# Building a Coherent EHEDG Guideline Portfolio

## Creating Clarity and Consistency Across Our Guidelines

Full Working Groups Day 2026
EHEDG Subcom Working Groups

# Constitution, Internal Rules & Code of Conduct

- Why do we have a Code?
- Who must follow our Code?
- What does the Code require from me?
- What should I do if I learn about or suspect misconduct?
- What will happen if someone does not follow the Code?

## 1. We follow the law

- Following Applicable Laws

## 2. We conduct our activities with integrity

- Anti-Bribery
- Gifts and Entertainment
- Fair Competition
- Intellectual Property

# Constitution, Internal Rules & Code of Conduct

3. We keep accurate and transparent records
4. We honour our organisational obligations
    - Trust in Relationships
5. We treat people with dignity and respect
    - Human Rights
    - Strength through Diversity
    - Alcohol and Drugs
    - Harassment and Violence
6. We protect EHEDG's information, assets and interests
    - EHEDG Property and Resources
    - Political Activity

# Internet Access

- **User:** nh
- **Password:** wifi

# Introduction

## The FWGD Will Cover Four Aspects:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Understanding our journey | Creating clarity across the guideline portfolio | Building consistency between Guidelines | Agreeing how we move forward |

# Agenda – 4 Nov AM



| | |
|---|---|
| **08:00 - 08:30** | Registration |
| **08:30 - 09:30** | Welcome and Introduction - Understanding our Journey |
| **09:30 - 10:30** | Guideline Development Process (GDP) explained |
| **10:30 - 10:55** | Coffee |
| **10:55 - 12:30** | Taskforce Certification |
| **12:30** | Lunch |

# Agenda – 4 Nov PM



| | |
|---|---|
| **13:30 - 15:00** | The Guideline Web |
| **15:00 - 15:25** | Coffee |
| **15:25 - 16:15** | Feedback Session |
| **16:15 - 16:30** | Example of Wow in WGs (Ralf) |
| **16:30 - 17:00** | Planning & Closure |
| **18:10** | 1st bus leaving for dinner, 2nd bus will be about 15 mins later |

# Agenda – 5 Nov F2F Working Groups Meeting

**13 Working Groups are meeting**



| | |
|---|---|
| **08:30-12:30** | Individual Working Groups meetings |
| **12:30–13:30** | Lunch |
| **13:30–17:00** | Individual Working Groups meetings |

# 13 EHEDG Working Groups

## Building Design

Chairs: Herwig Nollet, Gun Wirtanen, Patrick Wouters, Micha Nierop, Dr. John Holah

## Chocolate

Chairs: Matilda Freund, Adam Ruskin, Garry Pearson, Jitendra Rai

## CIP

Chairs: Hein Timmerman, Joe Matthews

## Dry Materials Handling

Chairs: Gabrie Meesters, Martijn van der Hoeven

## Elastomeric Seals

Chairs: Eva Fleischmann, Giovanni Valente

## Materials of Construction

Chairs: Eric Partington

## Robotics

Chairs: Alan Friis, Greg Harper

## Welding

Chairs: Peter Merhof

## Sensors

Chairs: Holger Schmidt



## Maintenance

Chairs: Dimitri Tavernarakis

## Conveyor Belts

Chairs: Enrico Visconti, Roger Scheffler

## Utilities

Chairs: Roland Cocker, Lisa Bullens

## Valves

Chairs: Uwe Heisswolf, Elena Klenk

# Understanding our Journey

# Historical Overview of the FWGD

## 2023

Istanbul, Turkey

17 -18 October 2023

Improving Working Group Processes and Ways of Working



## 2024

Amsterdam, Netherlands

7 & 8 November 2024

Strategic Alignment, Working Group Collaboration and Guideline Portfolio Management



## 2025

Kraków, Poland

15–16 October

Collaboration, Coordination and Planning for 2026



# Previous Themes

Krakow 2025:

Process of writing EHEDG Guidelines

Amsterdam 2026:

EHEDG's cohesive portfolio

# Our Current Titles



# Types of Guidelines



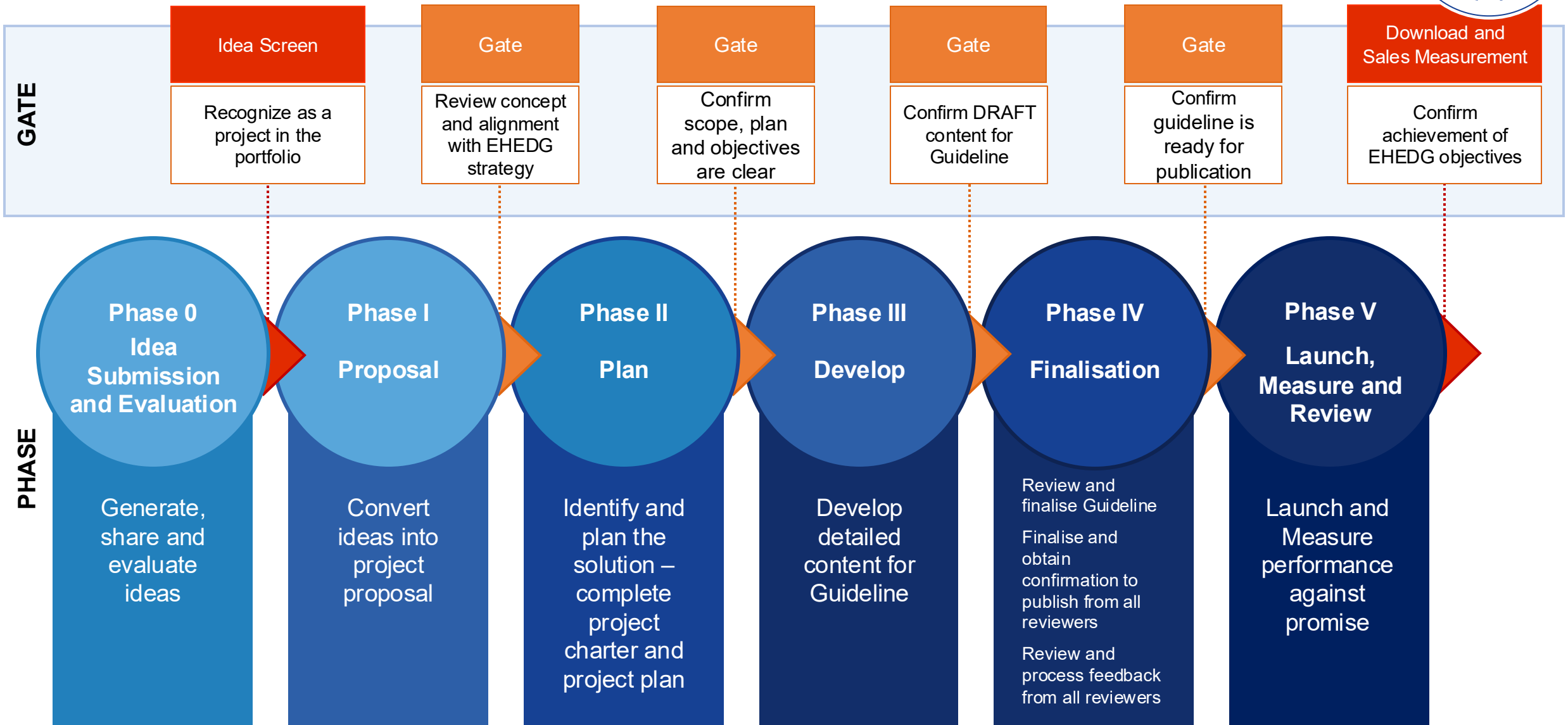
EHEDG has 3 types of Guidelines

| Methods | Equipment | Technology / Industry sector-specific |
|---|---|---|

**Published in following formats**

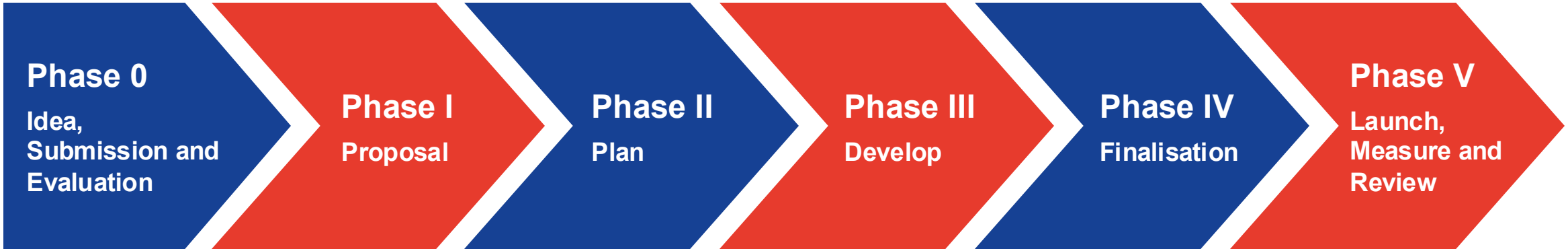
- **GL:** Guidelines
- **W:** White paper
- **P:** Position paper

# Guideline Development Process

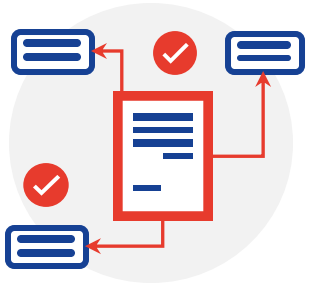


# Explain Our Current Portfolio

Total of **80 guidelines, white and position papers**




**17** GLs | **10** GLs | **21** GLs | **10** GLs | **22** GLs published!



**58 are new or being revised**

# Guideline Titles

**Phase 0**

**Idea, Submission and Evaluation**

Digital and AI Solutions for Hygienic Food Processing

Slicers and Cutters

Utensils

# Guideline Titles

**Phase I**

**Proposal**

- GL 55 Hygienic Design Requirements for Bakery Equipment
- GI 45 Cleaning Validation, Monitoring and Verification
- GL 10 Hygienic design of closed equipment for the processing of Liquid food
- GL 18 Chemical Treatment of stainless Steel Surfaces – New: Surface Treatment of Stainless Steel
- GL 36 Hygienic Engineering of Transfer Systems for Dry Particulate Materials
- GL 40 Hygienic Engineering of Valves in Process Lines for Dry Particulate Materials
- GL 49 Hygienic Design Requirement for processing of fresh fish
- GL 25 Design of mechanical seals for hygienic and aseptic applications
- GL 46 Aseptic and Hygienic Filling Machines - Planning, Installation, Qualification and Operation
- GL 5 A method for the assessment of in-line sterilisability of food processing equipment
- GL 7 A method for the assessment of bacteria-tightness of food processing equipment
- GL 19 A method for assessing the bacterial impermeability of hydrophobic membrane filters
- GL 67 Ice Cream Manufacturing
- P Additives Manufacturing (3D printing)
- GL 68 Hygienic Design of Brewing and Beer Production Facilities
- GL 69 Hygienic Design of Ready-to-Eat Meals Manufacturing Facilities
- GL 70 Hygienic Design of Fresh Produce Processing and Handling Facilities

# Guideline Titles

**Phase II**

**Plan**

GL 52 Basic Principles of Cleaning and Disinfection in Food Manufacturing

WP1 GFSI Hygienic Design Scopes JI & JII

GL 1 Continuous Pasteurization of Liquid Food

GL 6 Continuous UHT Sterilization of Liquid Food

GL 32 P1 Materials of Construction: General Requirements

GL 32 P3 Elastomeric Materials

GL 32 P4 Plastic Materials

GL 32 P5 Other Materials

GL 62 P2 Hygienic Design Requirements for End-Effectors

GL 62 P3 Hygienic Integration requirements for Robotic Systems

# Guideline Titles

**Phase III**

**Develop**

- GL 47 Guidelines on Air Handling Systems in the Food Industry - Air Quality Control for Building Ventilation
- GL 44 P1 HD Site and Building Envelope
- GL 44 P4 Drain + Floors
- GL 44 P5 Services
- GL 63 Chocolate
- GL 43 Hygienic Design of Belt Conveyors for the Food Industry
- GL 39 Design Principles for Equipment and Process Areas for Aseptic Food Manufacturing
- GL 31 Hygienic Engineering of Spray Dryer and Fluid Bed Plants
- GL 33 Hygienic engineering of discharging systems for dry particulate materials
- GL 38 Hygienic Engineering of Rotary Valves in Process Lines for Dry Particulate Materials
- GL 60 Hygienic Engineering of vibrotory sieves for Dry Particulate Materials
- GL 66 Hygienic Engineering of milling system for Dry Particulate Materials
- GL 56 Foreign Bodies
- GL 34 Integrating Hygienic Entities
- GL 61 Hygienic Maintenance and Installation Practices for the Food Industry
- GL 32 P2 Metallic Materials
- GL 59 Red Meat Processing
- GL 29 P5 Hygienic Design of Packing Systems for Solid Foodstuffs: Horizontal Form Fill and Seal
- GL 64 Utilities
- GL 14 Requirements for valves in hygienic and aseptic processes
- GL 9 Welding stainless steel to meet hygienic requirements

# Guideline Titles

**Phase IV**
**Finalisation**

GL 44 P3 Plant-layout and Zoning

GL 50 Hygienic Design requirements for CIP Installations

GL 22 General hygienic design criteria for the safe processing of dry particulate materials

GL 41 Hygienic Engineering of Diverter Valves in Process Lines for Dry Particulate Materials

GL 48 Elastomeric Seals

GL 23 P2 Production of H1 & HT1 Food Grade Registered Lubricants

GL 17 Hygienic design of pumps, homogenizers and dampening devices

GL 37 P2 Engineering and Development of Hygienic Process Sensors

GL 16 Hygienic pipe couplings

P1 Easy Cleanable Pipe Couplings and Process Connections

# Guideline Titles

**Phase V**

**Launch, Measure and Review**

- GL 44 P2 Managing Building Work and Equipment Installation/removal During Food Production
- GL 8 Hygienic design principles
- GL 13 Hygienic design of equipment for open processing
- GL 53 Hygienic Engineering of Bulk Pack-off Systems in Process Lines for Dry Particulate Materials
- GL 58 Hygienic Design Risk Management
- GL 12 The continuous or semi-continuous flow thermal treatment of Liquid particulate foods
- GL 23 P1 Use of H1 & HT1 Registered Lubricants
- GL 29 P1 Hygienic Design of Packing Systems for Solid Foodstuffs: General consideration
- GL 29 P2 Hygienic Design of Packing Systems for Solid Foodstuffs: Thermoforming Packaging Machinery
- GL 62 P1 Hygienic Design Criteria For Robots in Food Processing Environments: Fundamental Requirements
- GL 37 P1 Hygienic Design and Application of Sensors
- GL 42 Disc Stack Centrifuges - Design and Cleanablility
- WP2 The Impact of Hygienic Engineering and Design on Sustainability in Food Production
- GL 51 Hygienic Design Aspects for Tank and Vessel Cleaning in The Food Industry
- GL 2 A method for assessing the in-place cleanability of food processing equipment
- GL 57 A method for the assessment of open process equipment cleanability
- GL 20 Hygienic design and safe use of double-seat mixproof valves
- GL 65 Sampling Systems For Representative Liquid Sampling
- GL 28 Safe and Hygienic Treatment, Storage and Distribution of Water in Food and Beverage Factories
- GL 35 Hygienic welding of stainlesss-teel tubing in the food processing industry
- GL 54 Testing of Hygienic Weld Joints

# Guideline Type

| Methods | Equipment | Technology / Industry sector-specific |
|---|---|---|

## How well do you know the different types of EHEDG Guidelines?



You will be shown 4 EHEDG Guidelines.
For each one, select the category you think is correct.

Let's see how well you know the Guideline Portfolio!

# Instructions

Go to

**www.menti.com**

Enter the code

**7411 8768**



Or use QR code

# Simplified SCPs Structure

| Old SCP No. | Old Title | New SCP No. | New Title |
|---|---|---|---|
| SCP 1-1 | Document Flow Chart (discontinued) | SCP 1-1 | Strategic Planning for EHEDG Guideline |
| SCP 1-2 | Color Scheme (discontinued and merged into 1-2) | SCP 1-2 | Guideline Development Process |
| SCP 1-3 | Rules for EHEDG Working Groups (merged into 1-2) | SCP 1-3 | Working Group Participation Reimbursement Instructions |
| SCP 1-4 | Reimbursement Rules (revised and now SCP1-3) | SCP 1-4 | Guideline Idea Submission |
| SCP 1-5 | Strategic Planning (revised and now SCP1-1) | SCP 1-5 | Guideline Idea Evaluation (New) |
| SCP 2-1 | Guideline Proposal Revision Form (revised) | SCP 1-6 | Guideline Proposal Template (New) |
| SCP 2-2 | EHEDG Document Preparation Manual (revised and now SCP 2-4) | SCP 1-7 | Guideline Development Instructions |
| SCP 2-3 | (did not exist) | SCP 1-8 | Guideline Template |
| SCP 2-4 | (did not exist) | | |
| SCP 2-5 | Document Life Cycle (discontinued merged into 1-2) | | |
| SCP 2-6 | EHEDG Comments Template (discontinued) | | |

# Direction, Process and Participation

| | |
|---|---|
| **SCP 1-1** | **Strategic Planning**<br>Prioritises guideline development and revision based on industry needs, EHEDG strategy and available resources |
| **SCP 1-2** | **Guideline Development Process**<br>Defines the phases, responsibilities and review steps from initial idea through publication and ongoing maintenance |
| **SCP 1-3** | **Working Group Reimbursement Rules**<br>Clarifies when and how Working Group participants can receive support for travel and accommodation expenses |

# From Idea to Project Proposal

| | |
|---|---|
| **SCP 1-4** | **Guideline Idea Submission**<br>Captures ideas for new guidelines or revisions, outlining the need, scope and expected benefits |
| **SCP 1-5** | **Idea Evaluation**<br>Supports consistent evaluation and prioritisation based on relevance, added value, feasibility and stakeholder interest |
| **SCP 1-6** | **Guideline Proposal Template**<br>Turns a supported idea into a project proposal for approval, outlining scope, expertise, resources and timing |

# Preparing Consistent Guidelines

| | |
|---|---|
| **SCP 1-7** | **Guideline Development Instructions**<br>Explains how to prepare clear, practical and consistent guideline content |
| **SCP 1-8** | **Guideline Template**<br>Provides a standard structure and format, adaptable to the guideline type |

# What Next

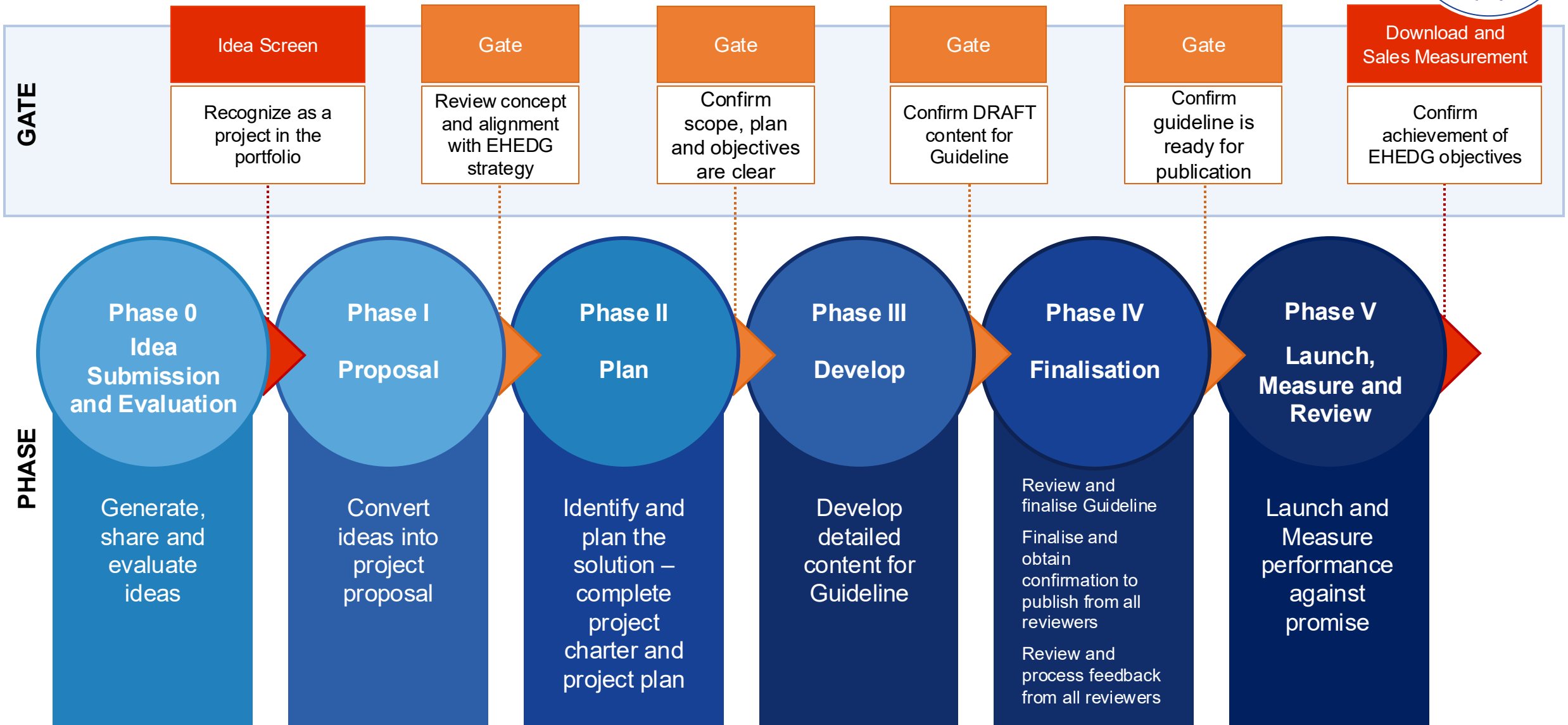


All SCPs are located here:
General | SCP (EHEDG)

**Note:** They are FINAL DRAFTS

Further fine tuning is needed and your input will be requested

# Guideline Development Process



# Gates: Confirm Readiness Before Moving Forward

## Check readiness at each phase transition

Confirm that the expected deliverables are sufficiently complete and aligned with the agreed scope

## Use gates for constructive discussion

WG Co-Chairs confirm readiness; SubCom Working Groups provide guidance and help resolve outstanding issues

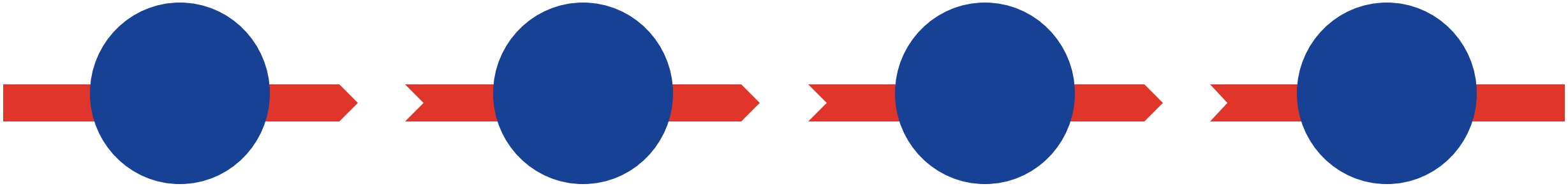
## Agree the next step

Decide whether to continue, adjust, stop or cancel the project

## Resolve issues early

Address gaps, overlaps, dependencies and resource constraints before committing further effort

# Build Quality Into Every Phase



### Plan before drafting

Agree the scope, objectives, content structure, expertise and timeline before developing the guideline

### Connect with the wider EHEDG portfolio

Resolve overlaps and align early with Certification and Training & Education where relevant

### Prepare a complete draft for peer review

Identify reviewers early and enter formal peer review with technically complete content

### Maintain the guideline after publication

Collect feedback, monitor relevance and plan updates through the five-year review cycle

# New WGs

New Working Groups now in planning, following approval of their objectives, scope and relevance to EHEDG.

