

## **Advanced Course on Hygienic Design Amsterdam, 7 - 10 December 2010**

### **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 December 7<sup>th</sup> at 13.30 and ending Thursday 10<sup>th</sup> 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), December 7<sup>th</sup> – 10<sup>th</sup> 2010.

### **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**

Before November 1<sup>st</sup>, 2011, via email [info@ehedg.nl](mailto: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