Review of Design Criteria
- Examples of In-Service Degradation
- Standard Maintenance Activities
- Engineering Analysis
- Pipe Hanger Types and Specifications

Control and Instrumentation

- Drum Level
- Pressure and Temperature
- Spray Systems

Damage & Degradation Mechanisms

- Surface Corrosion & Pitting
- Flow Accelerated Corrosion
- Corrosion Fatigue
- Cold-End Deposition
- Gas side Corrosion
- Thermal Effects
- Other Mechanisms

Water & Steam Chemistry

- Fundamentals
- Impurities in Water
- Water Pre-Treatment Methods
- Treatment Programs
- Purity Requirements
- Turbine Purity Requirements
- Carryover

Operations

- Dynamic response of system to start-ups/load changes
- Partial Load Operation
- Operation with Different Fuels
- Layup Practice
- Impact of GT Upgrades & HRSG Modifications on Performance
- Thermal Monitoring and Modeling of HRSG Performance
- Inspection Practice

* Or alternatively at a nearby hotel, depending on number of registrants.

USA:

Tetra Engineering Group Inc.
110 Hopmeadow St.
Weatogue, CT. 06089
Tel. +1-860-651-4622 Fax +1-860-651-5524

Europe:

Tetra Engineering (Europe) S.A.R.L.
Immeuble Petra A, B.P. 272
06905 Sophia Antipolis, France
Tel. +33 (0)4 92 96 92 54 Fax +33 (0)4 92 96 92 55

www.tetra-eng.com