## Progress



Hygienic Design of Ice Cream Manufacturing Facilities

Public call: 21 people interested
WG Chair informed – planning kick-off



Position Paper Additive Manufacturing (3D Printing)

Public call: 18 people interested
WG Chair informed – planning kick-off

# New WGs

New Working Groups now in planning, following approval of their objectives, scope and relevance to EHEDG.

## Progress



Hygienic Design for Bakery Equipment

Public call: 18 people interested
New WG Chairs nominated



Hygienic Design Requirement for Processing of Fresh Fish

Public call: 18 people interested
New Chairs being nominated

# New Upcoming WG

As part of the Guideline Development Process, we started to collect Ideation proposals following a defined Template to ensure valuable objectives, scope, and relevance for EHEDG

- Hygienic Design of Fresh Produce Manufacturing Facilities
- Hygienic Design of Ready-to-Eat Meals Manufacturing Facilities
- Hygienic Design of Brewing and Beer Manufacturing

**Call for experts will follow**

# New Revision Projects

As part of the Guideline Development Process new revision projects will start



White Paper GFSI Hygienic Design Scopes JI & JII



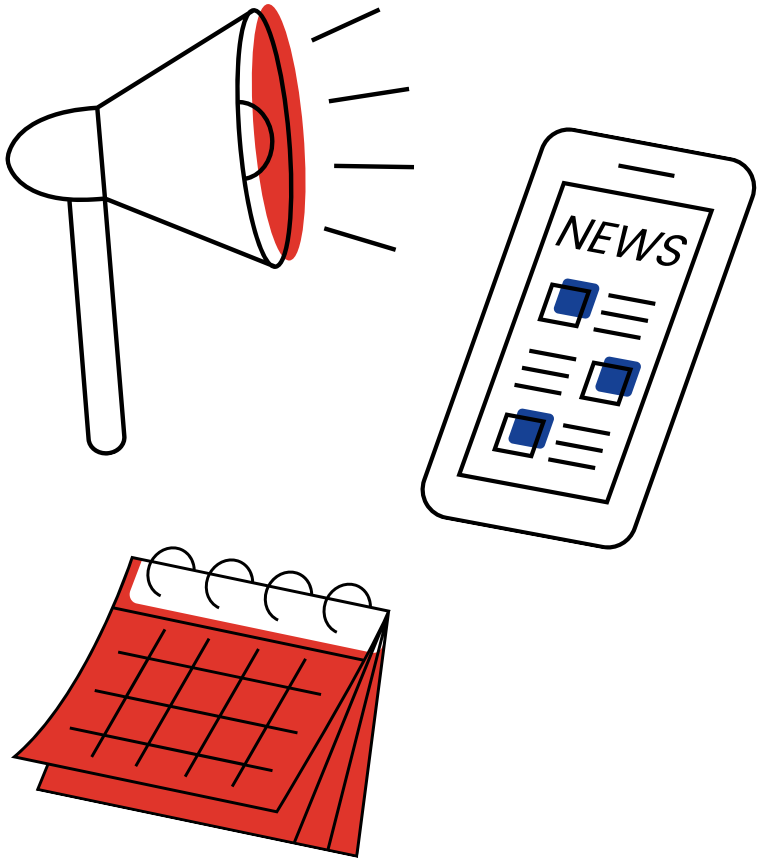
GL 18 Surface Treatment of Stainless Steel (new name)



GL 25 Mechanical Seals

**Call for experts will follow**

# Latest News




## Following Working Groups Chairs

- Bakery WG (revision) and 1 new WG Co-chair appointed Georg Kalss (Buhler) – kick-off meeting being planned
- Ice Cream WG (new), WG Co-chair Matthias Eisner (Yili) – Kick-off meeting being planned
- Position Paper Additive Manufacturing (new), Dimitri Tavernarakis Co-Chair
- Air Handling WG new Co-chair Fahmi Yigit

# Working Group vacancies

| Working Group | Vacancy Situation | Status |
|---|---|---|
| **Sensors** | 2 new Co-Chairs | WG will nominate its Co-Chairs during the F2F meeting on 5 November |
| **Fish Processing** | 1 Co-Chair; 1 Co-Chair agreed | Call for Experts Circulated |
| **Chemical Treatment-new title Surface Treatment** | 1 Co-Chair, 1 Co-Chair agreed | Call for experts to be send |
| **Mechanical Seals** | 1 Co-Chair (potentially 2) | Will Reach out to former WG members first |
| **SubCom Working Groups** | 3 new members | Call for Experts Circulated and review process on going |

# Other Guideline Revision News

## GL32 Materials of Construction will be split into 5 individual parts

| | |
|---|---|
| 32 P1 | Materials of Construction: General Requirements |
| 32 P2 | Metallic Materials |
| 32 P3 | Elastomeric Materials |
| 32 P4 | Plastic Materials |
| 32 P5 | Other Materials |

## Robotics team is working on 2 new parts of GL 62

| | |
|---|---|
| 62 Part 2 | Hygienic Design Requirements for End-Effectors, Part 2 |
| 62 Part 3 | Hygienic Integration requirements for Robotic Systems, Part 3 |

# Call For Experts

- Current Working Group Opportunities:

  https://www.ehedg.org/guidelines-working-groups/call-for-experts

# AI Policy

# Full Working Groups Day

EHEDG AI - WG Member Policy

# AI may support developing EHEDG guidelines

## But it may never replace

- independent technical working group expertise,
- expert consensus nor,
- our Guideline Development Process.

## Fundamental principle:

**AI supports EHEDG expertise, it does not replace it.**

# EHEDG Responsible AI Use Policy for Working Group Participants (SCP)

## Our AI Policy

EHEDG's AI policy will be based on:

- responsible use,
- transparency,
- confidentiality,
- human accountability

## Usage

We encourage Working Group members to use AI tools where it improves efficiency and quality of technical work …

but …

we will set boundaries where AI could compromise

- scientific accuracy,
- intellectual property,
- Confidentiality,
- credibility

# EHEDG's AI Traffic light

Green: Permitted (without prior approval)

Using AI to

- improve grammar,
- readability and structure,
- brainstorm discussion topics,
- prepare generic agendas,
- translate non-confidential material,
- research publicly available technical concepts

Human verification remains necessary for technical claims.

# EHEDG's AI Traffic light

## Orange: Permitted with safeguards

Using AI to

- draft technical guidance,
- summarise non-public Working Group discussions,
- compare standards and/or guidelines,
- evaluate scientific literature
- analyse technical data.

Requires appropriate authorisation for the tool and data, always bring it forward to HO first, verification of sources, human technical review and disclosure of material AI contributions.

# EHEDG's AI Traffic light

Red: Prohibited

- uploading confidential EHEDG documents,
- third-party owned information to unauthorised AI services,
- fabricating technical evidence,
- presenting AI-generated recommendations as validated EHEDG conclusions,
- allowing AI to make final decisions on technical requirements, approvals or certification.

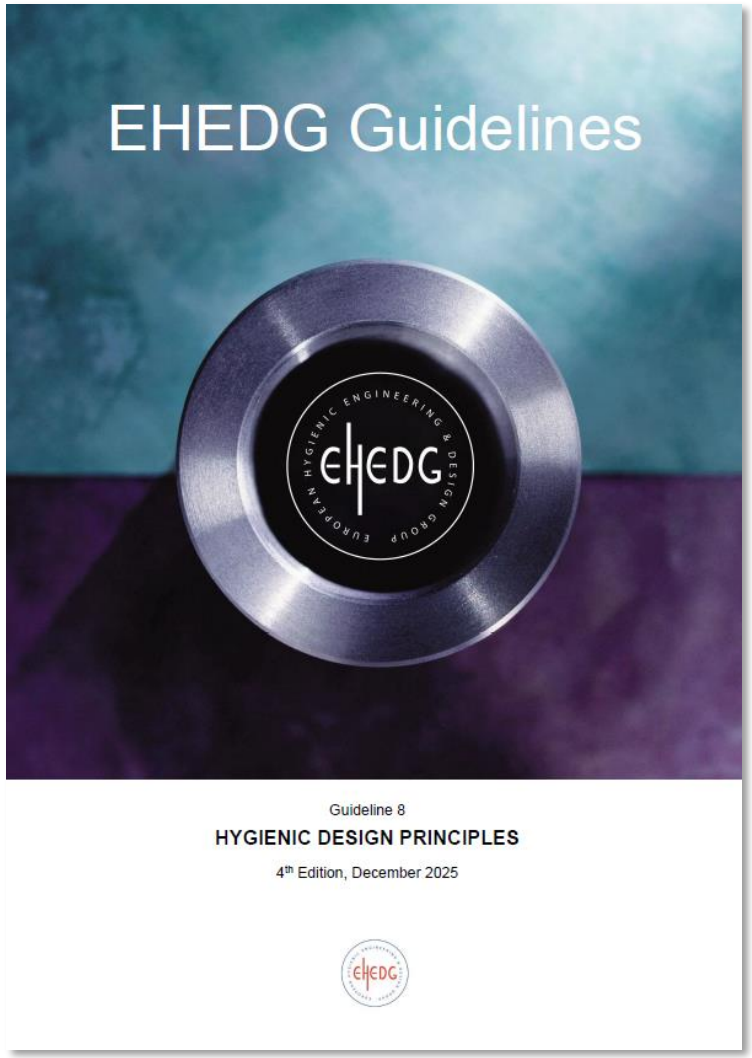
# The 10 EHEDG AI Commandments

1. Confidentiality — Do not disclose non-public WG info to unauthorised AI services.
2. IP — Respect EHEDG and 3rd party copyrights, licences and contributor rights.
3. Accuracy — Verify AI-generated tech statements against reliable primary sources.
4. Transparency — Disclose material AI assistance in tech contributions.
5. Accountability — The contributing WG member remains responsible for their work.
6. Consensus — AI cannot participate in consensus, vote or replace expert judgment.
7. Data protection — Do not upload personal info without legal basis and approved safeguards.
8. Independence — Any AI input cannot introduce supplier bias or product preferences.
9. Approved apps — Use only tools authorised for classification of info being processed.
10. Governance — EHEDG can request verification, correction or removal of AI-assisted contributions.

# New Guideline

## Lay-out

# Example of current guidelines




**Summary**

This document outlines the hygienic design considerations applicable for a risk-based approach to prevent contamination of food products. Entities (equipment and facilities) with poor hygienic design are difficult to clean. This document describes the principles of hygienic design that should be followed when designing, constructing and installing entities intended for food manufacturing. Guidance is provided for each of these steps to ensure that they do not adversely affect food safety and quality. The principles and criteria apply to both the processing equipment and the manufacturing environment according to the intended use. These criteria are used as a basis for EHEDG equipment certification. Other EHEDG Guidelines elaborate on the various aspects explained in this Guideline.

## Introduction

EHEDG is a non-profit consortium of stakeholders in the food industry. The objective of EHEDG is to be a global platform to define, explain and discuss hygienic design and engineering considerations for food manufacturing equipment, buildings and infrastructure, as well as for associated procedures and practices, to operate, maintain, clean and manage food safety and quality.

Ensuring the safety and quality of food products through the application of hygienic design is paramount in the food manufacturing industry.

By adhering to the essential principles and criteria, published in this Guideline, during the design, construction and installation of hygienic entities, builders and constructors of hygienic entities as well as food producers can ensure that a food manufacturing environment will be created which helps to produce safe and wholesome food and which is easy to clean and maintain, thereby minimising the risk of contamination.

EHEDG GL 8 was first published in 1993 to elaborate on the hygienic design requirements of the European Machinery Directive (1). EHEDG GL 8 is now referenced in all other EHEDG Guidelines supplementing those documents.

## 1 Objectives and Scope

EHEDG GL 8 provides an overview of the general hygienic design considerations, i.e. objectives and principles, which are applicable to equipment and facilities. Special considerations are provided for hygienic design criteria for food processing equipment in open and closed operations, taking wet and dry cleaning into consideration. Specific building design criteria are published in EHEDG GL 44 (2). Other EHEDG Guidelines elaborate on the various aspects explained in this Guideline.

This Guideline serves as a foundation for evaluating hygienic design within the EHEDG equipment certification programme (see Appendix A). Functional requirements, intended use, materials of construction and assessment methods are elaborated on in specific EHEDG Guidelines.

## 2 Normative References

The following documents contain provisions that, through reference, constitute provisions of this EHEDG Guideline. At the time this Guideline was prepared, the editions listed below were valid. All documents are subject to revision and parties are encouraged to investigate the possibility of applying the most recent editions of the documents indicated below.

EN 1672-2:2020 Food processing machinery – Basic concepts – Part 2: Hygiene and cleanability requirements (3)

ISO 14159:2002-04 Safety of machinery – Hygiene requirements for the design of machinery (4)



Whilst the prevention of food safety hazards can be considered as the main objective, hygienic design principles should also be applied to prevent production losses and increased costs caused by contamination. Some examples are given below:

- Reduced operating time (e.g. through prolonged cleaning downtime)
- Reduced performance (e.g. through reduced line speed)
- Quality defects (e.g. through spoilage)

Hygienic design principles can also contribute to reaching sustainability targets and occupational health and safety requirements.

### 4.3 Hygienic design risk management

The process of performing a hygienic design risk assessment (HDRM) and associated management is described in EHEDG GL 58 (7). The HDRM Guideline (7) provides guidance on the management of hygiene risks in the context of the hygienic design of food manufacturing equipment and facilities.

The methodology of the HDRM model (7) is a step-by-step approach, supported by several checklists and examples and consists of the following steps:

1. Establishment of scope, context and criteria
2. Hygiene risk identification
3. Hygiene risk analysis and evaluation
4. Hygiene risk reduction
5. Verification, validation, control and monitoring

Hygienic design principles should be applied to all stages of the food supply chain. The details of the actual design and fabrication of an entity are determined by the intended use and suitability for purpose.

EHEDG has classified different requirements for hygienic design criteria to be applied to equipment depending on the intended use and cleaning methods (see Table 1).

Table 1: EHEDG classification of equipment

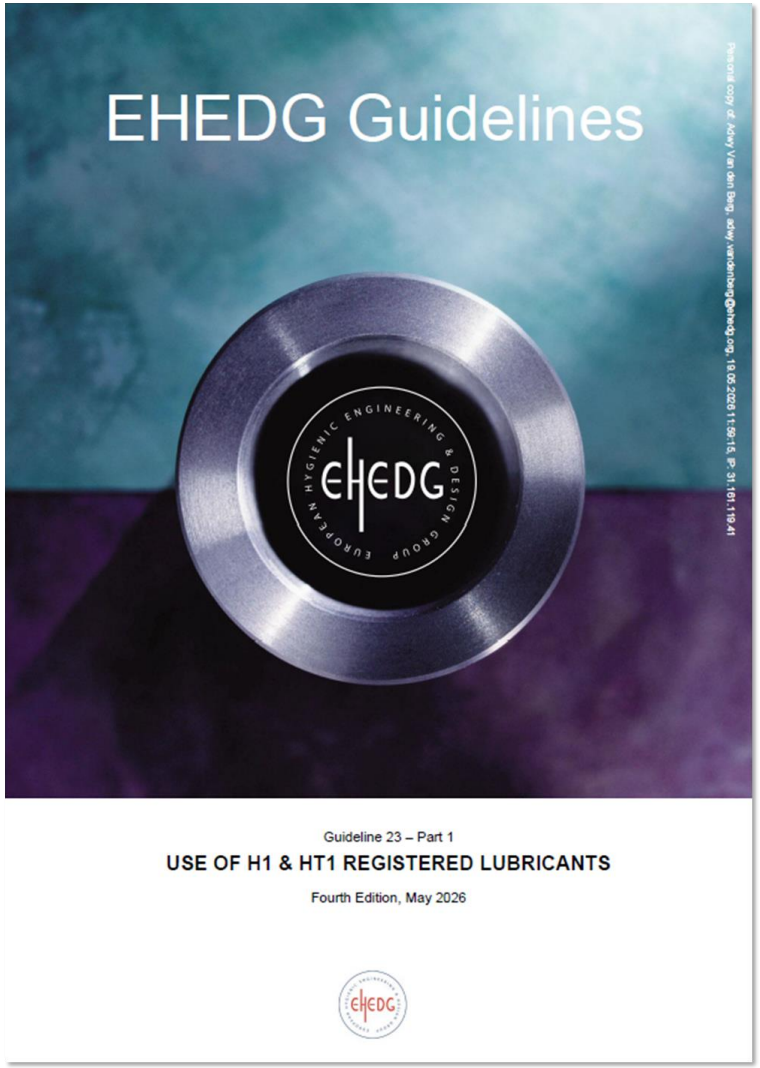
| Equipment Type / Class | Definition | Application / Examples |
|---|---|---|
| EL [1] Hygienic Class I | Closed and open equipment<br><br>Cleanable in place without dismantling | In processing lines that are cleaned in place with liquids |
| EL Aseptic Class I | Closed equipment<br><br>Cleanable and sterilisable in place<br><br>Impermeable to microbial ingress | In processing lines that are cleaned in place with liquids and produce ambient stable, highly microbial vulnerable products |
| EL Hygienic Class II | Closed and open equipment<br><br>Cleanable by dismantling | In processing lines that are cleaned with liquids by dismantling |

[1] EL: equipment intended for cleaning with liquids



Authority worthy …?!

# Example of current guidelines






6.3 Storage of food-grade lubricants

Lubricants are carefully packed and sealed to ensure that they reach the user completely free from contamination. A few elementary precautions will ensure that they reach the point of lubrication in equally good condition, such as the use of dedicated storage and transfer containers.

Figure 3: Example of correctly sealed packaging.

Moisture can be drawn into barrels when the air inside contracts due to temperature changes or if water collects on the head of an upright barrel. It is always best to store barrels indoors and avoid extremes of temperatures or variations. Consult your supplier and the product label for suitable storage or any restrictions.

Figure 4: Example of good storage facility which helps to prevent contamination.

Figure 5: Example of poor storage: contamination and use of incorrect lubricants can easily occur.

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Figure 14: Poor practice: insufficient lubrication of the chains and poor maintenance that has caused corrosion.

Figure 15: Good practice: a clean bearing to prevent contamination

Figure 16: Good practice: if no other options are available to avoid lubrication points above the food, this is a suitably positioned drip tray to prevent contamination.

Figure 17: Good practice: well-cleaned grease fittings.

6.5 Monitoring, sampling and testing

In use, lubricants are designed to protect moving parts from wear or degradation. As the lubricant is depleted of additives or usable properties, this protection is reduced.

Monitoring, sampling and testing the lubricants is an important step to ensure machine reliability. The implementation of an oil analysis programme will indicate the remaining useful life of the lubricant as well as providing indications of the asset condition, e.g. the gears and bearings in a gearbox.

Oil sampling is the procedure for collecting a volume of fluid from lubricated equipment for oil analysis. Collecting an oil sample requires that procedures are used to minimise disturbance of the sample during and after the sampling process. Oil samples should be drawn into a clean bottle designed for the collection of oil samples and not into a random container. The bottle should be sealed and sent to the laboratory for analysis as soon as possible after collection.

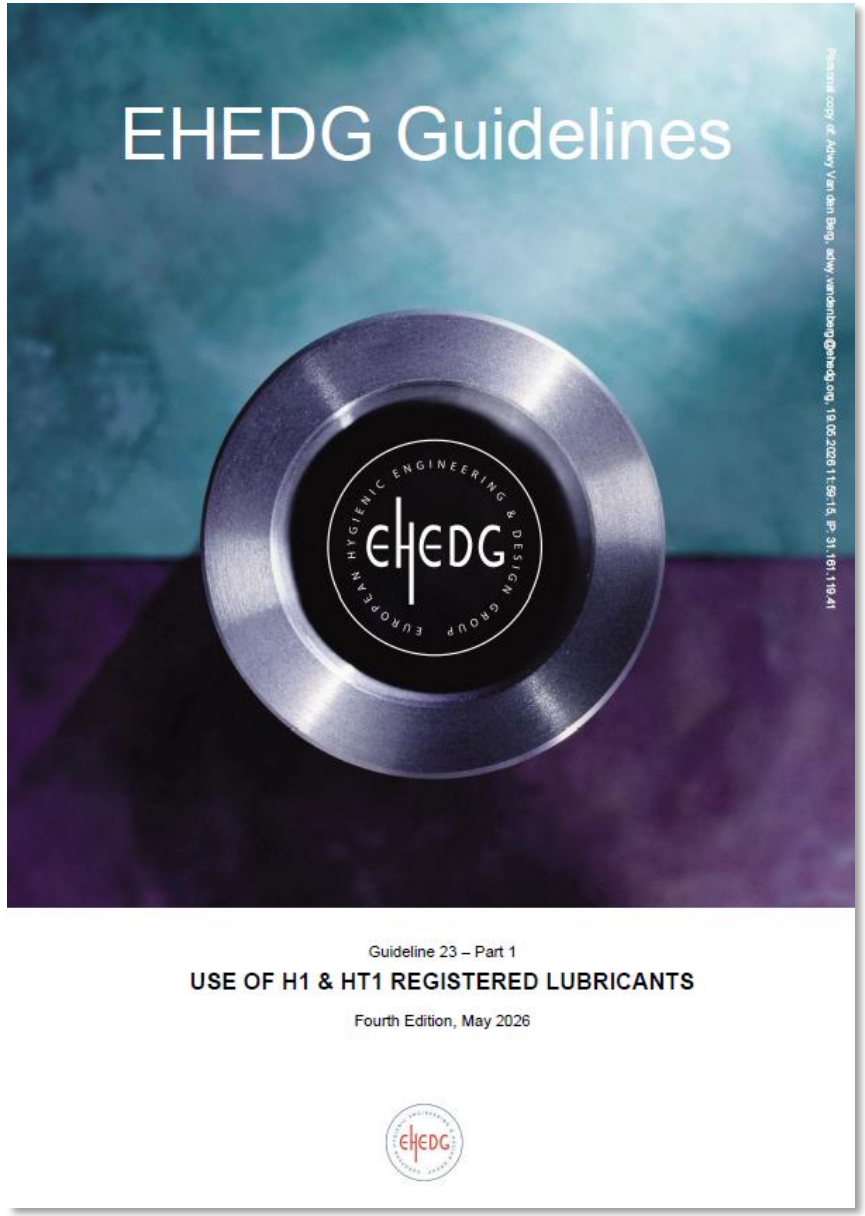
Correct sampling requires an understanding of the equipment in use, the volume of sample needed and the point at which the sample should be drawn. Your lubricant supplier should provide you with information on

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Authority worthy …?!

