

Advanced Course on Hygienic Design Amsterdam, 14 - 17 March 2011

1. Aim

The course provides knowledge of and insight into the hygienic design of equipment and processes for the food industry, to better fulfil the wishes of purchasers and retailers. These include minimising down time, maintenance, cleaning costs and environmental impact, but also efficient cleaning, optimal product safety and constant product quality. The design should comply with present legislation and standards, but can also anticipate future changes.

2. Participants

The course is meant for mechanical engineers, constructors, draughtsmen, project managers and sales-engineers, active with machine building for the food industry, including the engineering offices. Participants can originate from different sub-branches.

The course is also excellent for the technical and quality assurance staff of the food industry itself.

3. Previous training and working experience

The participants should have a minimum of two years of relevant practical experience. Participants with equivalent training or experience may be able to participate after consultation with the course director.

4. Course duration

The course duration is 4 days, starting at Monday March 14th at 13.30 and ending Thursday 17th at 12.30. Lunches and three dinners are included.

5. Form and content

The course is given from a very practical viewpoint. The theoretical fundamentals of the different subjects are presented in a short and concise way, continuously relating to practice by means of examples on video or pictures or samples. By the visiting of a pilot plant the participant get the opportunity to apply the knowledge. The course gives you tools to solve hygienic problems within your own organisation. Because of the small groups the course is very interactive.

6. Course date and location

The course will be held in Amsterdam (The Netherlands), March 14th – 17th 2011.

7. Costs

The cost of the course is Euro 2,150 ex.VAT, including handouts, coffee, tea, lunches and three times dinner. EHEDG members receive a Euro 200 discount.

8. Registration

via email info@ehedg.nl

9. Information

For further information you can contact the members of the international training group [W.N.A. Burggraaf](#) or [R. Cocker](#)

Program content

1. Introduction
2. Design Constraints and Requirements
 - History, Standardization & Legal Aspects
 - Machinery Directive; NEN-EN 1672; ISO 14159; NSF 3-A, **EHEDG**;
 - General Food Law
3. Know Your Enemy™
 - Damage and losses caused
 - Functional microbiology
 - Contamination/invasion mechanisms
 - Colonisation, biofilms, preservation and death
4. Scientific background EHEDG documents
 - EHEDG Test Methods, three tests, results on sheet
5. Hygienic Design of Food Production Systems
 - Uses Know Your Enemy™ to explain reasons behind design rules
 - Introduction document 8 & 10
 - Cleanability
 - Bad examples and effective solutions™
 - Wider coverage than just equipment
6. Material of Construction
 - Stainless steel; carbon; surface finish
 - Polymer use; FDA, Limitations, Management, Desorption
 - Background information integrity polymer surface (for seals)
7. Welding Stainless Steel
 - also set-up project; QA – QC incoming materials
 - permanent joint
8. Static Seals and Couplings
 - Design principle static seals; examples

9. Case Study: Spray Ball

- Application; define: product contact areas; redesign model

10. Background: Rheology / Thermodynamics

- Newtonian / non-Newtonian fluids; yield value (needed to understand case pump)
- Flow rate; removal of micro-organism; falling film; results for closed equipment applicable to open equipment
- Fouling heat treatment; sterilisation time (needed for heat treatment and reaction time)

11. Valves

- Valve types
- Hygienic versus aseptic
- Double-seat valve
- Case study weir-type valve

12. Dynamics Seals (Pumps)

- Case Positive replacement pump with application; safety valve and yield value

13. Cleaning and Disinfection

Course has up to now been focussed on removing invisible micro-organisms, but firstly visual soil has to be removed

- Cleaning & Disinfection 1 – background
- Cleaning & Disinfection 2 – application
- Fouling, cleaning agents, cleaning methods (Sinner circle), CIP, ATP

14. Continuous Thermal Treatment Processes

15. Open Equipment Design

16. Packaging

17. Supporting Activities - Lubrication Use

- FDA, Limitations, Management (following bearings; dynamic seals)

18. Building & Process Lay Out

- design around process, equipment, logistics, etc.

19. Supporting Activities - Installation & Maintenance Procedures

20. Case Study (Pilot Plant); 5 groups of 3-4 persons at the largest public accessible pilot plant at Nizo Institute in Ede, Netherlands with different pilot or semi production scale equipment;

21. Plenary Discussion

- presentation each group of results case study

23. Back in the Office.....

- Integration of Hygienic Systems
- Risk management paramount –evidenced-based!
- Starts with constraints: law, hygiene hazards, stakeholder requirements
- All steps correct and present
- Right sequence
- Concurrency
- Prescriptive design versus risk assessment
- Buying and selling hygienic Equipment

24. Student Course Evaluation