

Course Process & Cooling Water



Training Information

- Date:

See website www.blue-expert.com

- Duration:

1 or 2 day general course (split into a separate process or cooling water course day)

- Locations:

On-site; Apeldoorn, Netherlands; other locations see www.blue-expert.com

- Language:

English or Dutch

Process and cooling water can be considered the life-blood of your installation, and that is the essence of this series of courses. For reliable operations, optimum conditioning of the water steam circuit and good fouling control in the cooling water circuit are crucial to preventing corrosion and fouling. Having the right background information is essential in this effort.

With this series of courses, we ensure that your knowledge at various levels is updated and your questions are answered.

The series consists of a two-day general course in process, and cooling water, which covers all of the topics mentioned at a general level and/or upon request tailor made courses with a focus on i.e.:

- fouling control when using cooling water
- water chemistry basics

- make-up water preparation with ion exchange units & membrane technology
- conditioning of and preventing corrosion in the water steam circuit

Subjects covered:

Chemical Treatment of the water steam cycle

An optimal treatment of the water/steam cycle (steam, condensate, make-up, boiler feed and boiler water) is essential for a proper operation, this to prevent corrosion and with that unforeseen outage and production losses. Based upon decades of practical experiences different institutes have produced their own guidelines for the treatment of water/steam systems. Why which guidelines are applied under what circumstances will be discussed during this part of the course. The different treatment regimes, the influences on materials, solubility of magnetite and the influence of oxygen are important topics. Together with cases the theory and practice are coupled.

Corrosion

The sole reason for chemical treatment is the prevention of corrosion. To recognize the different forms of corrosion and with that the required adjustments, knowledge on corrosion is mandatory. The most frequent forms of corrosion for process and cooling water systems will be discussed, such as acid and caustic corrosion, pitting, stress corrosion, microbiologically induced corrosion (MIC) et cetera. In addition, the removal of corrosion and deposits (chemical cleaning) will be covered, together with the prevention of standstill corrosion (lay-up).

Monitoring

The treatment of water/steam systems is usually controlled by (online) measurements. Analyses (what, where and how) according to the state of the art will be discussed. Also the influence of interfering components and use of new parameters, such as degassed cation conductivity will be covered. With practical examples the theory will be supported and will prove the importance of a proper measurement.

Cooling water

Biofouling mitigation is for cooling water systems mandatory. Both once-through as cooling tower systems will be covered during this training course. When no measures are taken, within one year serious operational issues could occur. The theory behind biological fouling will be discussed, together with the growth of macro fouling, such as mussels, barnacles et cetera. This will also involve prevention of legionella. Physical and chemical treatment against fouling, both micro as macro, is important and needs to be monitored. During the course different options for biofouling treatment, monitoring options will be covered, using practical cases to support the theory. Special attention is given to the use of chlorine, Pulse-Chlorination, and the formation of chlorination by-products.

Increase knowledge on the following topics

- How to ensure the integrity of your boiler, condensate system and cooling water line.
- Guidelines to the treat your water/steam cycle
- Identity different forms of corrosion and preventive measures
- In depth knowledge of the theory behind the practice
- Knowledge on the mitigation of both macro and micro fouling in cooling water systems

Target Audience:

This course is intended for staff in industry and power generation whom would like to improve their knowledge on water treatment in relation to water / steam cycle and / or cooling water system and intend to optimize the performance of their asset. The course will be valuable to operators, plant engineers, chemists and laboratory staff.

BlueXPRT and H₂O Biofouling Solutions have multiple years of experience gained by working closely with industry. They have teamed up and will provide the courses. As part of their daily work they follow the newest international developments in their respective fields. To bring theory and practice together, participants are encouraged to come up with cases from their own plant - if possible - to discuss during the course. Practical examples like these are an important part of the course. Examples will be discussed to enhance the understanding of the nature of water chemistry issues. Next to that examples are used to illustrate the day-to-day practice resulting from theory discussed in the course.

For more information contact:

Ludwin Daal

Email: Ludwin.Daal@blue-expert.nl

Phone: +31 6 15 06 33 40

www.blue-expert.com

Registration and Dutch course information:

www.blue-expert.com