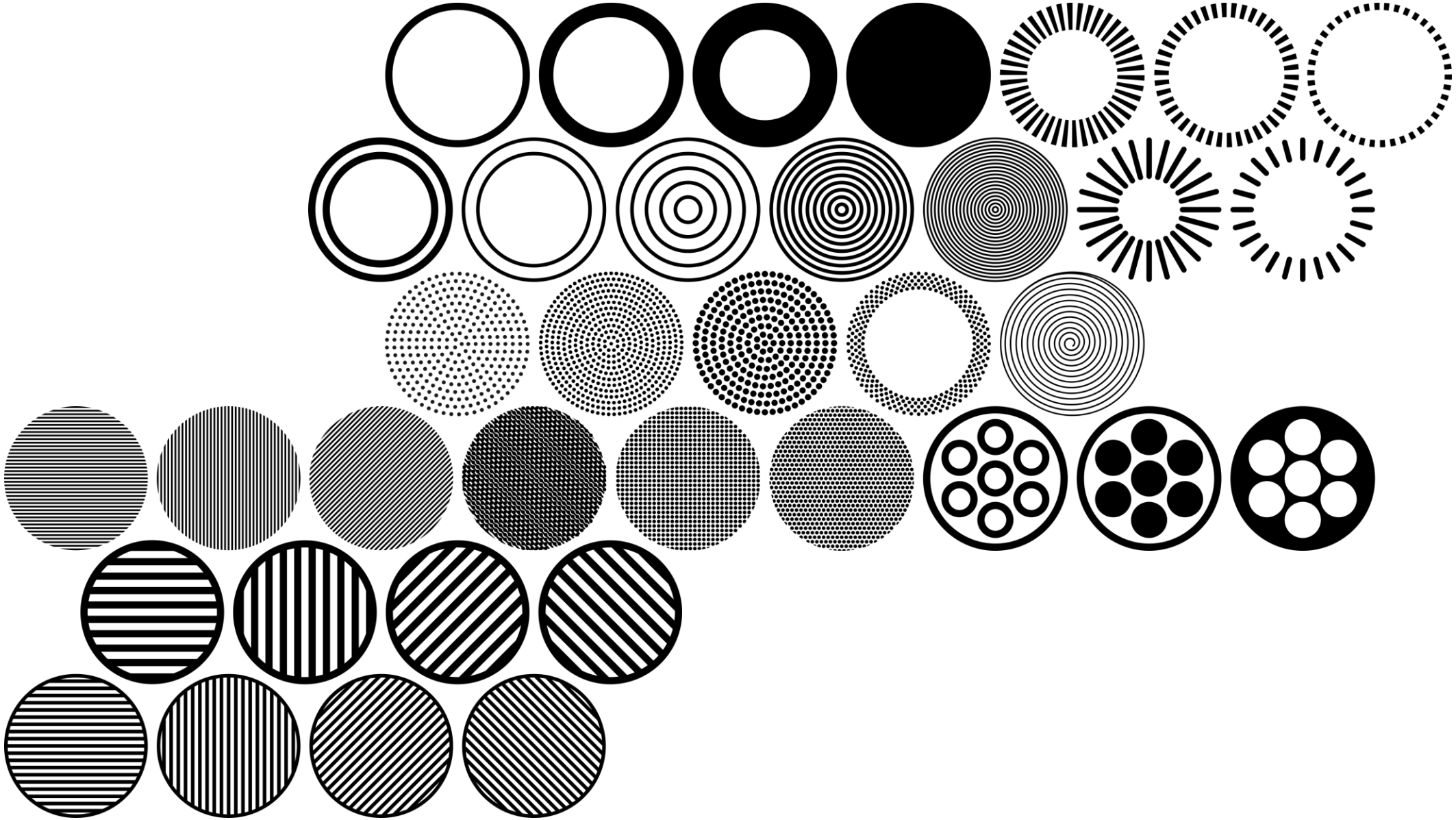
# Example current cover



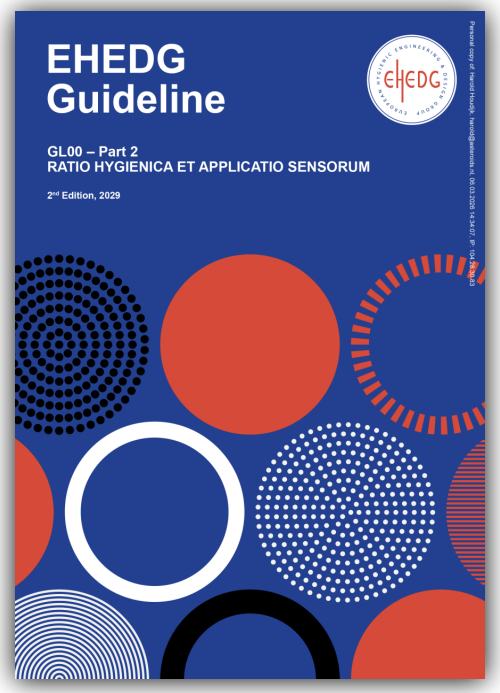
# Example new cover



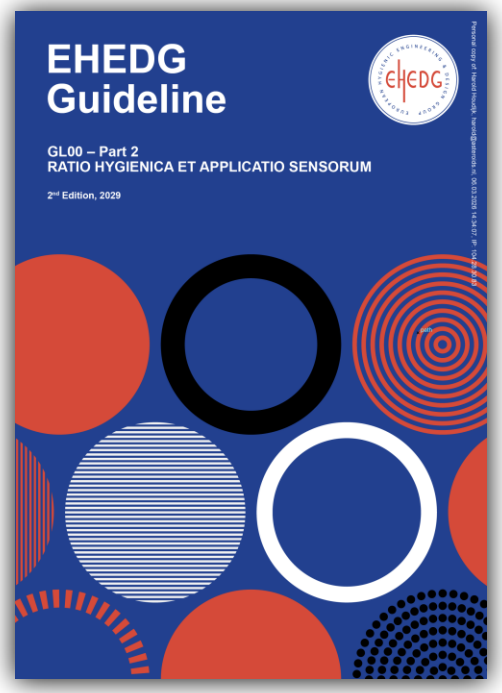
# Graphic elements for the cover



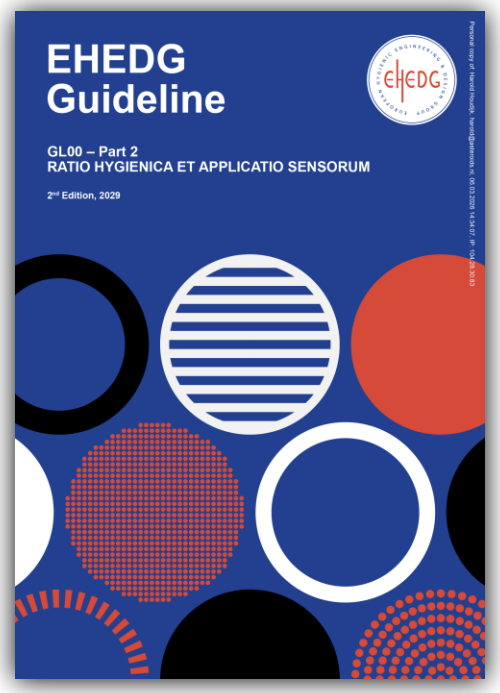
# Example cover variations




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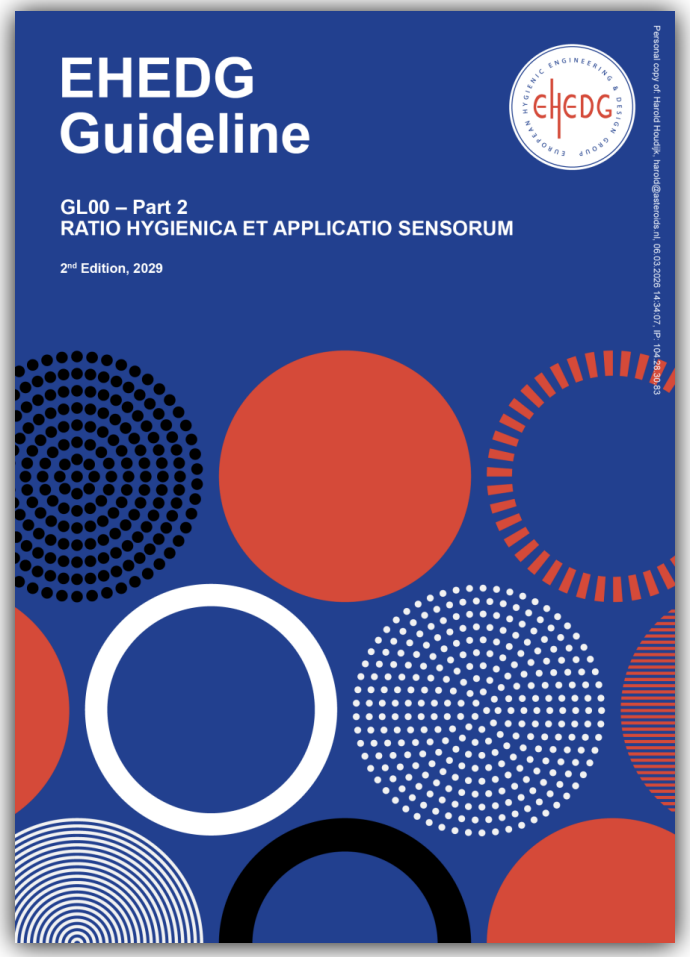



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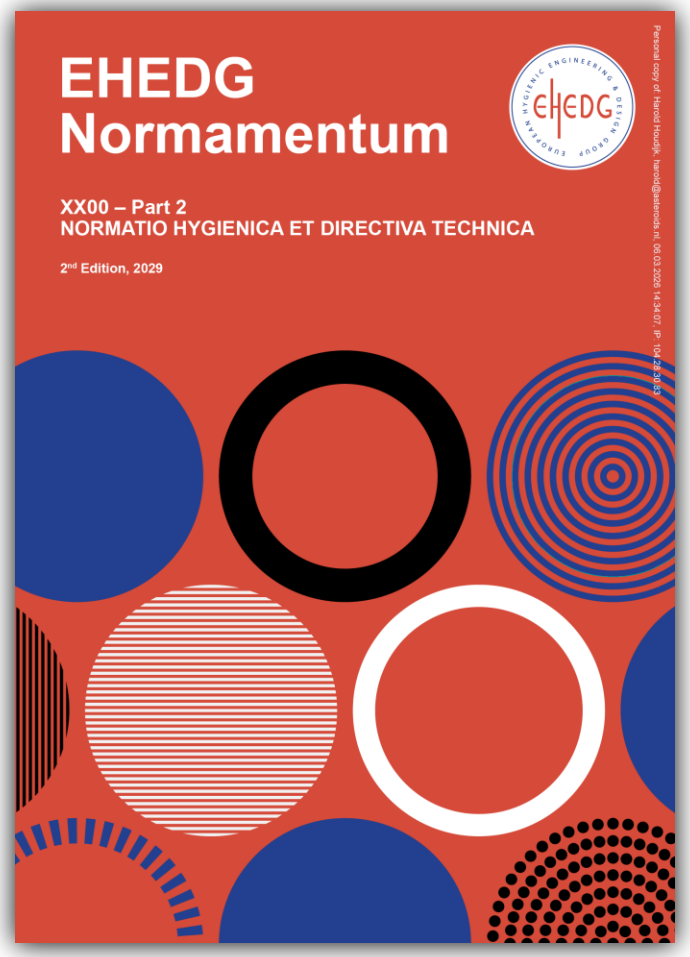



4

# Cover variations for different types of documents




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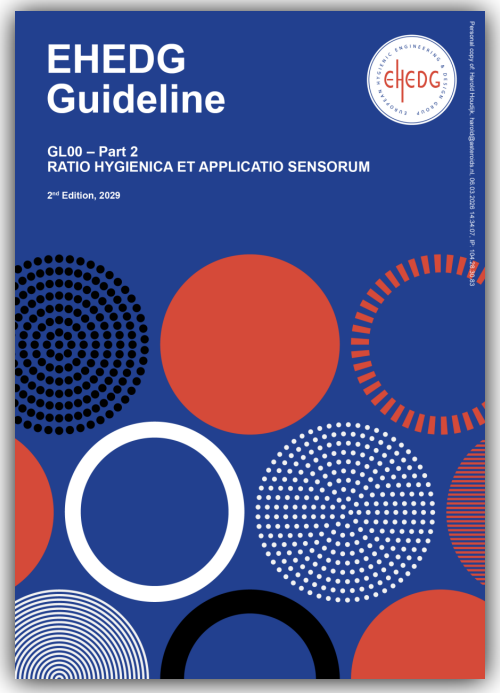



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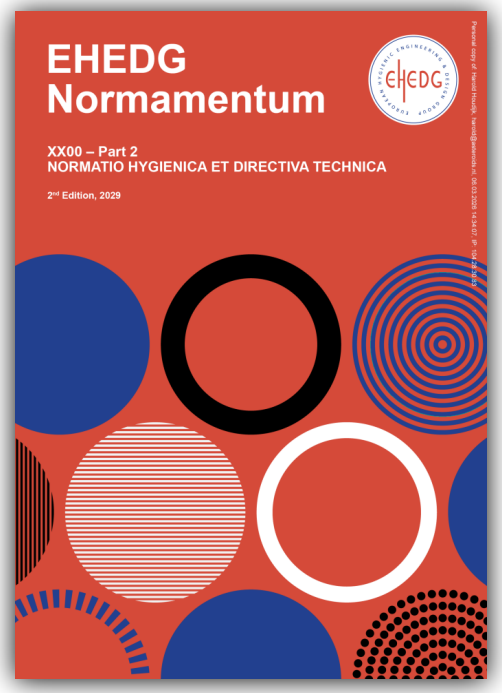



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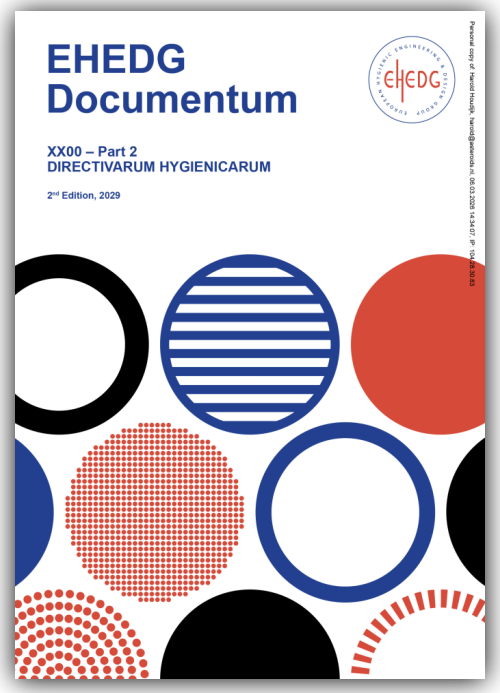
# Cover variations for different types of documents



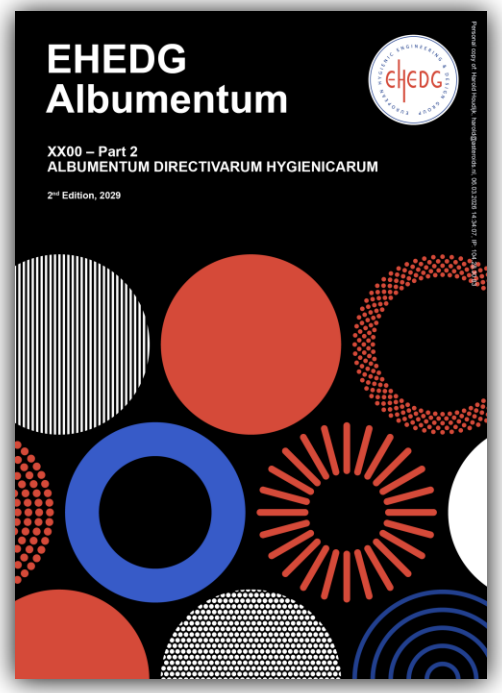

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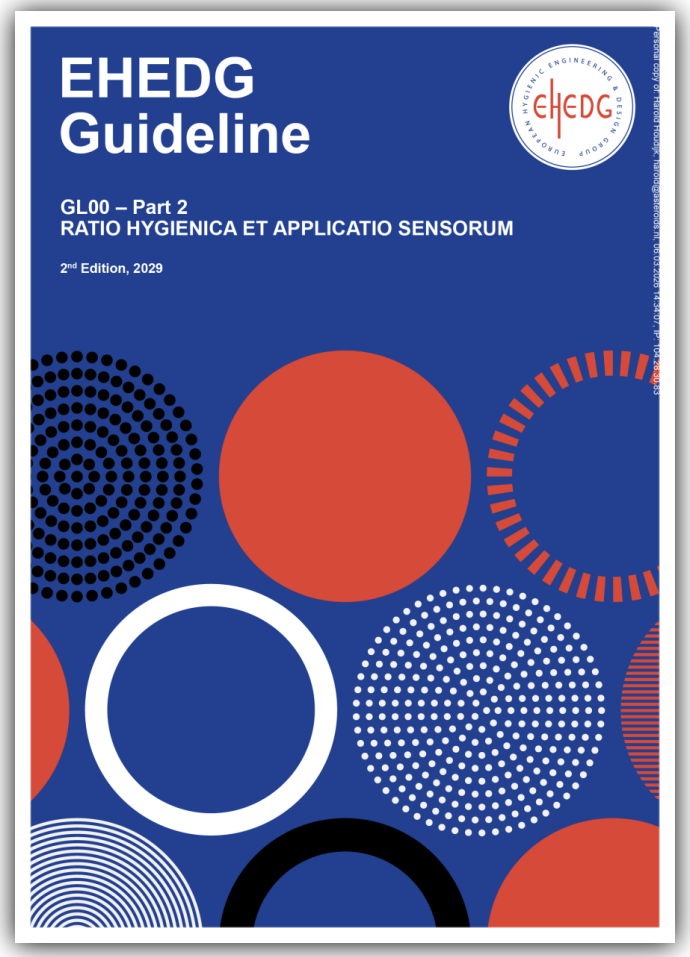

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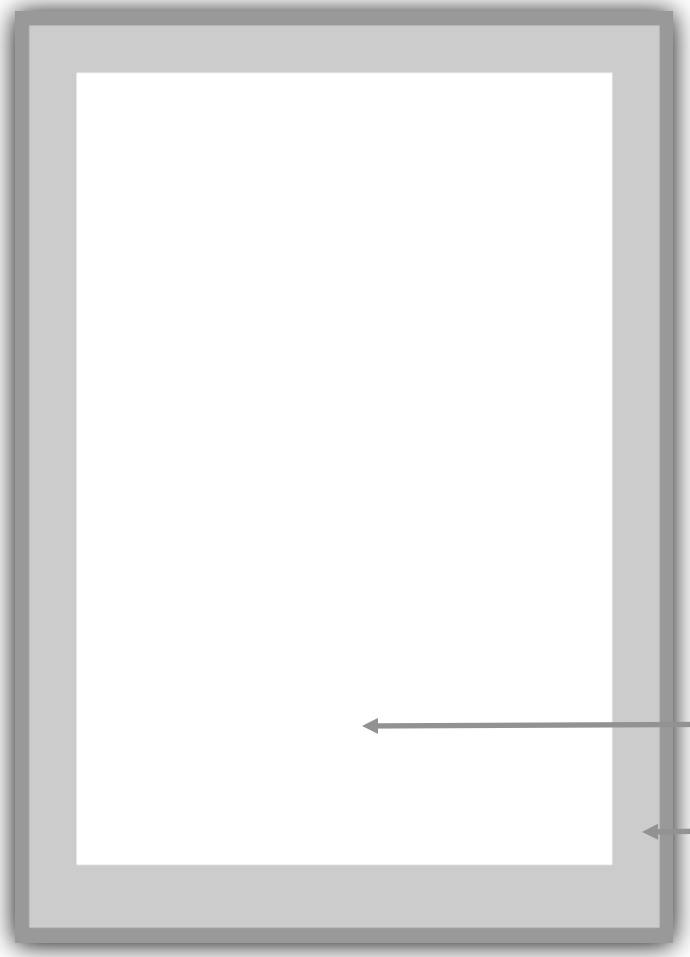

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# Content area and printing margins

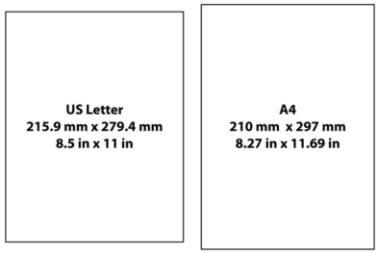
a ‘worst case scenario’ colour print, with unprinted paper edges




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2



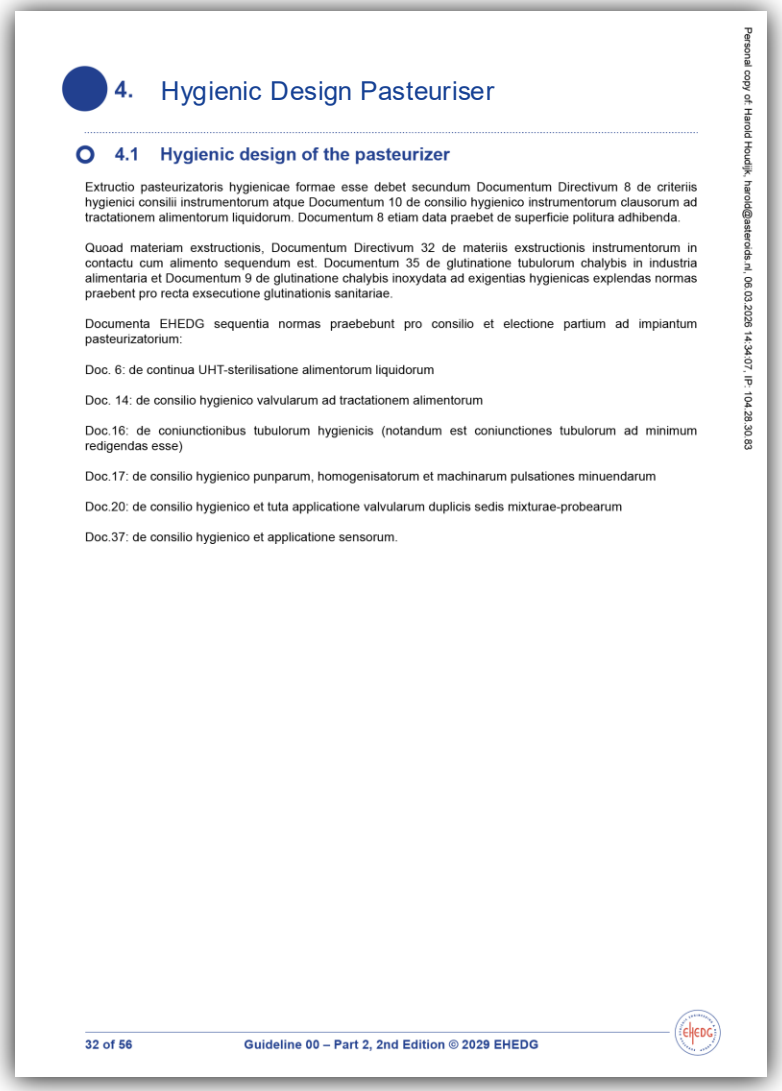

paper size A4 210 x 297 mm

content area

content margins

print margin 5 mm

# Chapter / Section markers / Footers



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## 4. Hygienic Design Pasteuriser

### 4.1 Hygienic design of the pasteurizer

Extructio pasteurizatoris hygienicae formae esse debet secundum Documentum Directivum 8 de criteriis hygienici consilii instrumentorum atque Documentum 10 de consilio hygienico instrumentorum clausorum ad tractationem alimentorum liquidorum. Documentum 8 etiam data praebet de superficie politura adhibenda.

