Energy and Utility Systems

Consultant / Trainer:

Jan Zander

The **Petrogenium.** Utility and Energy course has the key objective to provide understanding and guidance to staff, with the purpose to improve the reliability, efficiency and effectiveness of utilities generation and distribution at your refinery, petrochemical complex or LNG facility. Over many years the **Petrogenium.** experts gathered deep technical expertise in the operation, optimization and troubleshooting of all Utility complex aspects and its associated equipment. This knowledge and resulting best practices were collected and built the foundation for the course.

Participants

This **Petrogenium.** course can be tailored for awareness/inexperienced staff, for intermediate and for experienced personnel. Furthermore the course can be customized for a specific refinery, plant or unit. The option for post-course consultancy/help-desk support is also available.

Participants may include: (new) engineers and senior operational staff whereas based on the attendee profile a more theoretical or practical course approach can be followed. If desired the 4-day can be structured with side specific support activities and exercises during various sessions.

Learning Objectives

Understanding of all factors related to energy and utilities to improve the reliability, efficiency and effectiveness of utilities generation and distribution of refineries, petrochemical complexes or LNG facilities; problems that are experienced in many manufacturers' sites but are not described in detail in most textbooks will be dealt with, in order to help the participants in trouble shooting several hot utilities systems once they come across these issues.

Programme

Day 1

- Introduction
- Basic water chemistry
- Water sources & surge
- Sedimentation & clarification
- Filtration
- Ion exchange / demin plant

Day 2

- De-aeration & oxygen scavenging
- BFW pumps & NPSH
- Boilers & combustion basics
- Boiler water treatment
- Condensate treatment
- Steam distribution, control & dynamics

Day 3

- Steam turbines
- Condensers
- Cooling towers performance
- Cooling water treatment
- CT water & chlorination
- Cooling water & legionella

Day 4

- Water integrity protection
- Process safety in utilities
- Pump curves
- Condensate trapping
- Fuel gas
- Instrument air
- Nitrogen
- Reliability philosophy
- Power dynamics

The course is also available in a version for (night) shift operator training (face-to-face or remotely). For an impression of what an on-line course for (night) shift operators could look like: