

# Fundamentals and Practical Aspects of Waste Heat Recovery

Duration: 8 Hours

Date: March 7th, 2018 | 7:30AM-4:00PM

Cost: \$300

Location: The San Diego Convention Center, Room 3

## *Instructor:*

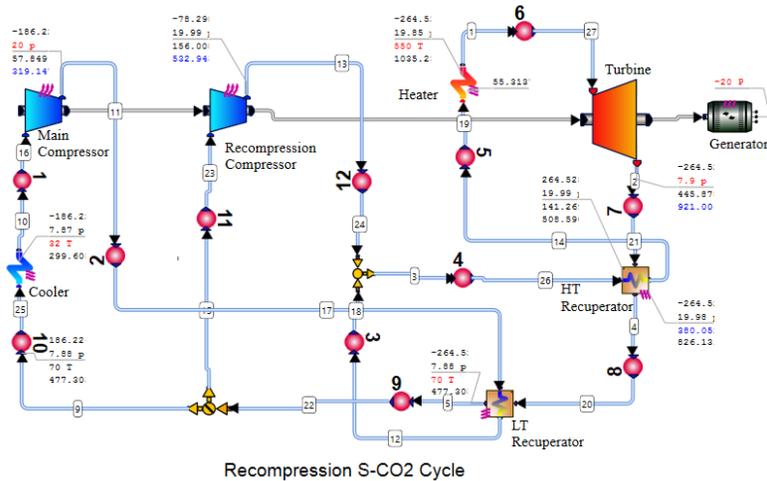
Mr. Clement Joly, Lead Engineer – Training, Technical Support and Special Projects.

(The 50% discounted EUEC registration cost will be added to attend each workshop)

## **Workshop Overview and Objectives**

The goal of this 1-day course is to provide engineers working in the energy and utility space with a better understanding of what waste heat recovery (WHR) systems are in the context of nuclear, fossil and renewable energies (including solar, biomass, etc.) and how they can greatly benefit the way we look at and increase the efficiency of our power generation installations to respect tighter environmental and emission regulations.

This workshop covers everything from assessment, opportunities, development and challenges for waste to energy processes to fluid properties and selection while diving into thermodynamic cycles and design of waste heat recovery system components using a combination of both theoretical and real-life examples. Additionally, specificities of WHR turbomachinery will be discussed and in-depth selection and design of axial and radial expanders will be undertaken focusing both on large equipment and smaller installations. This includes basic equations used for the design and analysis at design and off-design conditions of such machines, explanations on what a turbine is and the use of its components and their losses, as well as elementary profiling tips and much more.



In addition, the workshop will be supported with practical case studies illustrated through the use of different software tools.

### Course scope:

- Introduction and overview of waste heat recovery and thermodynamic cycles including ORC and sCO<sub>2</sub>
- Selection of fluid for recovery of low, medium and high grade waste heat for different power production ranges
- Discussion of turbine applications (axial versus radial-inflow versus radial-outflow), when to use them and their limitations
- Overall design process of turbines for different types of expanders (including axial vs radial) as well as pumps for waste heat recovery application
- Current design challenges and opportunities in waste heat recovery systems

### Who should attend:

- Technical managers and development engineers involved in design and development of systems and technologies for the improvement of energy efficiency by recovering waste heat.
- Professionals working on both renewable and green energy technologies.
- Engineers involved in design of nuclear and fossil-fired plants and other power generation technologies.
- Mechanical engineers and engineering managers working with waste heat recovery systems who are looking to learn about different system and component design and optimization strategies
- Engineering professionals working in the power generation or utility space looking to looking to improve or expand the product range by incorporating innovative engineering solutions into the waste heat recovery system design