Quoad materiam exstructionis, Documentum Directivum 32 de materiis exstructionis instrumentorum in contactu cum alimento sequendum est. Documentum 35 de glutinatione tubulorum chalybis in industria alimentaria et Documentum 9 de glutinatione chalybis inoxydata ad exigentias hygienicas explendas normas praebent pro recta exsecutione glutinationis sanitariae.

Documenta EHEDG sequentia normas praebebunt pro consilio et electione partium ad impiantum pasteurizatorium:

Doc. 6: de continua UHT-sterilisatione alimentorum liquidorum

Doc. 14: de consilio hygienico valvularum ad tractationem alimentorum

Doc.16: de coniunctionibus tubulorum hygienicis (notandum est coniunctiones tubulorum ad minimum redigendas esse)

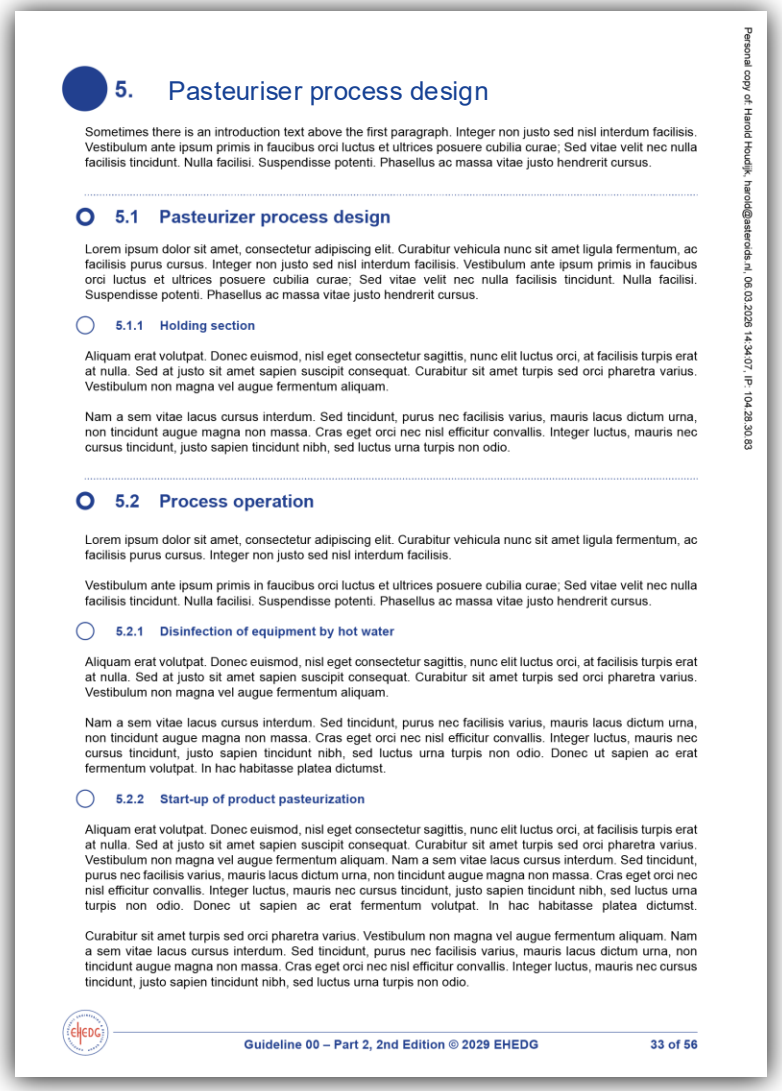
Doc.17: de consilio hygienico punparum, homogenisatorum et machinarum pulsationes minuendarum

Doc.20: de consilio hygienico et tuta applicatione valvularum duplicis sedis mixturae-probearum

Doc.37: de consilio hygienico et applicatione sensorum.



1
left page



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## 5. Pasteuriser process design

Sometimes there is an introduction text above the first paragraph. Integer non justo sed nisl interdum facilisis. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae; Sed vitae velit nec nulla facilisis tincidunt. Nulla facilisi. Suspendisse potenti. Phasellus ac massa vitae justo hendrerit cursus.

### 5.1 Pasteurizer process design

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#### 5.1.1 Holding section

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### 5.2 Process operation

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#### 5.2.1 Disinfection of equipment by hot water

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#### 5.2.2 Start-up of product pasteurization

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2
right page, with introduction text

# Illustrations

## With thin border – aligned to width of content area or aligned left

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### 3. Exhibitio illustrationum

#### 3.1 Lobortis nisl ut aliquip

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As the sensor is not in contact with the product, there is no direct hygienic impact. The splash area needs to be considered

1. Well resolved cap nut installation that covers the thread completely

2. No gap between the metal sensor and the transmitter/connector housing

3. There is a small gap between the sensor and the pipe, which is sometimes filled with connecting fluid that may require attention

*Figure 99: Lobortis nisl ut aliquip ex ea commodo consequat*

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3. Exhibitio illustrationum

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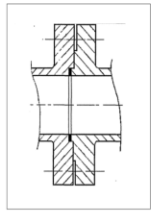


*Figure 99: Lobortis nisl ut aliquip ex ea commodo consequat*

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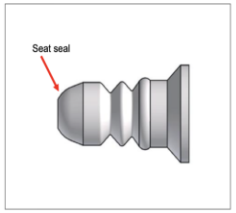
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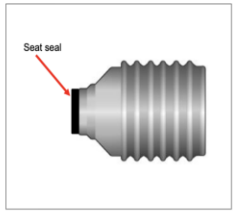




*Figure 77: Lobortis nisl ut aliquip superior ex ea commodo consequat*

*Figure 78: Lobortis nisl ut aliquip superior ex ea commodo consequat*

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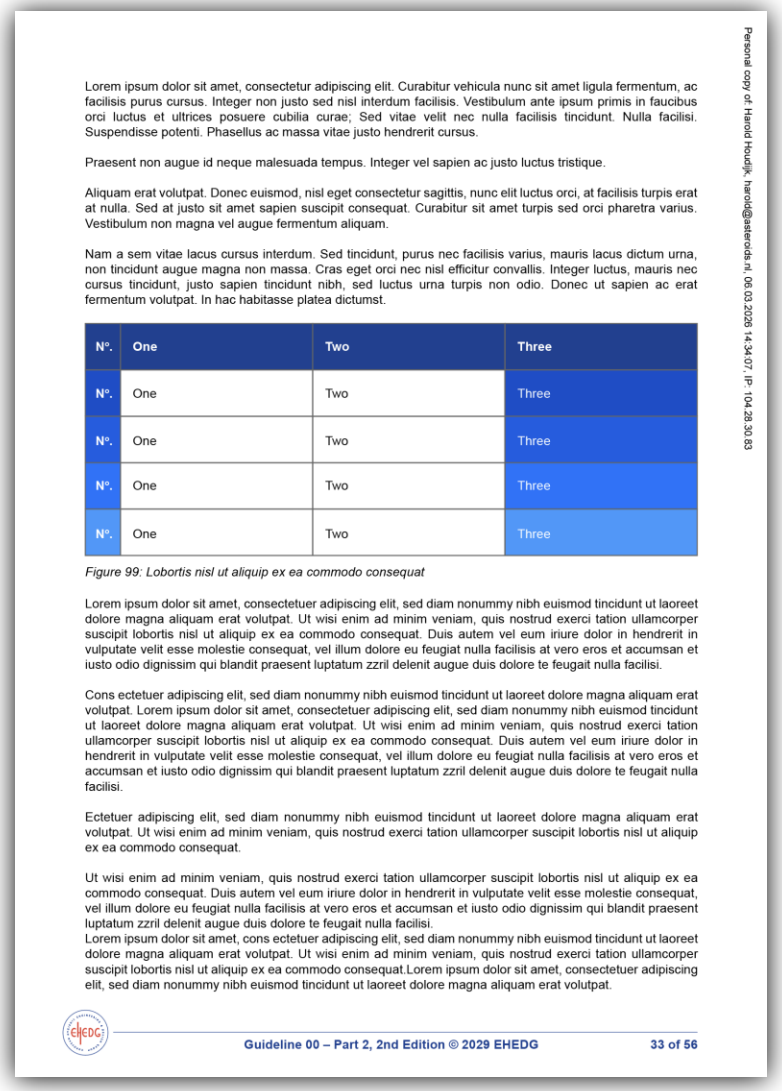
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3

# Tables

## With thin border – aligned to width of content area



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# In Summary

- A new process to improve the development and the delivery of new or updated documents
- With this approach, the right project execution is aimed for
- This process enables that the portfolio of the SCWG is meeting our stakeholders / members objectives



# Coffee

## 10:35 -11:05

# Taskforce Certification
## Progress Update

# The Future of EHEDG Certification:
# What It Means for Our Guidelines, OEMs and Food Producers

Bo, Enrico, Patrick, Ralf, Uwe
Full Working Group Day
On behalf of the EHEDG Certification Taskforce

# Certification Task Force

## Members of the Task Force

- Adwy van den Berg
- Alberto Scotti
- Astrid Häge
- Bastian Tolle
- Bo B. Jensen
- Enrico Visconti
- James (Jim) Hartley
- Johannes Allgaier
- Oliver Haeusler
- Patrick Wouters
- Ralf Stahlkopf
- Stephan Mannl
- Uwe Heisswolf

# Purpose of Today's Session

Introduce the proposed certification framework and pathways

Explore the implications for guidelines, AEOs, OEMs and food producers

Discuss the Working Groups' contribution and the proposed pilot

Gather input on priorities and further development

The certification framework is under development. Today's discussion will help shape its scope, technical requirements and implementation.

# Certification Taskforce: Purpose and Objective

**Why was the taskforce established?**

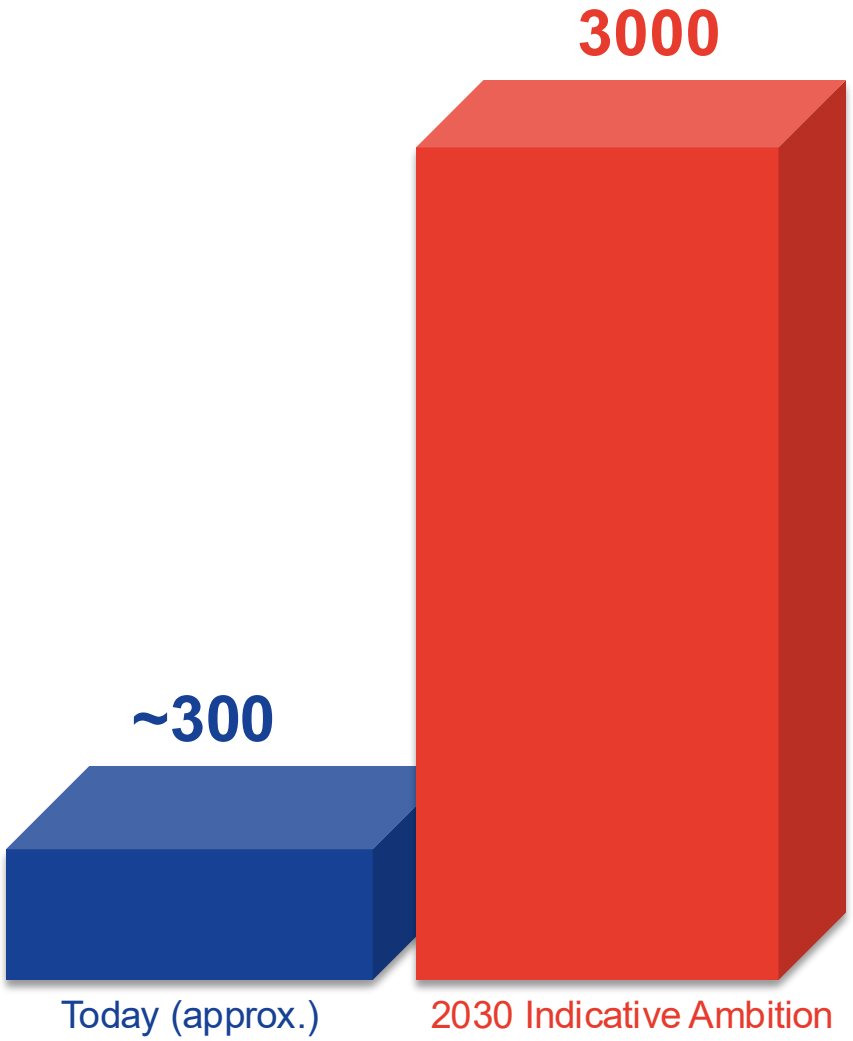
Strengthen trust in EHEDG certification through fair, transparent, consistent and technically credible assessment that delivers value to the industry.

- Review the current certification approach and identify improvements.
- Explore how certification can cover a wider portfolio.
- Develop proposals for assessment pathways, supporting criteria and governance.

# Growth Ambition

## Our objective

Expand certification while maintaining consistent, evidence-based assessment of hygienic equipment/system design



# Initial Observations from the Taskforce

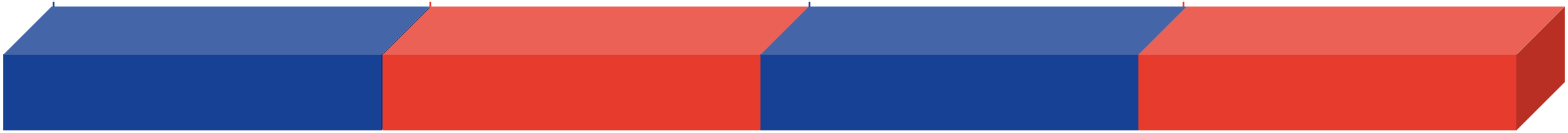
## Current certification challenges include:

- Costs, timelines, criteria and certification rules need greater transparency.
- Assessment and testing need greater consistency between laboratories.
- Governance arrangements need to address potential conflicts of interest.
- Hygienic design criteria are distributed across several guidelines.
- Existing standardised tests cannot readily accommodate every equipment configuration or type.

# Why the Certification Framework Needs to Evolve

## Requirements for wider certification

- Provide assessment pathways for a wider range of equipment and systems.
- Establish clear hygienic design requirements for the intended use.
- Define when design assessment, standardised testing or validated alternative evidence is needed.
- Support consistent decisions through clear responsibilities and independent technical oversight.



**What evidence do we need to demonstrate that equipment meets the hygienic design requirements for its intended use?**

# Hygienic Design Criteria Provide the Foundation



## Current Challenge

Relevant hygienic design criteria are currently distributed across several different EHEDG guidelines

Dispersed guidance creates potential inconsistency in terminology and hygienic evaluation across equipment types

Guideline users must consult multiple documents to identify applicable requirements



## Purpose of Consolidation

Bring applicable criteria together in a traceable overview linked to the source guidelines.

Support consistent terminology and standardised hygienic design assessments.

Support design assessment and identification of the evidence needed to demonstrate conformity.

# Consolidation of Hygienic Design Criteria

**Harmonizing EHEDG criteria into a unified, traceable assessment framework**



## Proposal:

Develop a consolidated Hygienic Design List of Criteria, traceable to the source guidelines.

## Scope of this exercise:

- Focuses on **equipment/systems hygienic design** (equipment hygienic design scope)
- Serves as technical foundation for EHEDG certification and evaluation processes
- Maintains formal traceability back to original EHEDG source guidelines.

# The Hygienic Design List of Criteria

## Proposal

Develop a consolidated Hygienic Design List of Criteria, traceable to the source guidelines

| Category | Criteria | Illustrative examples |
|---|---|---|
| 4 | General Hygienic Design Criteria | Materials, surfaces, joints, cleanability and integration — GL 8, GL 32, GL 34, GL 48 |
| 3 | Processing-Related Hygienic Design Criteria | Closed, open, dry and aseptic processing — GL 10, GL 13, GL 22, GL 39 |
| 2 | Equipment-Group Hygienic Design Criteria | Valves, pumps and sensors — GL 14, GL 17, GL 37 |
| 1 | Equipment-Type-Specific Hygienic Design Criteria | Double-seat mixproof valves, rotary valves and disc stack centrifuges — GL 20, GL 38, GL 42 |

# Proposed Certification Pathways

| Pathway 1<br>Hygienic Design Assessment | Pathway 2<br>Hygienic Design Assessment<br>+ Standardised Testing | Pathway 3<br>Hygienic Design Assessment<br>+ Validated Alternative Evidence |
|---|---|---|
| **Basis for demonstrating conformity:**<br>Design (technical and visual) assessment of equipment / systems design against the applicable criteria (from the GLs) | **Basis for demonstrating conformity:**<br>Design assessment supported by an applicable EHEDG standardised test | **Basis for demonstrating conformity:**<br>Design assessment supported by alternative evidence accepted within the framework |

The equipment's design and intended use determine whether the assessment requires standardised testing or validated alternative evidence.

**Note**: Rules for selecting a pathway, accepting evidence and defining the scope of certification are still being developed.

# Hygienic Design Criteria – Butterfly Valves

## Content

1. **Purpose/intended use**
   - Short functional description of the valve
   - Basic information on use
2. **Minimum hygienic design requirements**
   - Materials used
   - Essential design criteria to ensure adequate and safe operation (reference to other guidelines)
3. **Classification**

   Example:

| Equipment Type / Class | Definition | Application / Examples |
|---|---|---|
| **EL Class I** | • Closed equipment<br>• Cleanable in place without dismantling | Food processing lines that are cleaned in place with liquids |

# Hygienic Design Criteria – Butterfly Valves

## 4. Amendments / Exceptions

- Additions or exceptions to the hygienic design criteria described in other guidelines.
- Hygiene design criteria that are sufficient for the intended use

## 5. Evaluation & Testing

### 5.1 Design assessment

The purpose of the design assessment is to verify that the equipment under examination complies with the minimum hygiene design requirements.

- Hygiene design criteria that are sufficient for the intended use (reference to other guidelines)

### 5.2 Hygienic Design test

| Test | Purpose | Test conditions |
|---|---|---|
| **External tightness (Body seal tightness)** | • External leakage<br>• Product backflow of the seal | • Test pressure: 1,1 x PN<br>• Test fluid: water |
| **In-place cleanability** | • Removal of a soil containing bacterial spores | Test procedure according to EHEDG GL 2 |

# Hygienic Design Criteria – Butterfly Valves

1. **Purpose/intended use → short functional description of the valve**

Butterfly valves are certainly among the simplest, most cost-effective and functionally reliable shut-off valves in the food & beverage industry. The main success of butterfly valves lies in their simple operation and uncomplicated design. They consist of only a few components and enable easy and uncomplicated installation and maintenance. The shut-off element is a flap mounted perpendicular to the direction of flow, which is rotated by 90° (quarter-turn) for opening and closing. The flap is sealed radially around the entire circumference by means of a sealing sleeve, which is embedded between two housing flanges with a positive fit (Fig. 1)

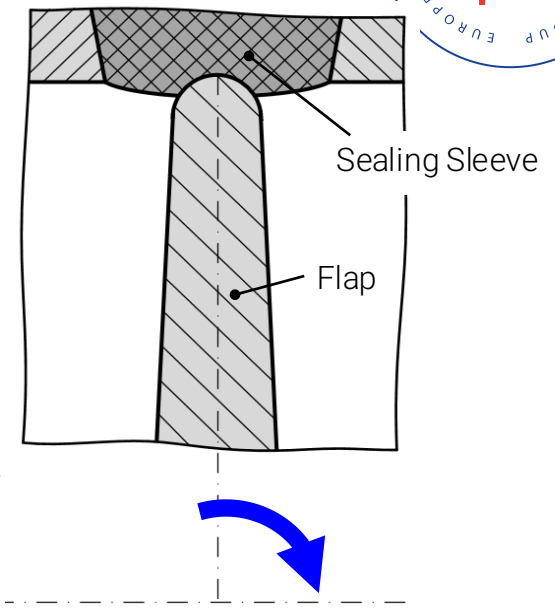



Fig.1 Radial sealing of the flap

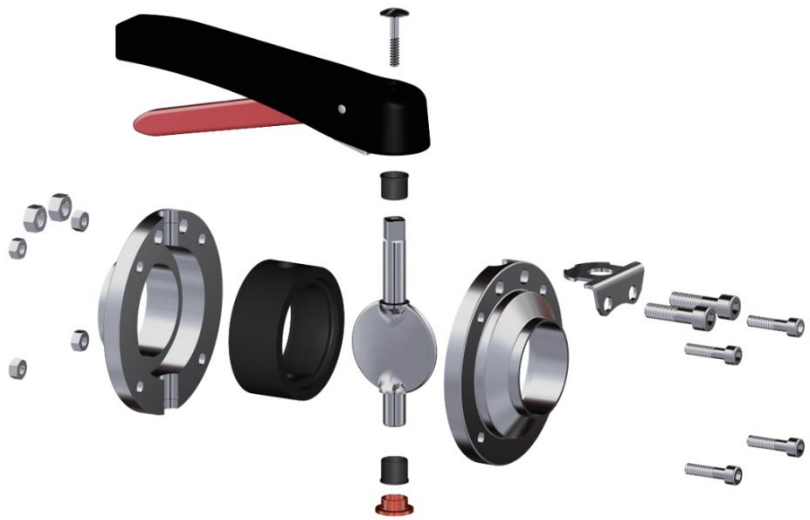


Fig. 2 Typical assembly of a manually operated butterfly valve

The valves are usually cleaned as part of CIP processes in the connected piping systems. Butterfly valves are also very versatile, whether as an easy-to-insta intermediate flange variant or automated with actuators, there are virtually no limits to the design variants. Figure 2 shows the typical structure of a manually operated butterfly valve with weld-on ends.

Butterfly valves are not suitable for use in sterile processes.

# Hygienic Design Criteria – Butterfly Valves

## 2. Minimum hygienic design requirements

- Materials used:
  Materials that come into contact with the product shall meet the following requirements:

| | |
|---|---|
| Steels & Alloys | • Requirements in accordance with EHEDG Guideline 32-2 |
| Rubbers | • Requirements in accordance with EHEDG Guideline 32-3 |
| Plastics | • Regulation (EU) 10/2011<br>• (FDA), 21 CFR 177.1550 |
| Lubricants | • Requirements in accordance with EHEDG Guideline 23 |

- Proper alignment of the shaft shall be ensured by means of suitable guide sleeves
- Valve seal
  As butterfly valves are generally fitted with only one valve seal, this must provide sufficient axial compression to prevent the product from leaking backwards. At the same time, the valve seal must provide sufficient compression at the stem passages to ensure a tight seal at this point (Fig. 3).

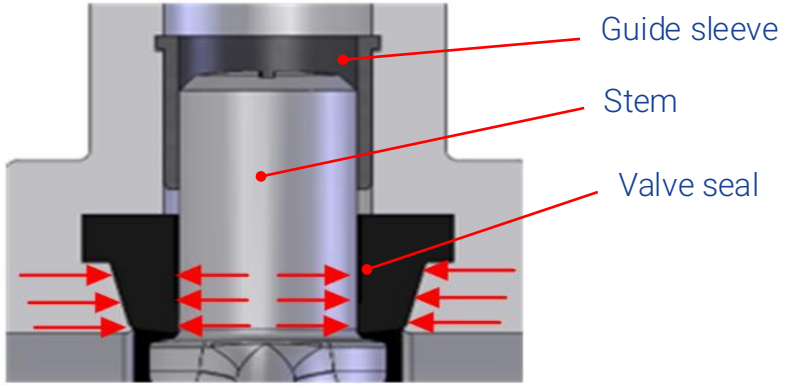



Fig. 3 Valve seal compression

# Hygienic Design Criteria – Butterfly Valves

## 3. Classification

- Butterfly Valves are classified under the following:

| Equipment Type / Class | Definition | Application / Examples |
|---|---|---|
| EL Class I | • Closed equipment<br>• Cleanable in place without dismantling | Food processing lines that are cleaned in place with liquids |

## 4. Amendments / Exceptions

Notwithstanding the requirements of other EHEDG Guidelines, the following design criteria are permitted:

| | |
|---|---|
| • Internal weld | pickled, passivated and/or polished, Ra ≤ 1.60 µm |
| • External surface and welded area | pickled, passivated and/or polished, Ra ≤ 1.60 µm |

# Hygienic Design Criteria – Butterfly Valves

## 5. Classification

In order to get additional confirmation of the equipment hygienic design properties case the candidate do not comply with all the minimum set of requirements, a EHEDG test should be offered to get the certification.

| Test | Purpose | Test conditions |
|---|---|---|
| **External tightness (Body seal tightness)** | • External leakage<br>• Product backflow of the seal | • Test pressure: 1,1 x PN<br>• Test fluid: water |
| **In-place cleanability** | • Removal of a soil containing bacterial spores | Test procedure according to EHEDG Guideline 2 |

# Hygienic Design Criteria – Butterfly Valves

## 5.2 Hygienic Design test

The purpose of the design assessment is to verify that the equipment under examination complies with the minimum hygiene design requirements for certification. These minimum requirements are specified in the following guidelines:

- EHEDG Guideline 8 (Category 4)
- EHEDG Guideline 10 (Category 3)
- EHEDG Guideline 14 (Category 2)
- This guideline (section 2 and 4) (Category 1)

Exceptions may be made to the general hygiene design principles, provided that this is specified in Section 4.

The Hygienic design evaluation is conditional and sufficient to get a EHEDG certificate.

# Assessing Equipment Beyond Existing Standardised Tests

**The Pilot Benchmark (Butterfly Valve Example)**

The butterfly valve example illustrates how guideline criteria can support a structured assessment.

How can we apply this approach to equipment that existing standardised tests cannot accommodate?

## The Challenge:

Some equipment cannot readily be assessed using existing standardised tests because of its size, configuration or operating conditions.

*Examples: complete heat exchanger systems, disc stack centrifuges, packing machines and integrated processing equipment.*

**What the assessment needs to address**

- Applicable hygienic design requirements for the intended use.
- Individual components and their hygienic integration.
- Supporting evidence needed to demonstrate conformity, including validated alternative evidence where appropriate.

**What criteria and evidence would enable EHEDG to assess and certify this equipment?**

# Pump Sizes Beyond Available Reference Pipes

Some pump connection sizes fall outside the reference pipe sizes available for the standard cleanability test (GL 2).

| Reference pipe sizes (GL 2) | Pump connection sizes |
|---|---|
| DN 20, 25, 32, 40, 50, 65 and 80 | Also include sizes such as DN 15, 100, 125, 200 and 250 |
| As listed in the supplied GL 2 example | A matching reference pipe is therefore not always available |

GL 2: A method for assessing the in-place cleanability of food processing equipment



# Pumps, Test Requirements

EHEDG tests are carried out in accordance with EHEDG Guideline No. 2 (Method for the Assessment of In-Place Cleanability of Food Processing Equipment) and EHEDG Guideline No. 5 (Method for the Assessment of In-Line Steam Sterilizability of Food Processing Equipment). In addition to the requirements specified in the guidelines, the following parameters must be observed for the EHEDG test.

If the nominal sizes of the available EHEDG test equipment do not match the nominal size of the components to be tested, hydraulically similar models may also be tested, provided their nominal sizes correspond to those of the available EHEDG test equipment. A successfully completed test of the model is then considered as passed for the hydraulically similar component as well.

For example for centrifugal pumps hydraulically similar pumps are defined as follows. The pumps have a similar geometric design. For the dimensionless pump parameters, the following apply: flow rate (phi) φ = constant, pressure coefficient (psi) ψ = constant, power coefficient (lambda) λ = constant, Reynolds number Re = constant, specific speed $n_q$ = constant. The pump manufacturer is best placed to specify the hydraulic similarity.

The dimensionless velocity triangles must be identical for the pumps to be considered similar. The respective dimensionless velocity triangles are obtained by dividing all velocities by the largest circumferential velocity $u_2$.

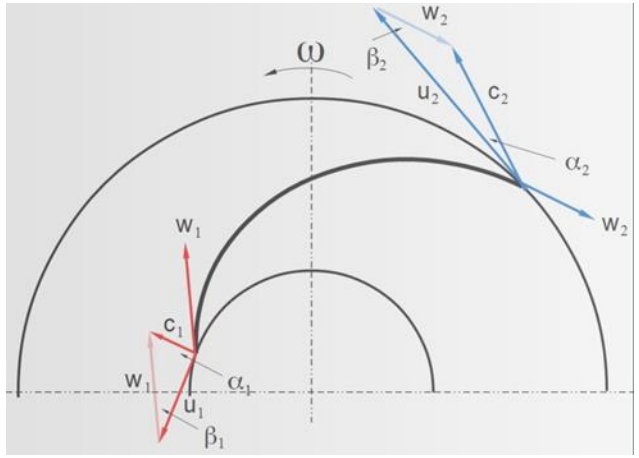



**Figure 7: Speed triangles on the wheel** (Ralf Stahlkopf, March 23, 2026).

# Pumps, Hydraulically similar

For the dimensionless flow rate (phi) φ, the following equation applies with the volume flow rate Q in [m³/s], the rotational speed n in [1/s], and the diameter D in [m]: $\varphi = Q/(n \cdot D^3)$ .

For the dimensionless pressure coefficient (psi) ψ, the following equation applies with the acceleration due to gravity g in [m/s²], the delivery head H in [m], the rotational speed n in [1/s], and the impeller diameter D in [m]: $\psi = (g \cdot H)/(n^2 \cdot D^2)$

For the dimensionless power coefficient (lambda) λ, the following equation applies with the pump power input P in [N·m/s], the density ρ in [kg/m³], the rotational speed n in [1/s], and the impeller diameter D in [m]:
$\lambda = P/(\rho \cdot n^3 \cdot D^5)$ .

For the dimensionless Reynolds number Re, with density ρ in [kg/m³], dynamic viscosity μ in [N·s/m²], characteristic length D in [m], and flow velocity v in [m/s], the following equation applies: $Re = (\rho \cdot v \cdot D)/\mu$ .

For the specific rotational speed nq in [1/min], with rotational speed n in [1/s], volumetric flow rate Q in [m³/s], and delivery head H in [m], the following numerical equation applies: $n_q = n \cdot \sqrt{Q}/H^{(3/4)}$ .

# Centrifugal pumps

For centrifugal pumps, an impeller with the maximum impeller outer diameter $D_2$, as defined in the hydraulic design, is used. The hydraulically designed inlet diameter of the impeller $D_1$ determines the suction port diameter $d_s$, which is used during the EHEDG test. The hydraulic design parameters used for conducting the EHEDG test can be specified in the certificate: rated speed n, flow rate Q, impeller inlet diameter $D_1$, impeller outer diameter $D_2$, and suction port diameter $d_s$. The pumps are operated at the rated speed n defined in the hydraulic design. For centrifugal pumps, the desired flow velocity in the suction port during the EHEDG test (c = 1.5 m/s) is achieved by throttling on the discharge side.

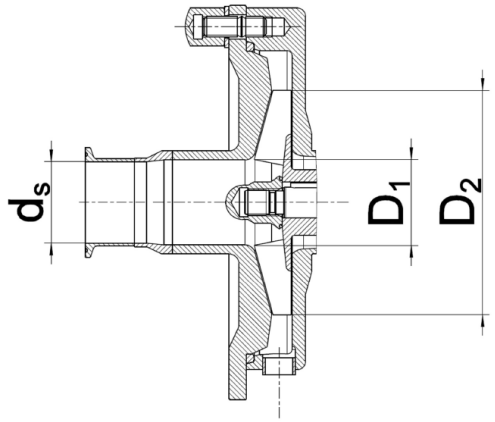



Figure 8 – Centrifugal pump, suction diameter ds, impeller diameters D1, D2

At the centrifugal pump manufacturers request, reduced impeller outer diameters ($D_2$,x), reduced suction port diameters ($d_s$) and deviating rotational speeds ($n_x$) can also be tested and certified by agreement between the EHEDG test institute and the client.

# Opportunities and Implications for OEMs

The proposed framework could extend certification opportunities to a wider range of equipment and systems

| | |
|---|---|
| **Broader certification scope** | Seek certification for equipment and systems that existing standardised tests cannot readily accommodate.” |
| **Clearer design requirements** | Guide hygienic design decisions from the start of product development. |
| **Market differentiation** | Demonstrate independently assessed conformity for the intended use. |
| **Documentation and evidence** | Provide the drawings and supporting evidence required for assessment. |

Successful implementation requires clear evidence requirements, proportionate assessment effort and costs, and predictable timelines.

# Opportunities and Implications for Food Producers

**Wider certification could strengthen equipment specification and selection**

| 1. Specify | 2. Compare | 3. Confirm scope | 4. Integrate |
|---|---|---|---|
| Include hygienic design requirements and relevant certification in RfQs. | Assess supplier's proposals against common criteria. | Check that certification covers the proposed configuration and intended use. | Assess installation, commissioning and operating conditions. |

Certification adds value when its scope matches the intended use.

# Working Groups Enable Wider Certification

Guideline content provides the technical foundation for:

| equipment development | procurement | certification |
|---|---|---|

- Define clear hygienic design requirements for the intended use.
- Reference shared criteria and specify equipment-specific additions or permitted deviations.
- Identify where testing or other supporting evidence is needed.
- Address unclear wording and gaps that could lead to inconsistent assessments.

**Working Groups have a leading role in making the proposed framework technically credible and applicable across industry.**

# EHEDG wording: Recommendations and Requirements

| | GL8 | GL10 |
|---|---|---|
| Shall (3-A, ASME BPE) | 22 | 0 |
| Should (3-A, ASME BPE) | 44 | 29 |
| Must | 9 | 35 |
| May | 28 | 50 |
| Acceptable | 2 | 9 |
| Unacceptable | 0 | 4 |
| Preferred | 1 | 3 |
| Recommended | 4 | 3 |

## GL8

To achieve the hygienic design principle of cleanability for equipment design, the following criteria are to be considered:

- Avoid difficult-to-clean surface microstructures (topography or defects), such as pores, sharp peaks, deep valleys, crevices, imperfections, scratches, pits, cracks, bubbles, tears and blisters.
- Avoid difficult-to-clean surface roughness. For easy-to-clean stainless steel surfaces, it is recommended that an Ra value of 0.8 µm or less be achieved by polishing (mechanical/electrochemical) or machining. However, other Ra values may be defined for special types of equipment or specific functional requirements, as described in other EHEDG Guidelines (25) (26).
    - For other materials of construction, there is no standardised roughness measurement method, hence there are no Ra recommendations, and cleanability should be assessed by testing.
    - Marking/labelling of equipment should not influence the roughness. This could be done by e.g. laser with the correct parameters.

## GL8

**5.2.2.1.2 Other permanent joints**

Pop rivets and other unsealed metal-to-metal joints shall not be used, as they create areas with a risk of product built-up and areas which cannot be cleaned.

Solder and adhesive joints shall be flush with the surface and shall be free of pores and difficult-to-clean structures. The material shall be able to withstand the conditions of use.

# EHEDG wording: Recommendations and Requirements

## GL10

### 7.5 Dead areas

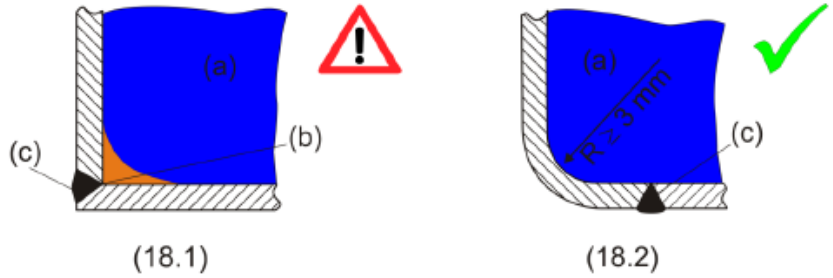
Incorrect mounting of sensors in process lines will result in large dead areas which are unacceptable (Fig. 12).

If a dead area is unavoidable, its length must be as short as possible and its cleanability must be demonstrated (Ref. a)6)). For all pipe diameters the length of the up-stand should be smaller than its diameter ($l \leq d$).

## GL10

### 7.6 Internal angles and corners

Sharp corners must be avoided. All internal angles and corners should be well radiused to facilitate cleaning. Fig. 18.2 shows how to weld without sharp corners and Fig. 19.2 how to design tank lid constructions such that sharp corners are avoided.




(18.1) (18.2)

*(a) product area, (b) sharp corner, (c) weld*

**Figure 18 — Welding of metal plates, perpendicular to each other.**

## GL8

To follow the hygienic design principles of cleanability, drainability and accessibility, the following geometrical aspects should be avoided:

- dead areas in piping systems
- pockets and horizontal surfaces
- exposed threads
- steps and recesses, e.g. caused by misalignment of joints
- internal angles of less than 135° without a radius (specified in the applicable Guidelines)

# EHEDG wording: Recommendations and Requirements

- Overview across guidelines
  - Applications
  - Document level
- Align language around requirements and recommendation
- Draft table for collecting information

| Property | EHEDG | GL - ## | Shall/should | PCS/ Non-PCS | Direct/indirect | Level (4, 3, 2, 1) |
|---|---|---|---|---|---|---|
| Ability to clean | Fundamental requirement | 8 - 4.6.2 | | | | |
| Ability to drain | May be important for some products | 8 - 4.6.3 | | | | |
| Ability to drain | May only be important prior to product change over | 8 - 4.6.3 | | | | |
| Ability to drain | May only be important prior to maintenance | 8 - 4.6.3 | | | | |
| Adhesive bonds | Shall be continous | 8 - 5.1.4.2 | | | | |
| Adhesive bonds | Shall be flush with surface | 8 - 5.2.2.1.2 | | | | |

# Pilot with Working Groups

**Review existing guidelines**
**Initial focus:** Understand and organise the hygienic design criteria that already exist.



## Proposal:

Working Group would

1. Review their current equipment guidelines on the basis of instructions and a new template that will be supplied by the Taskforce Certification – timing Q1 2027
2. Extract and list the defined hygienic design criteria for the condition of use.
3. Assign each criterion to the relevant category where appropriate.
4. Retain a reference to the source guideline and section.
5. Record unclear wording, overlaps and questions for joint review.

# After the Pilot: Refining the Framework

- Review the extracted criteria together with the participating Working Groups
- Identify differences in terminology, overlaps and potential gaps
- Refine the category definitions and the method for recording criteria
- Progressively include criteria from additional Working Groups
- Maintain traceability to the source guidelines

# Group discussion: priorities and industry value

**1. Certification Priorities**
Which additional equipment, machines or systems should EHEDG prioritise for certification, and why?

**2. Industry Opportunities**
How could wider certification influence OEM product development and food producer RfQs?

**3. Implementation Challenges**
What is the most important challenge EHEDG should address to make this work?

# Group Task

## Group Activity



Time Available:
10 minutes

### Group Setup

10 people per group (see next slide for the groups)

### Task:

1. Report three certification priorities
2. (at least) One expected industry opportunity
3. Two key implementation challenges

### Feedback: 2 mins

**Let us know, if something is not clear!**

# Group Task

## Group Composition

| Group 1 | Group 2 | Group 3 | Group 4 | Group 5 |
|---|---|---|---|---|
| Adam RUSKIN | Carolina Arias Lopez | Dimitri Tavernarakis | Francesco Mattana | Heiko Emde |
| Ana Pires Dymond Soares | Christian Geubert | Dirk Nikoleiski | Frans Saurwalt | Holger Schmidt |
| Andries Louw Wolthuizen | Christian Sommer | Edyta Margas | Gabriel Meesters | Hubert Brodalka |
| Anett Winkler | Christopher Garland | Eelco Baten | Georg Kalss | Hui Zhang |
| Antonio Toso | Constantin Anastasyadis | Elena Klenk | George Fiotakis | Joachim Zipp |
| Astrid Häge | Corinne BEGUERIA | Enrico Visconti | Gerdien Raap | Joe Matthews |
| Bertil Andersson | Daniel Lenz | Eric Partington | Giovanni Valente | Joerg Zacharias |
| Bjarne Larsson | David Childs | Eva Fleischmann | Greg Janzow | Jose Antonio Rosales Medina |
| Bo Boye Busk Jensen | David Newgreen | Fabian Hertnagel | Gregory Przybylik-Harper | Kelly Maria Calixto |
| Carla Gomes | Devin Damdhul | Ferdinand Schwabe | Hans-Joachim Johl | Komal Ejaz |

# Group Task

## Group Composition

| Group 6 | Group 7 | Group 8 | Group 9 | Group 10 |
|---|---|---|---|---|
| Lars Chluba | Miha Jevnikar | Peter Merhof | Roger Scheffler | Steve Arnold |
| Luca Grazzini | Mike Waskow | Peter Schwabach | Roland Cocker | SUBHASH chandra |
| Maik Bluhm | Miomir Niksic | Radosław Olszewski | Ronen Hurni | Thomas Tyborski |
| Marc Doehring | Murat Merdin | Ralf Simonis | Sandra Kaiser | Uwe Heisswolf |
| Markus Schröer | Natacha Holmud | Ralf Stahlkopf | Sebastian Wilhelm | Vasyl Mazov |
| Martijn van der Hoeven | Nicolas Barril | Reiner Lemperle | Shaun Pitcher | Wesley Pieterse |
| Martin Barnickel | NORBERT SPLIETHOFF | Richard Smith | Stefan Åkesson | Xavier LE ROUX |
| Matilda Freund | Oladipo Adedokun | Robert Boisvert | Stefan Andersson | Yi Xu |
| Matthias Eisner | Ozan Devlen | Rod Benson | Stefan Hamacher | Zdenek Cupl |
| Mieke Heymans | Paul Bagshaw | | | |

# Discussion: Working Group Contribution

**1. Guideline improvements**

What needs clarification or improvement in your guideline to support the proposed certification approach?

*Consider intended use, design criteria and supporting evidence.*

**2. Pilot participation**

Which Working Groups and guidelines could participate in the pilot?

The taskforce will follow up with interested Working Groups to agree the pilot scope, coordinators and timetable.

# Group Task

## Group Task Activity



Time Available:
5 minutes

### Group Setup

10 people per group (see next slide for the groups)

### Task:

1. Suggest at least one guideline improvement
2. Indicate Working Group's interest in joining the pilot.

### Feedback: 2 mins

**Let us know, if something is not clear!**

# Lunch

## 12:30 -13:30

# The Guideline Web

## Building a Coherent EHEDG Guideline Portfolio Together

Full Working Groups Day 2026
EHEDG Subcom Working Groups

# Purpose and Objectives

Explore the EHEDG guideline portfolio and use our collective expertise to strengthen its clarity, consistency and practical value

Broaden our understanding beyond our own Working Group

Recognise how guidelines connect and support one another.

What expertise WGs contribute to in training and certification

Identify opportunities to improve alignment and collaboration.

**A shared understanding. A stronger portfolio.**

# The Guideline Web

## Building a connected Guideline Portfolio together

01 Guideline Map

02 Themes, Overlaps & Gaps

03 Disruption

04 Exchange

05 Overview

**GOAL**

Discover connections, overlaps, gaps and opportunities to improve clarity and consistency across EHEDG guidelines.



# Group Composition

| | Group 1<br>GL 22 | Group 2<br>GL 62 P2 | Group 3<br>GL 37 P2 | Group 4<br>GL 61 | Group 5<br>GL 50 |
|---|---|---|---|---|---|
| **Anchor GL** | **Gabriel Meesters** | **Gregory Przybylik-Harper** | **Holger Schmidt** | **Dimitri Tavernarakis** | **Joe Matthews** |
| | **Martijn van der Hoeven** | **Daniel Lenz** | **Astrid Häge** | **Steve Arnold** | **Hui Zhang** |
| | Paul Bagshaw | Ralf Simonis | Sandra Kaiser | Natacha Holmud | Edyta Margas |
| | Komal Ejaz | NORBERT SPLIETHOFF | Roland Cocker | Christian Geubert | Antonio Toso |
| | Shaun Pitcher | Francesco Mattana | Yi Xu | Zdenek Cupl | Luca Grazzini |
| | Vasyl Mazov | Stefan Hamacher | David Newgreen | Joachim Zipp | Frans Saurwalt |
| | Fabian Hertnagel | Ralf Stahlkopf | Reiner Lemperle | Sebastian Wilhelm | George Fiotakis |
| | Richard Smith | Andries Louw Wolthuizen | Jose Antonio Rosales Medina | Joerg Zacharias | Carla Gomes |
| | Ferdinand Schwabe | Maik Bluhm | Georg Kalss | Stefan Andersson | Carolina Arias Lopez |
| | Fahmi Yigit | Elena Klenk | Enrico Visconti | Lisa Bullens | Stefan Åkesson |

# Group Composition

| | Group 6<br>GL 32 P2 | Group 7<br>GL 14 | Group 8<br>GL 9 | Group 9<br>GL 48 | Group 10<br>GL 63 |
|---|---|---|---|---|---|
| **Anchor GL** | **Eric Partington** | **Uwe Heisswolf** | **Peter Merhof** | **Eva Fleischmann** | **Matilda Freund** |
| | **Ana Pires Dymond Soares** | **Bertil Andersson** | **Christopher Garland** | **Giovanni Valente** | **Anett Winkler** |
| | Christian Sommer | Lars Chluba | Mieke Heymans | Murat Merdin | Mike Waskow |
| | Markus Schröer | Eelco Baten | Thomas Tyborski | Xavier LE ROUX | Wesley Pieterse |
| | Miha Jevnikar | Peter Schwabach | Heiko Emde | Robert Boisvert | Devin Damdhul |
| | Constantin Anastasyadis | Ozan Devlen | Greg Janzow | Hans-Joachim Johl | Kelly Maria Calixto |
| | Rod Benson | Marc Doehring | Bo Boye Busk Jensen | Hubert Brodalka | Adam RUSKIN |
| | Corinne BEGUERIA | Oladipo Adedokun | David Childs | Roger Scheffler | Matthias Eisner |
| | Martin Barnickel | Gerdien Raap | Radosław Olszewski | Nicolas Barril | Miomir Niksic |
| | SUBHASH chandra | Ronen Hurni | | Dirk Nikoleiski | Bjarne Larsson |

# Roles and Tasks

| | |
|---|---|
| Facilitator | Guide discussion, involve everyone and keep the table focused. |
| Guideline resource person | Explain the assigned anchor guideline’s scope and technical context. |
| Mapper | Position cards and draw labelled connections. |
| Recorder | Complete the worksheet (when applicable) |
| Timekeeper | Keep the team on schedule. |

# The Guideline Web: Round 1

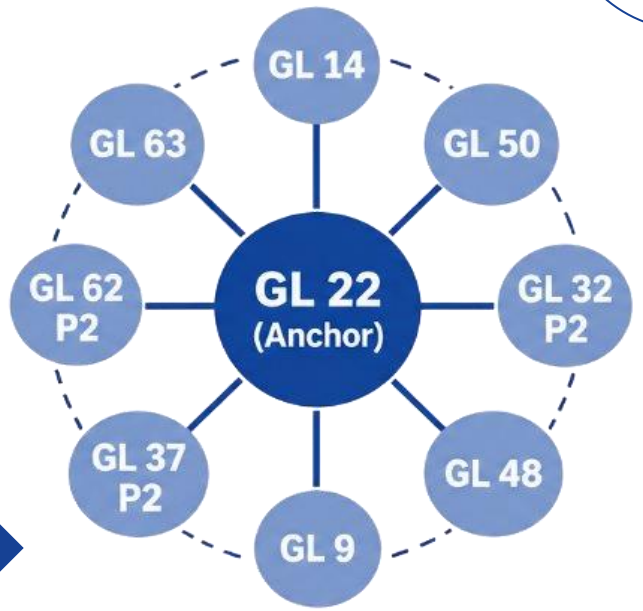
## ROUND 1: Map the connections

**01** *(15 minutes)*




### ANCHOR GUIDELINE

- Start with your A4 anchor guideline.
- Go through the EHEDG guideline portfolio cards.
- Place stronger connections closer to the anchor guideline.




### What to record?

**Identify the strongest connections between the guidelines and discuss with your team WHY they are related.**

# The Guideline Web – Round 2

## ROUND 2: Themes, Overlaps and Gaps

**02** *(15 minutes)*

### THEMES, OVERLAPS & GAPS

- Add theme, overlap and gap cards wherever they apply in your guideline web.
- Discuss with your team WHY you think these themes, overlaps or gaps apply to the selected guidelines.
- Produce your own potential themes, overlaps or gaps on the empty cards



# The Guideline Web – Round 2

## ROUND 2: Themes, Overlaps and Gaps

### VISUALISE THE STRENGTH OF EACH CONNECTION

Use markers to draw lines between the guidelines and the other cards. The thickness of each line should show how strongly the connection is:




- **Thin line:** Low connection.
- **Medium line:** Moderate connection.
- **Thick line**: Strong connection. The guidelines are closely related or strongly depend on each other.

*(15 minutes)*

# The Guideline Web – Round 3

## ROUND 3: DISRUPTION

**03** *(10 minutes)*

**REAL-LIFE CHALLENGE**

- Each receives GDP phase their anchor guideline is in.
- Each table gets one disruption affecting its anchor guideline.
- Discuss the consequences for the anchor and connected guidelines.

Check the card assigned to your team!



# The Guideline Web – Round 3

**Tasks:** *(10 minutes)*

- **Identify the Problem**
  Determine the main consequence of the disruption for your anchor guideline. **01**

- **Decide What to Do**
  Agree on 2 concrete and realistic actions your Working Group would take to address the situation. **02**

- **Assign Responsibilities**
  Decide who should lead each action (consult the Roles sheet if needed) and what the first step would be. **03**

Consider the current phase (GDP) the anchor guideline is in.

# CAPTURE YOUR GUIDELINE WEB!



## TAKE A PHOTO

Make sure your guideline numbers, connections and coloured notes are visible.

*Your findings matter — help us capture the bigger picture.*

# The Guideline Web – Round 4

## ROUND 4: THE OVERVIEW –

**05** *(20 minutes)*

**POST-DISRUPTION:**

After discussion,

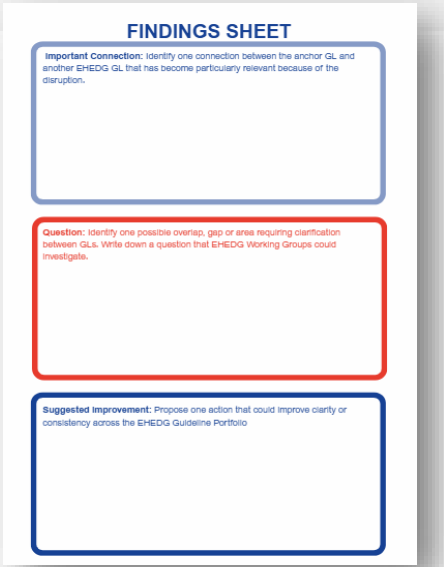
fill in the 'Finding Sheet'

**LIGHT BLUE – Important Connection**

**RED – Question or Uncertainty**

A disagreement, overlap or unanswered question requiring further investigation.

**DARK BLUE – Suggested Improvement**


FINDINGS SHEET

**Important Connection:** Identify one connection between the anchor GL and another EHEDG GL that has become particularly relevant because of the disruption.

**Question:** Identify one possible overlap, gap or area requiring clarification between GLs. Write down a question that EHEDG Working Groups could investigate.

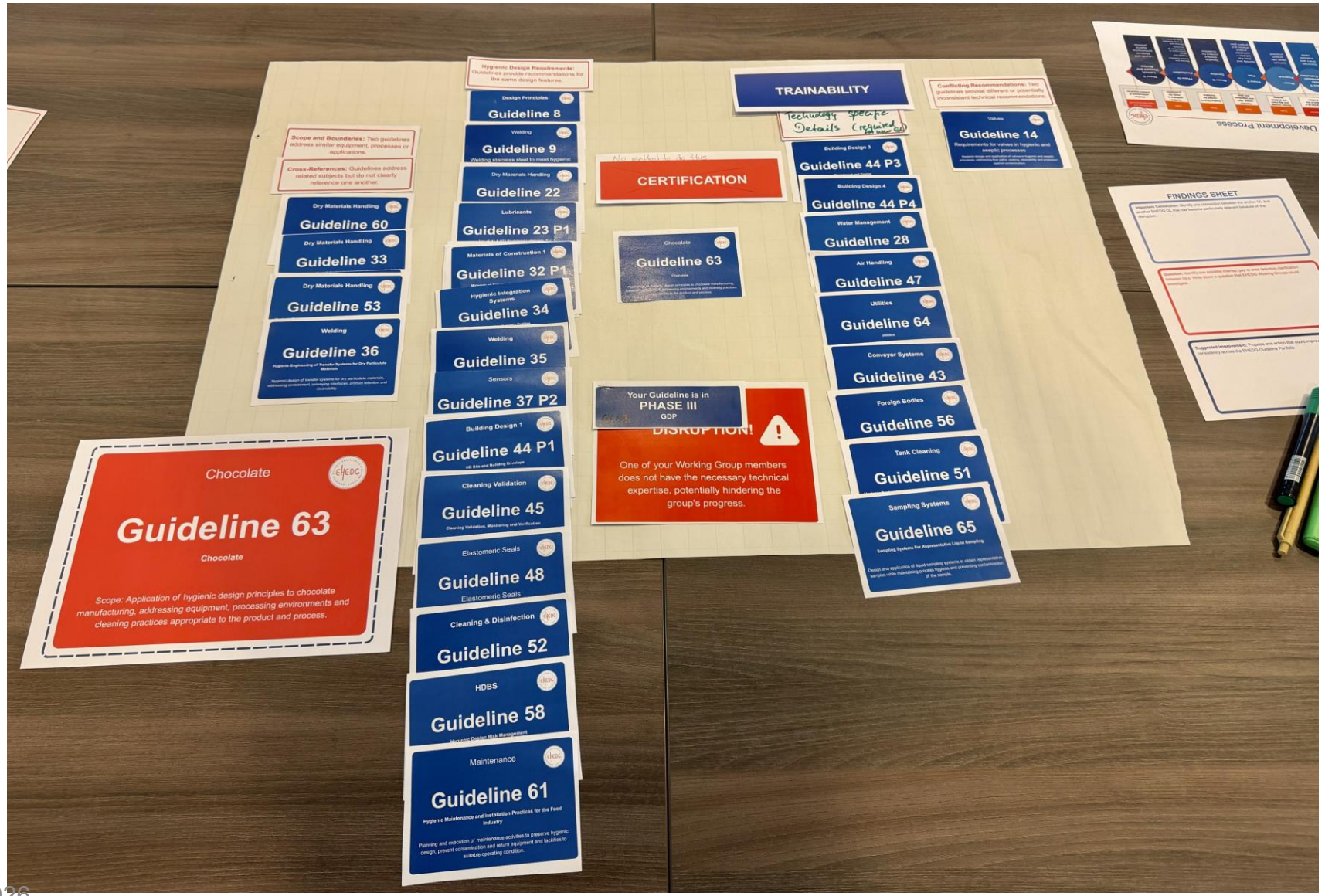
**Suggested Improvement:** Propose one action that could improve clarity or consistency across the EHEDG Guideline Portfolio


115

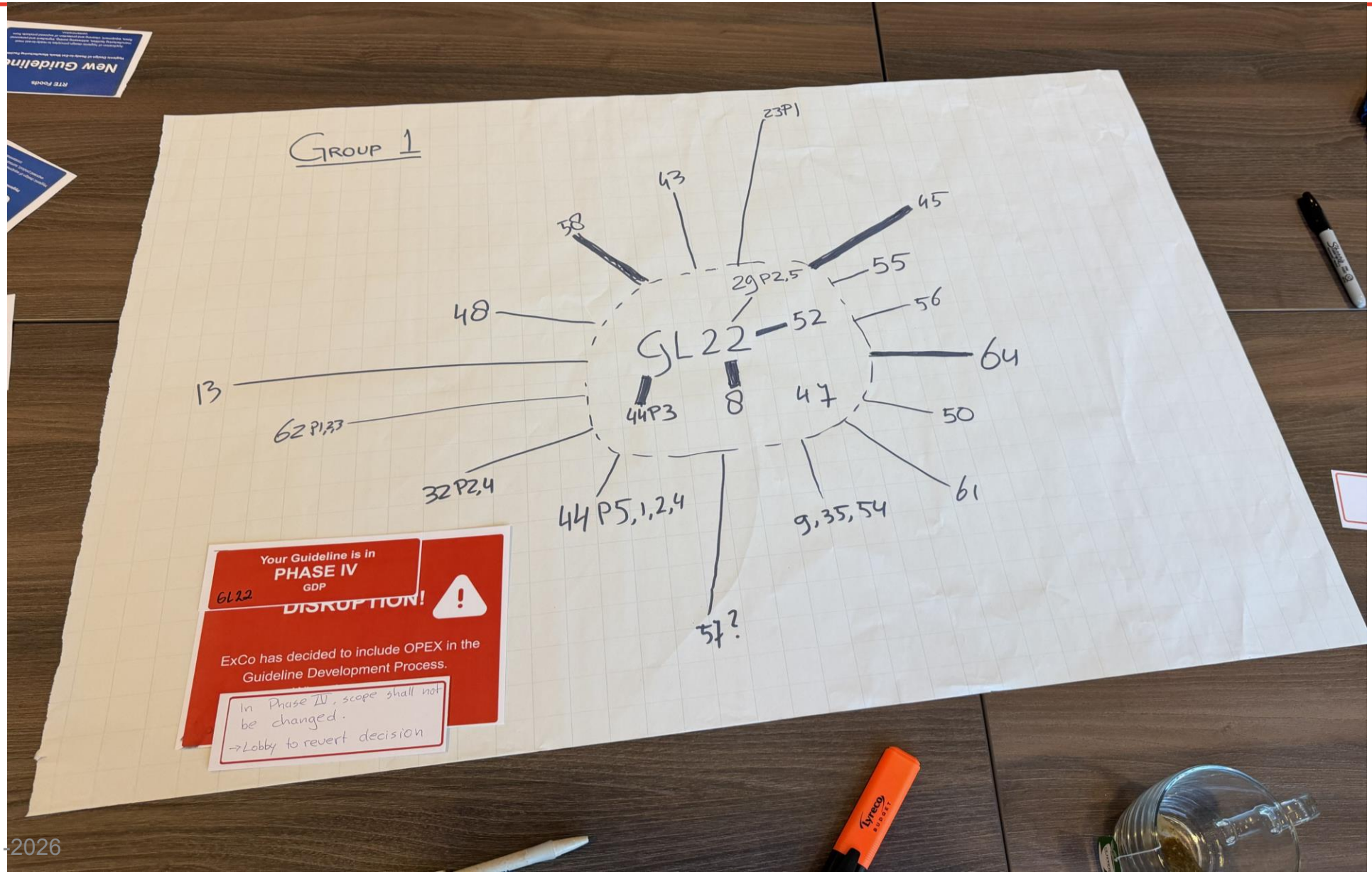
# Feedback

- Please share your picture from the web
- Please share your findings sheet
- 3 Groups to present their feedback after the coffee break

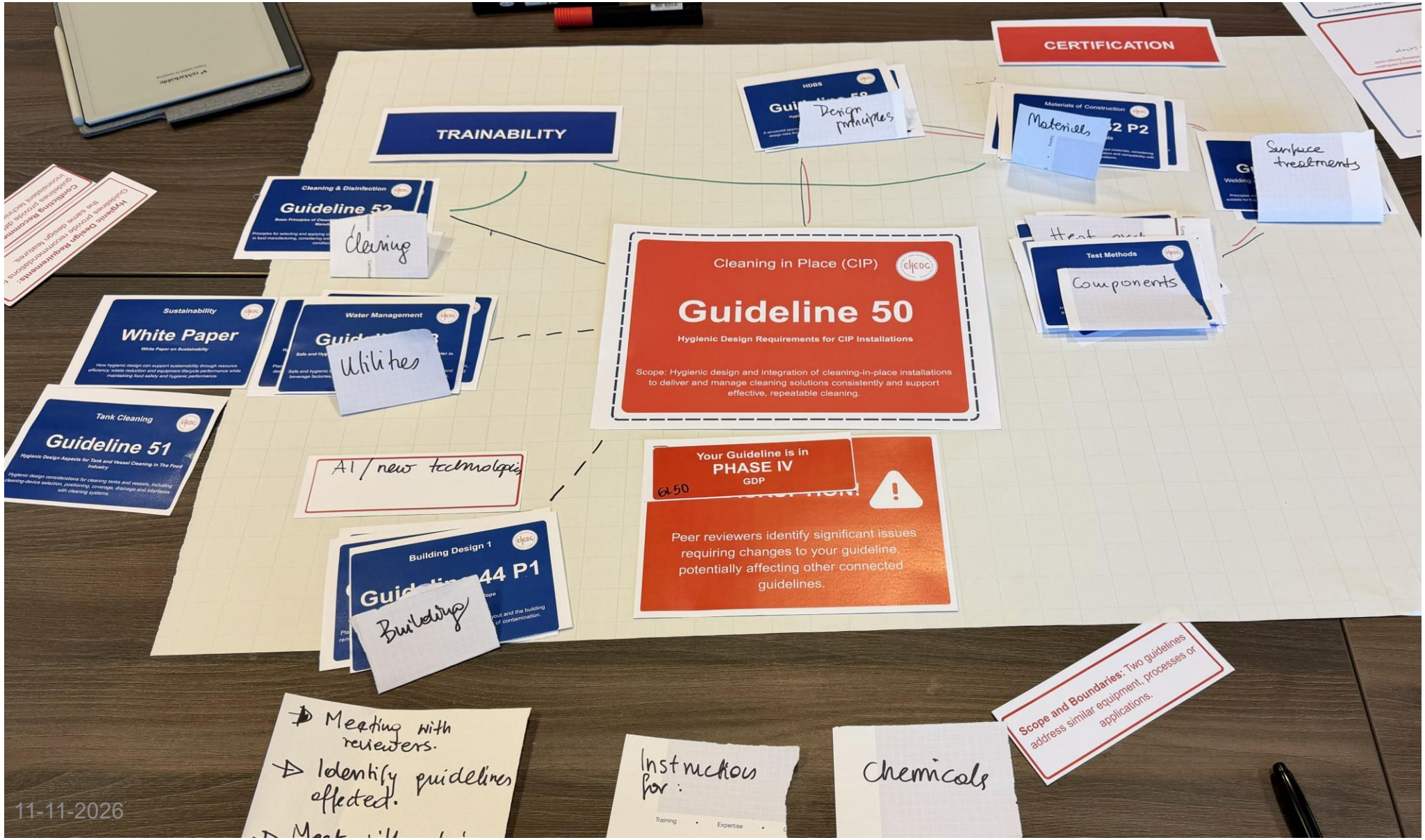
# GL63


TRAINABILITY
CERTIFICATION
Guideline 8
Guideline 9
Guideline 22
Guideline 23 P1
Guideline 32 P1
Guideline 34
Guideline 35
Guideline 37 P2
Guideline 44 P1
Guideline 45
Guideline 48
Guideline 52
Guideline 58
Guideline 61
Guideline 60
Guideline 33
Guideline 53
Guideline 36
Guideline 63
Guideline 44 P3
Guideline 44 P4
Guideline 28
Guideline 47
Guideline 64
Guideline 43
Guideline 56
Guideline 51
Guideline 65
Guideline 14
Chocolate
Guideline 63
Scope: Application of hygienic design principles to chocolate manufacturing, addressing equipment, processing environments and cleaning practices appropriate to the product and process.
Your Guideline is in PHASE III GDP
One of your Working Group members does not have the necessary technical expertise, potentially hindering the group's progress.
FINDINGS SHEET

# GL 22


Group 1
GL 22
23P1
43
58
45
55
29P2,5
48
52
56
64
13
62P1,3
44P3
8
47
50
32P2,4
44P5,1,2,4
9,35,54
61
57?
Your Guideline is in
PHASE IV
GDP
GL22
ExCo has decided to include OPEX in the Guideline Development Process.
In Phase IV, scope shall not be changed.
→Lobby to revert decision

# GL50


CERTIFICATION
TRAINABILITY
Cleaning & Disinfection
Guideline 52
Cleaning
Design principles
Materials of Construction
Materials
Surface treatments
Sustainability
White Paper
Water Management
Utilities
Test Methods
Components
Cleaning in Place (CIP)
Guideline 50
Hygienic Design Requirements for CIP Installations
Scope: Hygienic design and integration of cleaning-in-place installations to deliver and manage cleaning solutions consistently and support effective, repeatable cleaning.
Tank Cleaning
Guideline 51
AI / new technologies
Your Guideline is in
PHASE IV
GDP
GL50
Peer reviewers identify significant issues requiring changes to your guideline, potentially affecting other connected guidelines.
Building Design 1
Buildings
Meeting with reviewers.
Identify guidelines effected.
Instructions for :
Training
Expertise
Chemicals
Scope and Boundaries: Two guidelines address similar equipment, processes or applications.

# Feedback

# Discussion

# EHEDG – Guideline 17

## HYGIENIC DESIGN OF PUMPS, HOMOGENIZERS AND DAMPING DEVICES

Procedure for creating a new (the 5th) revision

Ralf Stahlkopf

# Welcome

to the

## 1st EHEDG-Subgroup Meeting
## (constituent meeting)

## Pumps, Homogenizers and Damping Devices
## Fifth Edition

**EHEDG Amsterdam & online (Teams)**

**November 06, 2024**

# Participants

| Meeting- No | | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Place | | | | | Amsterdam | | Amsterdam | | Online | | Amsterdam | | Amsterdam | | Amsterdam | | Amsterdam | | Amsterdam | | Amsterdam | | Amsterdam | | |
| Date | | | | | 06.11.2024 | | 20.03.2025 | | 16.04.2025 | | 17.07.2025 | | 27.11.2025 | | 26.03.2026 | | 24.09.2026 | | 11.03.2027 | | 18.03.2027 | | 08.04.2027 | | |
| Participance | | | | | yes | no | yes | no | yes | no | yes | no | yes | no | yes | no | yes | no | yes | no | yes | no | yes | no | ∑yes |
| No | Surname | First Name | Company | Country | | | | | | | | | | | | | | | | | | | | | |
| 1 | B. | H. | SPX Flow | PL | | | | | x | | | x | x | | x | | x | | | | | | | | 4 |
| 2 | C. | M. | PCM Europe SAS | F | x | | x | | x | | x | | x | | x | | | x | | | | | | | 6 |
| 3 | D. | P. | Alfa Laval | DK | | x | | x | | x | x | | x | | x | | x | | | | | | | | 4 |
| 4 | D. | S. | KSB | D | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | F. | C. | Pentair Südmo GmbH | D | | x | | x | | x | | x | | x | | x | | | | | | | | | 0 |
| 6 | F. | J. | Fristam Pumpen KG | D | | x | | x | | x | | x | | | | x | | | | | | | | | 0 |
| 7 | G. | S. | GEA | I | | x | x | | | x | x | | | x | | x | x | | | | | | | | 3 |
| 8 | H. | G. | ProMinut | D | x | | x | | | x | x | | x | | x | | x | | | | | | | | 6 |
| 9 | J. | H. | Flux- GmbH | D | x | | x | | x | | x | | x | | x | | x | | | | | | | | 7 |
| 10 | M. | M. | GEA | I | | x | | x | | x | | x | | x | | | | | | | | | | | 0 |
| 11 | M. | S. | Evoguard GmbH | D | x | | x | | x | | x | | x | | x | | x | | | | | | | | 7 |
| 12 | S. | M. | Hilge | D | x | | x | | x | | x | | x | | x | | x | | | | | | | | 7 |
| 13 | S. | A. | SPX Flow | I | | x | | x | | x | | x | | x | | x | | | | | | | | | 0 |
| 14 | S. | B. | Seepex | D | | x | | x | | x | | x | | x | | x | | | | | | | | | 0 |
| 15 | S. | R. | Fristam Pumpen KG | D | x | | x | | x | | x | | x | | x | | x | | | | | | | | 7 |
| 16 | T. | M. | Danone | Ro | | | | | x | | | x | | x | | x | | | | | | | | | 1 |
| 17 | T. | A. | CSF | I | x | | x | | x | | | x | x | | x | | x | | | | | | | | 6 |
| 18 | T. | S. | GEA | I | | | | | | | | | | | | | x | | | | | | | | 1 |
| 19 | V. | F. | HAW- HH | D | x | | x | | | x | x | | x | | x | | | x | | | | | | | 5 |
| 20 | Z. | G. | Nestle | CH | | x | x | | x | | x | | x | | x | | x | | | | | | | | 6 |
| 21 | A. | V. | EHEDG | NL | x | | | x | x | | x | | x | | x | | (x) | | | | | | | | 5 |
| 22 | S. | V. | EHEDG | NL | | | | | | | | | | x | | x | | (x) | | | | | | | 0 |
| 23 | V. | A. | EHEDG | NL | | | | | | | | | | x | | x | | | | | | | | | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| | Summe | Σ | | | 9 | 8 | 10 | 7 | 10 | 9 | 11 | 8 | 12 | 8 | 12 | 8 | 11 | 2 | | | | | | | 0 |
| | Summe | Σ | | | 1 | 7 | 1 | 7 | 1 | 9 | 1 | 9 | 1 | 9 | 1 | 9 | | | | | | | | | 0 |

EHEDG Working Group
"Pumps, Homogenizers and Damping Devices"

Fristam Pumpen KG (GmbH & Co.)
Dipl.- Ing. (TU) Ralf Stahlkopf
Development
Kurt-A.-Körber-Chaussee 55
D-21033 Hamburg
Tel.: +49 (0)40/ 725 56 118
Mobil: +49(0)172/ 4520463
ralf.stahlkopf@fristam.de
www.fristam.de

# AGENDA

**For the 7th EHEDG-Subgroup Meeting**
**Pumps, Homogenizers and Damping Devices**
**Fifth Edition**

Location: EHEDG Head Office
Karspeldreef 8
1101 CJ Amsterdam

Date: September 24, 2026

Time: 10.00 am – 04:00 pm

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**Topics:**

- Welcome
- Schedule
- Report of the chairman
- Guideline 17, fifth edition
- Proposals and discussion
- Schedule
- Next meeting
  - 8th EHEDG-Subgroup Meeting
  - Face-to-Face-Meeting
  - Date: Thu., 11.03.2027 (1), Amsterdam
  - Date: Thu., 18.03.2027 (2), Amsterdam
  - Date: Thu., 16.04.2027 (3), Amsterdam
  - Online-Meeting: See above
  - Meeting place: VDMA Frankfurt, Amsterdam EHEDG- Office, Schiphol Airport or Company of a member
  - Two to three meetings per year
  - Deadline: Two years

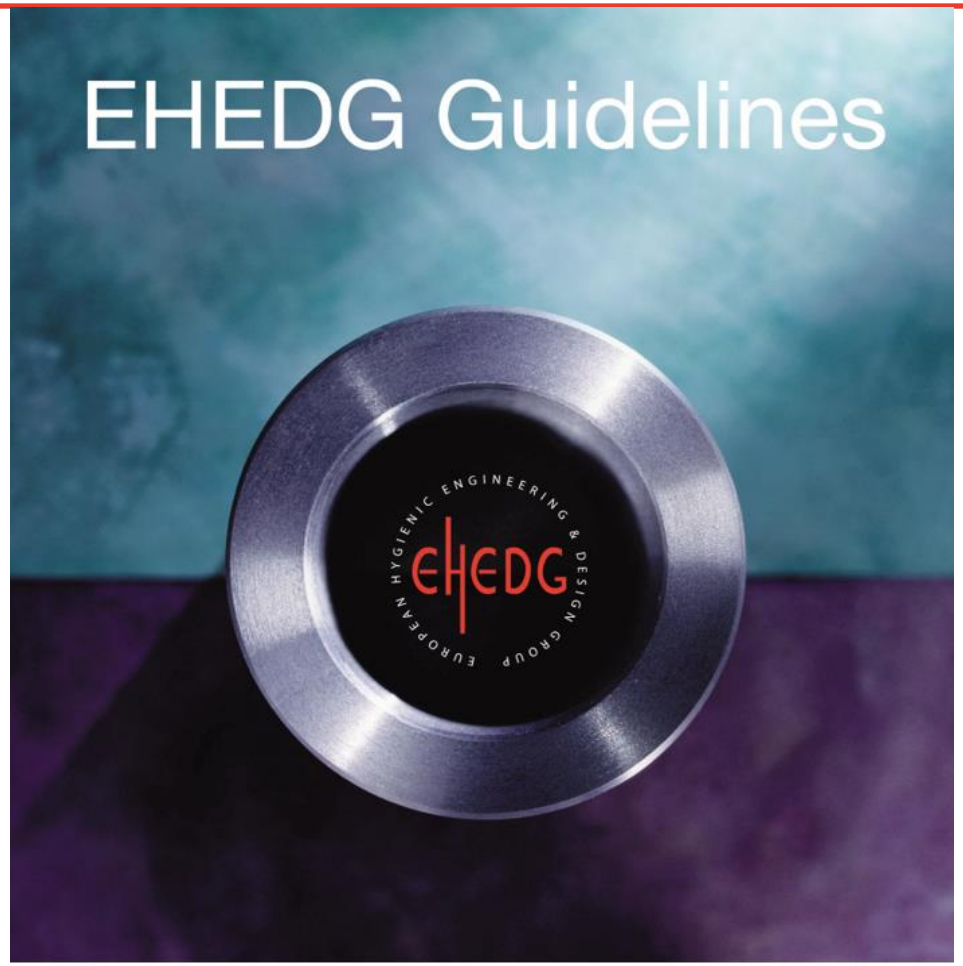
# Minutes

**Minutes 7** (24.09.2026, Meeting 7, Amsterdam)

EHEDG Working Group "**Pumps Homogenizers und Damping Devices**", Guideline No.: 17,
Seventh meeting for the update of the fifth revision, Thursday 24.09.2026, 10:00-16:00,
"Hygienic design of pumps, homogenizers and damping devices".
Meeting Place: EHEDG Head Office, Karspeldreef 8, 1101 CJ Amsterdam

| **TOP 1** | **Status / ToDo's:** | **Responsible** |
|---|---|---|
| Welcome and working group formalities. Report by the working group chair. | 1.) Welcome, introduction. 2.) Minutes of March 26, 2026 are adopted. 3.) The Agenda was accepted. 4.) Interview, Cristina Annoni, Ralf Stahlkopf, Silvia Grasselli, was published. 5.) EHEDG Yearbook 2025 is live since 23.06.2026. 6.) Task Force, EHEDG, certification, 22.09.2025, ..., 11.09.2026, (16 online), (4 in person). Topics and objectives are discussed. 7.) EHEDG Section Germany, 79539 Maulburg, 25.06.2026. | |
| **TOP 2** | **Status / ToDo's:** | **Responsible** |
| Discussion content | 1.) Determine the list of authors according to the list of participants. 2.) Show and select images by Jon JH Tsung (EHEDG graphic designer). 3.) Discuss all comments, suggestions, and commentators; discuss answers, vote. 4.) Test requirements, Chapter 11.2.4 Positive displacement high pressure piston pumps (homogenizers). 50 bar ≤ p ≤ 2000 bar and image (Appendix F, Increased cleaning pumping chamber,present | |
| **TOP 3** | **Status / ToDo's:** | **Responsible** |
| Next tasks (Homework) | 1.) Upload guideline with comments in the comment sidebar, latest status (04.08.2026), R.St., CW 40´26. 2.) Upload guideline with incorporated comments, latest status (24.09.2026, before), R.St, CW 40´26, 3.) If members of Working Group 17 still have any comments, send them to R.St. by CW 44´26. 4.) R.St. discusses this with the individual members and incorporates it into Guideline 17 (CW 46´26). 5.) Upload of the revised current version (R.St., CW 48´26) 6.) Send revised Guideline 17 to EHEDG Office, R.St. CW 50´26 | |
| **Top 4** | **Status / ToDo's:** | **Responsible** |
| Upload | Upload the current version of the guideline by week 50´26 | |
| **TOP 5** | **Status / ToDo's:** | **Responsible** |
| Next meeting (Meeting 8) | Thu., 18.03.2027, 10:00 - 16:00 Uhr, EHEDG Head Office, Karspeldreef 8, 1101 CJ Amsterdam | |

Universität Hamburg, 24.09.2026




DOC 17

**HYGIENIC DESIGN OF PUMPS, HOMOGENIZERS AND DAMPENING DEVICES** ~~(08.11.24, FULL WORKING GROUP DAYS)~~

~~4th Edition May 2020~~ 5th Edition December 2026

## Summary

As standard, a pump for food production shall be constructed according to hygienic aspects and ensure gentle product handling. For special requirements, the pump should optionally allow for retrofitting (e.g. jacketed pump housing, single, quenched or double mechanical seals).

Typical pump materials (metallic and non-metallic, elastomers and synthetics) and the quality of cast surfaces are indicated, cross reference is made to other EHEDG Guidelines.

Differences between the EHEDG Guidelines (Europe) and the 3-A Standards criteria (USA) are indicated.

For CIP-able pumps for food production, a product contact surface finish of ~~Ra~~ $R_a$ ≤ 0.8 µm shall be kept. Product surface finish of ~~Ra~~ $R_a$ ≤ 0.8~~µm~~ µm (~~space inserted~~) up to ~~Ra~~ $R_a$ ≤ 3,2 µm is allowed if it has been validated by an appropriate test (e.g. centrifugal pumps or areas of high velocity (see Doc. 2, ref. 1).

~~µ~~3-A stipulates that for CIP-able pumps for food production a surface finish of ~~Ra~~ $R_a$ ≤ 0.8~~µm~~ µm (~~space inserted~~) is to be observed in principle.

All components included in this Guideline shall be designed for CIP and SIP if necessary.

Chambers streamed with product shall be self-deaerating, without dead ends and should optionally provide a drainage facility without dead ends.

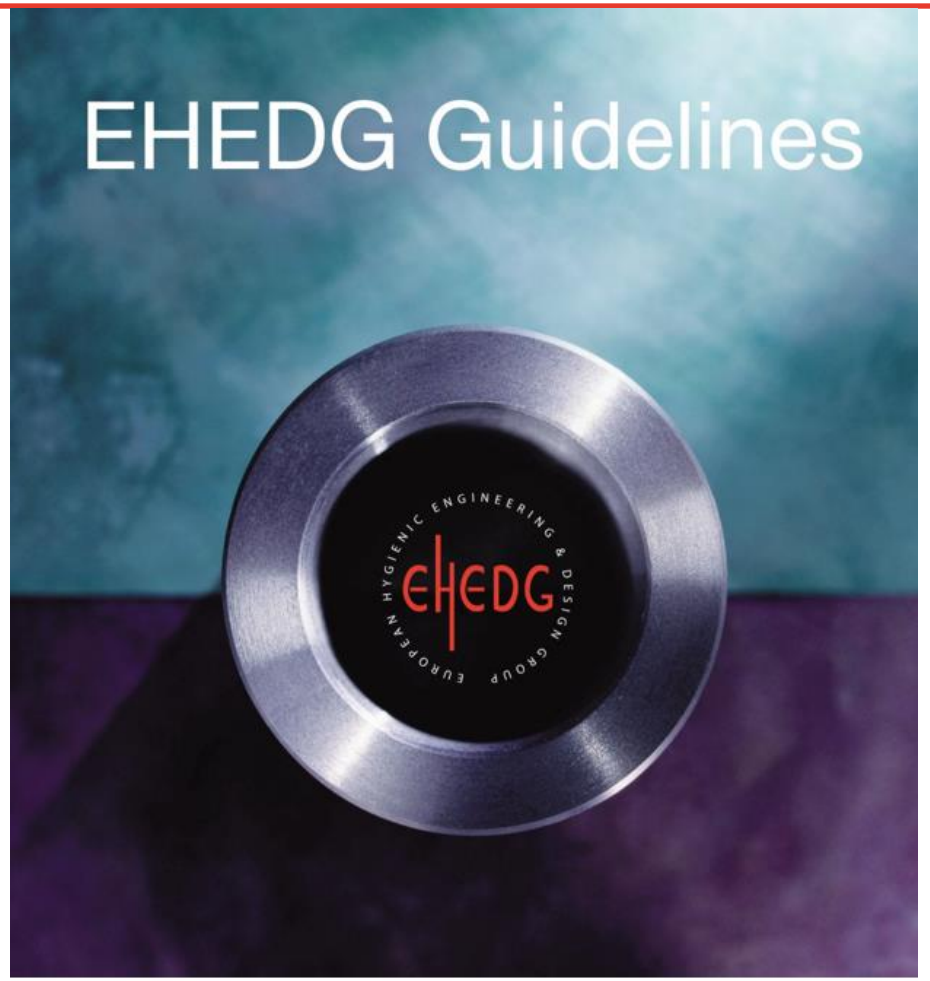
Different classes of pumps (displacement pumps, fluid flow- pumps and other pumps plus turbines), homogenizer and dampening device for fluids in the food industry are included. Examples for non-hygienic and hygienic as well as aseptic design are illustrated (Annexes).

## 11 Testing requirements

EHEDG investigations are carried out in accordance with the EHEDG guideline doc. 2 (A method for assessing the in-place cleanability of food processing equipment) or according to the EHEDG guideline doc. 5 (A method for the assessment of in-line sterilisability of food processing equipment) carried out. In addition to the conditions required by the guidelines for the EHEDG test, the following parameters must be observed during these examinations:

Centrifugal pumps use an impeller with the maximum impeller diameter D2 specified for the hydraulic design. The pumps are operated at the rated speed n specified in the hydraulic design. In the case of centrifugal pumps, the desired flow rate in the suction port of c = 1.5 m / s is achieved by throttling the pressure side in the EHEDG test.

At the request of the pump manufacturer, reduced impeller outer diameters D2 and speeds n can be tested and certified between EHEDG Test-Institute and the customer. (~~Proposal No 91, Company: APV, Alfa Laval, CSF, Fristam, GEA, KSB, LEWA~~)




DOC 17

**HYGIENIC DESIGN OF PUMPS, HOMOGENIZERS AND DAMPING DEVICES**

5th Edition December 2026

## Summary

As standard, a pump for food production shall be constructed according to hygienic aspects and ensure gentle product handling. For special requirements, the pump should optionally allow for retrofitting (e.g. jacketed pump housing, single, quenched or double mechanical seals).

Typical pump materials (metallic and non-metallic, elastomers and synthetics) and the quality of cast surfaces are indicated, cross reference is made to other EHEDG Guidelines.

Differences between the EHEDG Guidelines (Europe) and the 3-A Standards criteria (USA) are indicated.

For CIP-able pumps for food production, a product contact surface finish of ~~Ra~~ $R_a$ ≤ 0.8 µm shall be kept. Product surface finish of ~~Ra~~ $R_a$ ≤ 0.8~~µm~~ µm (~~space inserted~~) up to ~~Ra~~ $R_a$ ≤ 3,2 µm is allowed if it has been validated by an appropriate test (e.g. centrifugal pumps or areas of high velocity (see Doc. 2, ref. 1).

~~µ~~3-A stipulates that for CIP-able pumps for food production a surface finish of ~~Ra~~ $R_a$ ≤ 0.8~~µm~~ µm (~~space inserted~~) is to be observed in principle.

All components included in this Guideline shall be designed for CIP and SIP if necessary.

Chambers streamed with product shall be self-deaerating, without dead ends and should optionally provide a drainage facility without dead ends.

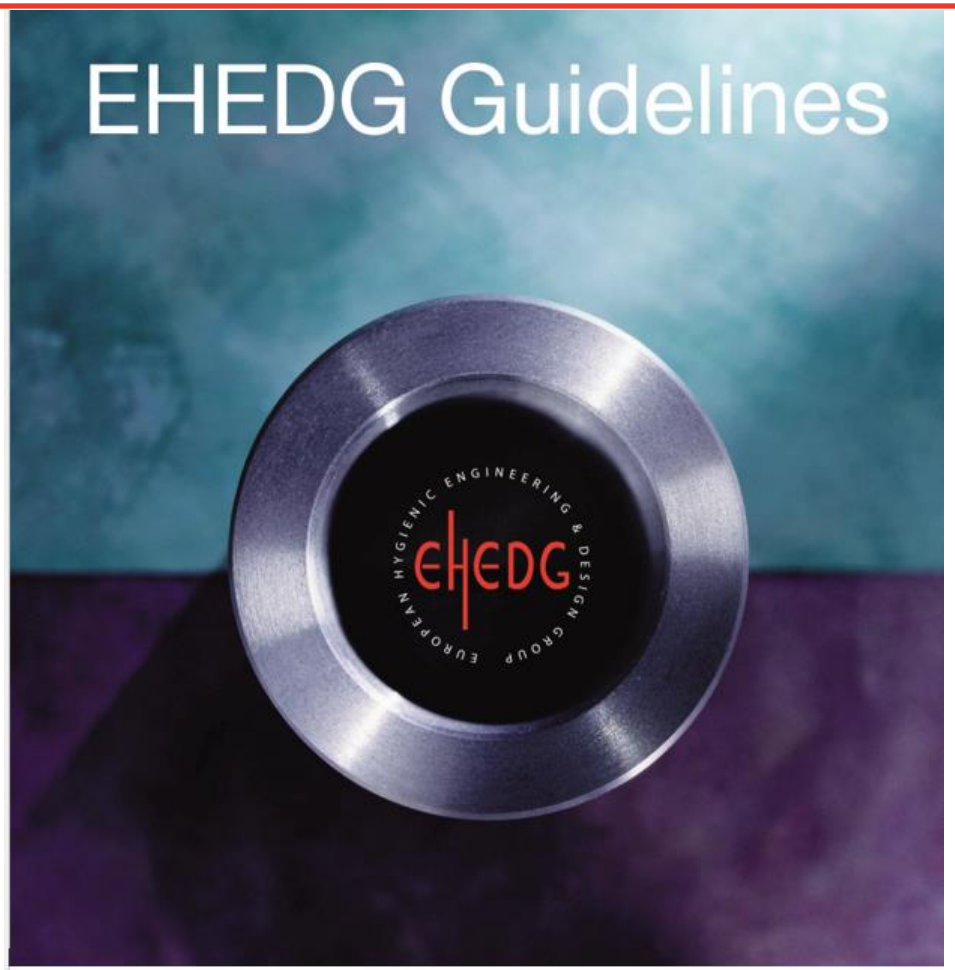
Different classes of pumps (displacement pumps, fluid flow- pumps and other pumps plus turbines), homogenizer and dampening device for fluids in the food industry are included. Examples for non-hygienic and hygienic as well as aseptic design are illustrated (Annexes).

## 11 Testing requirements

EHEDG tests are carried out in accordance with EHEDG Guideline No. 2 (Method for the Assessment of In-Place Cleanability of Food Processing Equipment) and EHEDG Guideline No. 8 (Hygienic Design Principles). In addition to the requirements specified in the guidelines, the following parameters must be observed for the EHEDG test.

If the nominal sizes of the available EHEDG test equipment do not match the nominal size of the components to be tested, hydraulically similar models may also be tested, provided their nominal sizes correspond to those of the available EHEDG test equipment. A successfully completed test of the model is then considered as passed for the hydraulically similar component as well.

For example, for centrifugal pumps hydraulically similar pumps are defined as follows. The pumps have a similar geometric design. For the dimensionless pump parameters, the following apply: flow coefficient (phi) $\varphi$ = constant, pressure coefficient (psi) $\psi$ = constant, power coefficient (lambda) $\lambda$ = constant, Reynolds number Re = constant, specific speed $n_q$ = constant. The pump manufacturer is best placed to specify the hydraulic similarity.


EHEDG Guidelines
EUROPEAN HYGIENIC ENGINEERING & DESIGN GROUP
EHEDG
DOC 17
HYGIENIC DESIGN OF PUMPS, HOMOGENIZERS AND DAMPING DEVICES
5th Edition December 2026

## Summary

As standard, a pump for food production shall be constructed according to hygienic aspects and ensure gentle product handling. For special requirements, the pump should optionally allow for retrofitting (e.g. jacketed pump housing, single, quenched or double mechanical seals).

Typical pump materials (metallic and non-metallic, elastomers and synthetics) and the quality of cast surfaces are indicated, cross reference is made to other EHEDG Guidelines.

Differences between the EHEDG Guidelines (Europe) and the 3-A Standards criteria (USA) are indicated.

For CIP-able pumps for food production, a product contact surface finish of ~~Ra~~ $R_a \leq 0.8$ µm shall be kept. Product surface finish of ~~Ra~~ $R_a \leq 0.8$~~µm~~ µm (~~space inserted~~) up to ~~Ra~~ $R_a \leq 3{,}2$ µm is allowed if it has been validated by an appropriate test (e.g. centrifugal pumps or areas of high velocity (see Doc. 2, ref. 1).

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All components included in this Guideline shall be designed for CIP and SIP if necessary.

Chambers streamed with product shall be self-deaerating, without dead ends and should optionally provide a drainage facility without dead ends.

Different classes of pumps (displacement pumps, fluid flow- pumps and other pumps plus turbines), homogenizer and dampening device for fluids in the food industry are included. Examples for non-hygienic and hygienic as well as aseptic design are illustrated (Annexes).

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For example, for centrifugal pumps hydraulically similar pumps are defined as follows. The pumps have a similar geometric design. For the dimensionless pump parameters, the following apply: flow coefficient (phi) $\varphi$ = constant, pressure coefficient (psi) $\psi$ = constant, power coefficient (lambda) $\lambda$ = constant, Reynolds number Re = constant, specific speed $n_q$ = constant. The pump manufacturer is best placed to specify the hydraulic similarity.

## 6 Materials

All materials used for product contact surfaces shall be suitable and compatible with the application. They shall be inert, non-toxic, non-porous, non-absorbent, and insoluble as far as possible under the intended conditions of use. All materials in contact with the products shall comply with the relevant legal requirements of the country the equipment is operated in, such as:

For applications in the European Union, all materials shall comply with EU 1935/2004. Additional information can be found in the EHEDG Guideline Doc. 32 (see ref. 7).

For applications in the United States of America, US Federal Regulations FDA (Food and Drug Administration), have to be complied with. (see ref. 12, 13, 16, 18 )

**Metals**
Type 300 (see Annex A) series stainless steel or better is preferred. Where increased material strength is demanded Duplex type steels, with similar or better properties than Type 300, may be used.

**Elastomers**
Elastomeric materials may be used for gaskets, seals, O-rings, parts of pumps and damping devices. Elastomer shall comply with EHEDG- Guideline No. 32 (see ref. 7).

**Plastics**
Plastic materials may be used for gaskets, seals, O-rings parts of pumps and damping devices in compliance with the provisions of EHEDG- Guideline No. 32 (see ref. 7).

Elastomeric materials and plastic materials having product contact surfaces shall be of such composition as to retain their surface and conformation characteristics when exposed to the Operational Conditions.

How is non-porosity defined (thinking about the micro-porosity required for proper lubrication in piston/seal systems)?
22. Juni 2026 um 10:39

Should the EU BPA ban be mentioned here there are examples of both elastomers and bonding materials which manufacturers have needed to replace for this reason.
17. Juni 2026 um 06:26

## 7 Surfaces

### 7.1 Product Contact Surface Finishes

52.) [I would recommend to rewrite 7.1 completely. (Comment 30, 16.07.2026, BBBJ, Answer: This text has developed over decades through the contributions of all participants and has been continuously refined, the members' signature, do not change, old text, do not change, agreed: yes ...., no...)]

General criteria for surface finishes of product contact surfaces ~~have been described~~are given in EHEDG GL 8 (~~see ref.~~ 3). 53.) (Suggestion 13, 16.07.2026, BBBJ, Answer: Only different wording, the statement is the same, the description is more precise, do not change, agreed: yes...., no...)

The surface finish influences the cleanability of pumping equipment. The cleaning times decrease with improved surface finishes (see Figure 1).

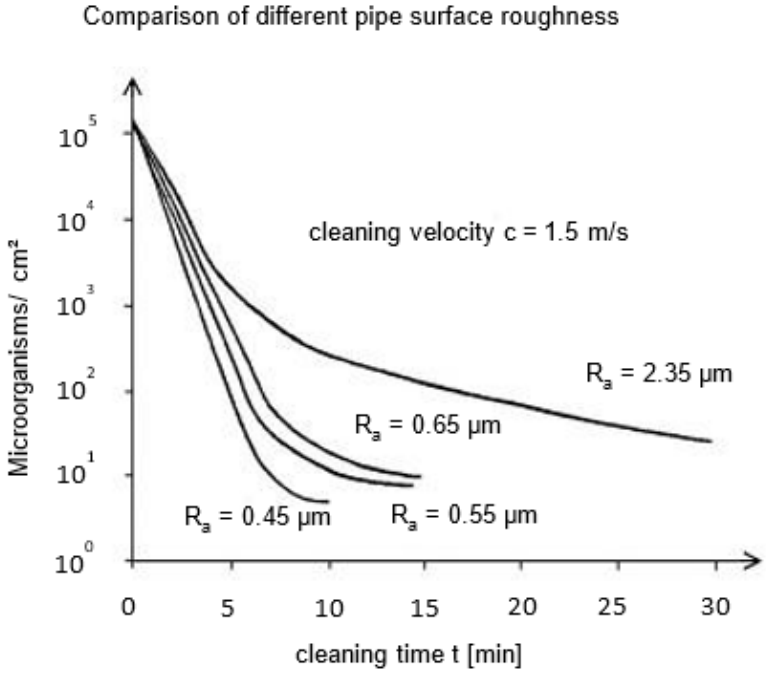



**Figure 1 – Example for cleanability, $R_a$-diagram (Source: Campden, U.K.)**

# EHEDG- Subgroup 17: Pumps, Homogenizers and Dampening Devices, meeting, September 24, 2026, 10:00 AM - 4:00 PM, Karspeldreef 8, Amsterdam



Stahlkopf, Ralf

Antworten | Allen antworten | Weiterleiten | ...

An Maxime Chevalier; 'poul.daugaard@alfalaval.com'; hehl.gabriele@prominent.com; 'Silvia.Grasselli@gea.com'; 'Hans-Joachim Johl'; Mannl, Stephan; 'markus.schroeer@gea.com'; 'Franz@vinnemeier.de'; **+8 weitere**

Cc 'Adwy van den Berg | EHEDG'; Vanessa Amani | EHEDG; 'Valeriia Seliverst | EHEDG'; 'joshua.rodulfo@ehedg.com'; Hans-Joachim Johl

Di 15.09.2026 14:06

Sie haben diese Nachricht am 01.10.2026 20:39 weitergeleitet.

Dear members of EHEDG Subgroup 17 (Pumps, Homogenizers, and Dampening Devices),

I hope you had a good summer and a pleasant, relaxing holiday. The peer review process for the fifth revision of the pump guideline has been completed. I am currently preparing the guideline, incorporating all comments, for our next meeting.

The meeting of EHEDG Subgroup 17 (Pumps, Homogenizers, and Dampening Devices) will take place as planned on September 24, 2026, from 10:00 AM to 4:00 PM at Karspeldreef 8, Amsterdam.

Most of you have already confirmed your attendance. I would like to take this opportunity to remind you of the date. I look forward to seeing you at the meeting.

Mit freundlichen Grüßen / with best regards

Ralf Stahlkopf
Entwicklung

**Fristam Pumpen KG (GmbH & Co.)**
Kurt-A.-Körber-Chaussee 55, 21033 Hamburg

Tel.: +49 (0)40 / 725 56 118
Mobile: +49 (0)172/ 45 20 463
E-Mail: Ralf.Stahlkopf@fristam.de
Webseite: www.fristam.de

EHEDG- Subgroup 17: Pumps, Homogenizers and Dampening Devices, meeting, September 24, 2026, 10:00 AM - 4:00 PM, Karspeldreef 8, Amsterdam



Stahlkopf, Ralf

An 'Maxime Chevalier'; 'poul.daugaard@alfalaval.com'; 'hehl.gabriele@prominent.com'; 'Silvia.Grasselli@gea.com'; 'Hans-Joachim Johl'; 'Mannl, Stephan'; 'markus.schroeer@gea.com'; 'Franz@vinnemeier.de'; 'gunter.zimmermann@rdko.nestle.com'; 'a.toso@csf.it'; Friedsch, Joachim; 'jfriedsch@web.de'; 'Hubert.Brodalka@spxflow.com'; 'TOMESCU Marian'; 'Tsantes, Stefano'; 'Hans-Joachim.Johl@flux-pumpen.de'

Cc 'Adwy van den Berg | EHEDG'; 'Vanessa Amani | EHEDG'; 'Valeriia Seliverst | EHEDG'; 'joshua.rodulfo@ehedg.com'

Antworten | Allen antworten | Weiterleiten

Do 01.10.2026 21:54

Aufbewahrungsrichtlinie 2 Year Delete (2 Jahre) Läuft ab 30.09.2028

Sie haben diese Nachricht am 01.10.2026 22:07 weitergeleitet.

EHEDG Pumps Minutes en 24092026.02.xlsx
59 KB

Dear members of EHEDG Subgroup 17 (Pumps, Homogenizers, and Dampening Devices),

I hope you all had a safe travel at home. Our meeting on September 24, 2026, at Karspeldreef 8, Amsterdam and online was very successful. In addition to various information and discussions, our primary focus was the peer review process for the fifth revision of Guideline 17 (Pumps, Homogenizers, and Dampening Devices), we reviewed, discussed, and **voted** on all comments and decided which changes to implement. We went through every comment, focusing specifically on the new text resulting from the changes and additions introduced by Subgroup 17 for this fifth version. Our approach involved distinguishing between correct and incorrect information, selecting the best wording (usually the version drafted by our working group) when faced with identical meanings but different phrasings, and making changes only when we have a benefit for the guideline. Thank you for your tremendous effort and for the unity shown during the decision-making process.

Chapter 11.2.4 Test requirements for positive displacement high-pressure piston pumps (homogenizers) cannot be included in this fifth revision, as doing so would necessitate a new peer review process. Thank you to Silvia Grasselli and Stefano Tsantes for their preparatory work, the chapter fits well within the guideline. If our proposed expansion of Chapter 11, Test requirements, is approved, Chapter 11.2.4 covering test requirements for positive displacement high-pressure piston pumps (homogenizers) and other pumps, can be included in the next revision.

The following next steps are planned:

1.) Upload guideline with comments in the comment bar; latest version (04 Aug 2026); R.St., Week 40/2026.
2.) Upload guideline with comments incorporated; latest version (24 Sep 2026); R.St., Week 40/2026.
3.) If members of Working Group 17 have any further comments, send them to R.St. by Week 44/2026.
4.) R.St. discusses these with the individual members and incorporates them into Guideline 17 (Week 46/2026).
5.) Upload the revised current version (R.St., Week 48/2026).
6.) Send revised Guideline 17 to the EHEDG Office; R.St., Week 50/2026.
7.) Next meeting: Thursday, 18 March 2026, 10:00 – 16:00, EHEDG Head Office (in-person or online). Ideally, Guideline 17 ("Pumps, Homogenizers, and Dampening Devices") will be finished and, if possible, published by then. We can then discuss the next steps.

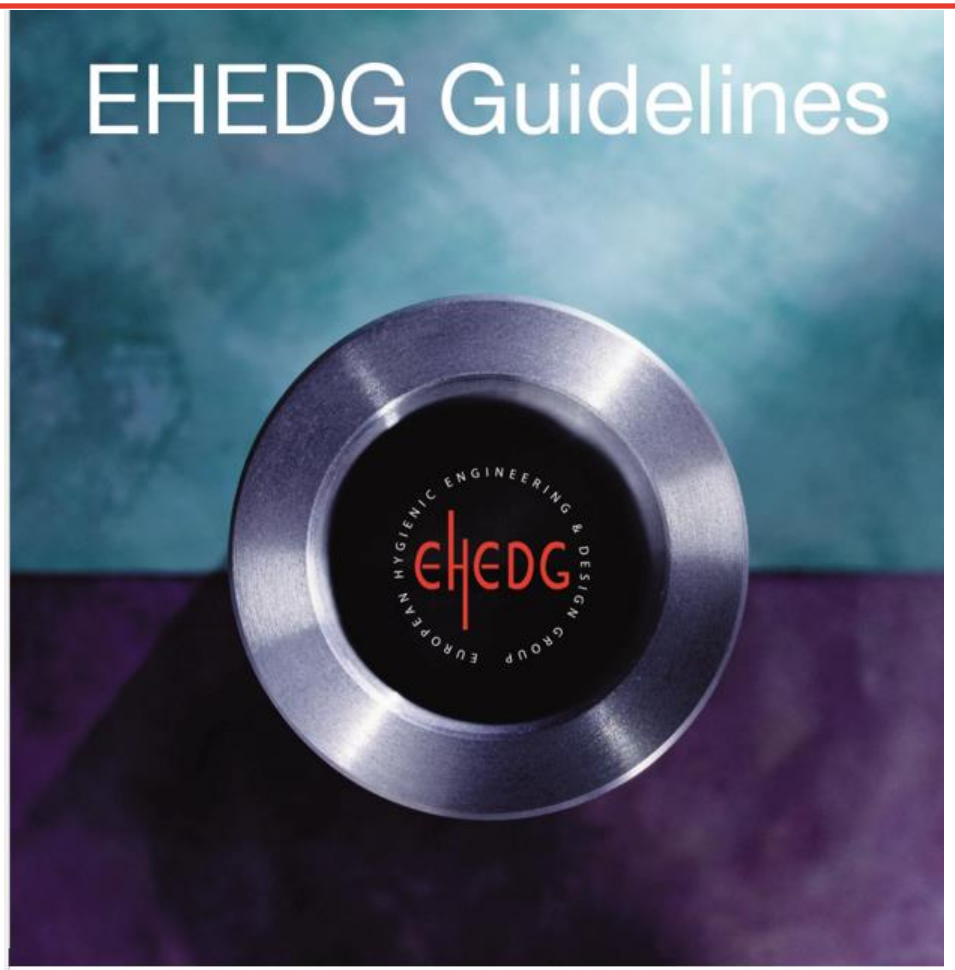
Mit freundlichen Grüßen / with best regards

Ralf Stahlkopf
Entwicklung

**Fristam Pumpen KG (GmbH & Co.)**
Kurt-A.-Körber-Chaussee 55, 21033 Hamburg

Tel.: +49 (0)40 / 725 56 118
Mobile: +49 (0)172/ 45 20 463
E-Mail: Ralf.Stahlkopf@fristam.de
Webseite: www.fristam.de

Annex:: Minutes 7 (24.09.2026, Meeting 7, Amsterdam)


EHEDG Guidelines
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EHEDG
DOC 17
HYGIENIC DESIGN OF PUMPS, HOMOGENIZERS AND DAMPING DEVICES
5th Edition December 2026

# Closure

## Next Steps

# Your input!

With the EHEDG World Congress in October 2028, we are considering holding the CWGD and FWGD consecutively in April/May.

**What would you prefer? Share your opinion!**



# Instructions

Go to

**www.menti.com**

Enter the code

**5984 3991**



Or use QR code

# Save the Date for Next FWGD

## FWGD: 13 October 2027

- Plenary: 12 October
- WG meetings: 14 October

**Location:**
Amsterdam



# 13 EHEDG Working Groups

## Building Design

Chairs: Herwig Nollet, Gun Wirtanen, Patrick Wouters, Micha Nierop, Dr. John Holah

## Chocolate

Chairs: Matilda Freund, Adam Ruskin, Garry Pearson, Jitendra Rai

## CIP

Chairs: Hein Timmerman, Joe Matthews

## Dry Materials Handling

Chairs: Gabrie Meesters, Martijn van der Hoeven

## Elastomeric Seals

Chairs: Eva Fleischmann, Giovanni Valente

## Materials of Construction

Chairs: Eric Partington

## Robotics

Chairs: Alan Friis, Greg Harper

## Welding

Chairs: Peter Merhof

## Sensors

Chairs: Holger Schmidt



## Maintenance

Chairs: Dimitri Tavernarakis

## Conveyor Belts

Chairs: Enrico Visconti, Roger Scheffler

## Utilities

Chairs: Roland Cocker, Lisa Bullens

## Valves

Chairs: Uwe Heisswolf, Elena Klenk

# WG Meetings – 5 Nov

| Working Group | Meeting Room |
|---|---|
| Building Design | 20 |
| Chocolate | 17 |
| CIP | 15 |
| Dry Materials Handling | 18 |
| Elastomeric Seals | 16 |
| Materials of Construction | 5 |
| Robotics | 19 |
| Welding | 4 |
| Sensors | 3 |
| Valves | 2 |
| Maintenance | 6 |
| Conveyor Systems | 10 |
| Utilities | 12 (4th Floor) |

# Diner Arrangements

## Transport to restaurant

**Bus 1:** Is leaving at **18:10** in **front of the hotel**

**Bus 2:** Is leaving around **18:30** in **front of the hotel**

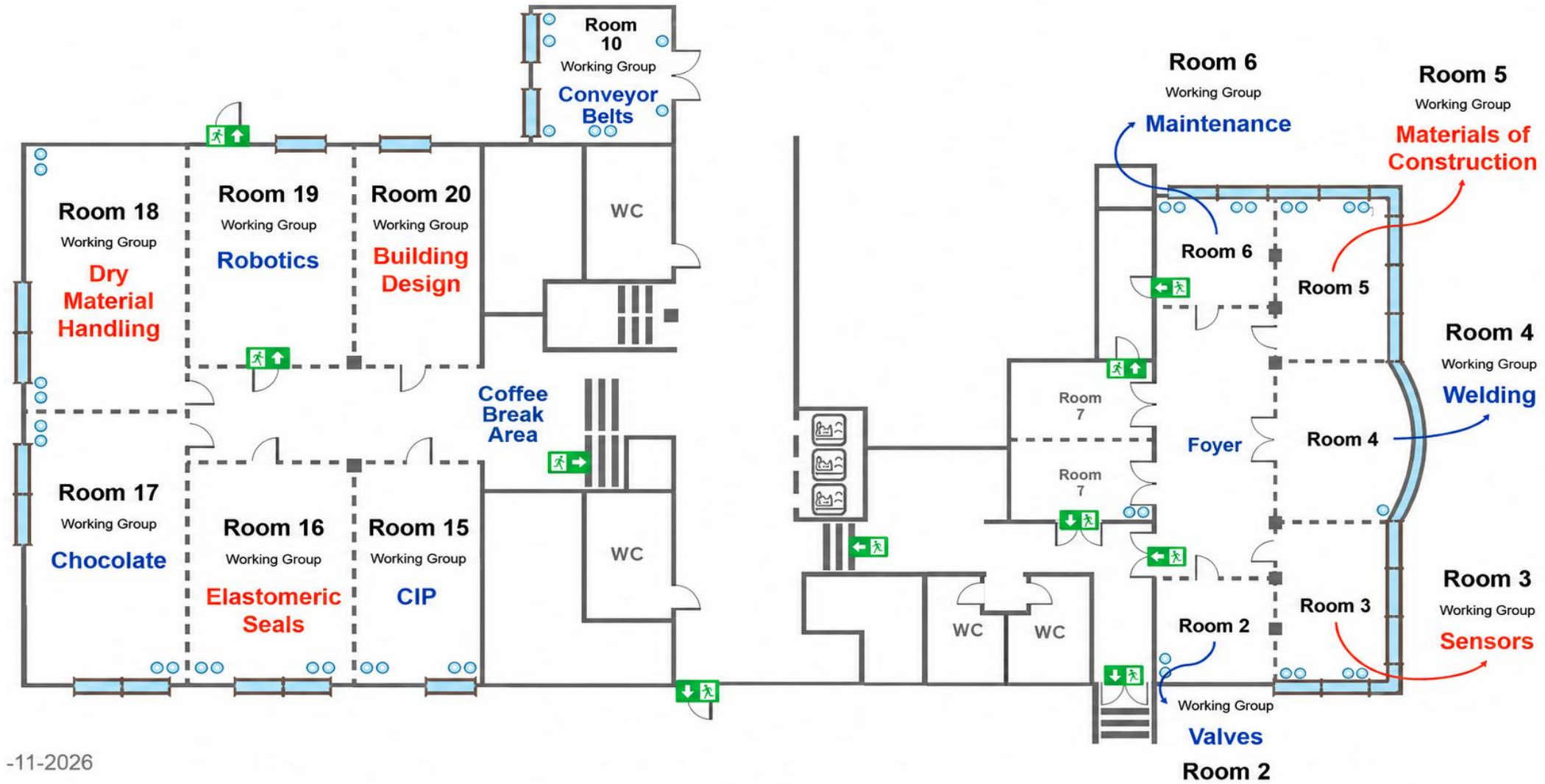


## Transport back to hotel

**Bus 1:** will be **leaving the restaurant** around **21:00**

**Bus 2:** will be **leaving the restaurant** around **21:30**

# Map of the Rooms




Kindly note that the Utilities Working Group meeting will take place in Room 1Q2, located two floors above, on the 4th floor.

# Thank you!




**Website**
www.ehedg.org

**Patrick Wouters**
patrick.wouters@ehedg.org