EHEDG CONNECTS

CERTIFICATION
GUIDELINES
EXPERTISE
NETWORK
TRAINING

edition 1

Magazine of the
European Hygienic
Engineering & Design Group

THE GOLDEN ERA
OF HYGIENIC ENGINEERING & DESIGN

EHEDG CERTIFICATION
HERE COME THE ROBOTS

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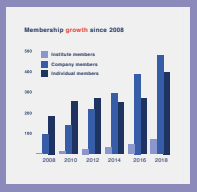


THE GOLDEN ERA OF HYGIENIC DESIGN

OPTIMIZING FOOD SAFETY AND FOOD QUALITY BY CONNECTING PEOPLE AND EXPERTISE

These are exciting times for EHEDG. The global food industry collectively recognizes the importance of hygienic engineering and design for safe food processing and packaging. Food producers, scientists, legislators, and equipment manufacturers acknowledge and advocate that hygienic design is an indispensable prerequisite for safe food production.

EHEDG is today a trustworthy and competent knowledge platform that provides the necessary expertise to improve food safety worldwide. Consequently, membership is growing. Since our previous print publication, we have again welcomed many new members in our community. Since all of these members bring in their unique knowledge and experience, EHEDG has more expertise to show for than ever before.

Connecting the dots and leading the way

The leading role of EHEDG in hygienic engineering and design is also noticed by other organizations that strive to make the world of food a safer place. The European Commission is considering including hygienic design as a best available technique. The 3-A organization in the United States is referring to EHEDG guidelines to formulate its sanitary standards for food producers. Also, the Global Food Safety Initiative (GFSI) decided to develop one of its scopes with the support of EHEDG expertise. These are great opportunities for EHEDG to position the working field of hygienic engineering and design in a broad context of global food safety.

EHEDG continues to emphasize that implementing hygienic equipment and engineering solutions optimizes food safety, sustainability, and food processing productivity. This is the golden era of hygienic design because the industry realizes that investing in hygienic engineering and design creates a win-win-win-situation for people, planet, and profits.

In our quest to optimize food safety and food quality, EHEDG is blossoming into a lively community of people that care profoundly about food safety.

“IN OUR QUEST TO SUPPORT FOOD SAFETY AND FOOD QUALITY, EHEDG IS BLOSSOMING INTO A LIVELY COMMUNITY”

The support base for EHEDG is solid and fertile. Our well-established product portfolio provides practical guidance to the industry; our certificates keep on proving their practical value and our training programs reach more industry stakeholders every day. They will continue to do so via face-to-face training as well as online e-training programs, all as parts of our roadmap to establish an EHEDG Training Academy. By continuously improving and communicating our product offering, EHEDG collectively contributes value to its member companies.

The value of EHEDG products and services

To stay relevant, it is vital that EHEDG continuously optimizes its value proposition for its members. The many EHEDG Committees and EHEDG Working Groups will continue to offer guidance with factual and unbiased information. They keep up with new legislation and innovation developments, publish new and update existing guidelines, establish certification opportunities and enhance training programs. These volunteers will tell you that being part of the global EHEDG community and working collectively with people from all over the world is rewarding both professionally and personally.

All EHEDG members share a common objective: we want to help to secure food safety globally. Thus it is an essential mission of the EHEDG leadership to safeguard the objectivity of all EHEDG activities. That’s why the EHEDG Executive Committee chooses to operate and communicate in a fully transparent manner. As we speak, new online and offline channels are put into place so that every EHEDG member can safely share knowledge and exchange views under the flag of the protected EHEDG brand. Because sharing knowledge means caring for food safety.

EHEDG Connects

This publication shows how EHEDG connects people that care about hygienic design and food safety. The interviews with the chairmen of the EHEDG Committees and Working Groups show us how their teams contribute to an expanding range of EHEDG services. They explain how realigning the management structure of EHEDG has made this organization more agile, and how our recently centralized certification process secures the validity and comparability of EHEDG certificates. By implementing new means of digital communication and topic-oriented online forums, they stimulate knowledge exchange, and by streamlining guideline and training protocols, they help to adequately disclose all the valuable expertise that EHEDG has to offer.

On behalf of EHEDG, I cordially invite you to join us in this golden era of hygienic engineering and design. By sharing our activities, accomplishments, and plans with you in this publication, we hope to inspire you to share yours too. Connect with us so we can broaden our scopes together and optimize food safety and food quality all over the world.

Thank You.

Ludvig Josefsberg
EHEDG President

FINANCIAL TRANSPARENCY SERVES OUR GLOBAL COMMUNITY OF VOLUNTEERS

SUBSTANTIATED SUPPORT AND MEANINGFUL ENCOUNTERS STIMULATE COMMITMENT

In this first issue of EHEDG Connects I like to dedicate some words to all the great volunteers who contributed their time and efforts to the higher goal of us all: to make the world of food a safer place through hygienic engineering and design. By sharing your expertise with our global EHEDG community, you all substantially contribute to the progress we are making. I believe that is something we should be proud of.

Because what a year it was. As your treasurer of this unique global community, I can inform you that EHEDG is doing exceptionally well. Our community is growing steadily, and with this consistent increase in members, our financial abilities are growing as well. I have to make sure that our common financial resources are well-spent, in goal-oriented ways that contribute effectively to the notoriety of EHEDG.

When someone asks me what the secret of the success of EHEDG is, I like to answer: “I used to think that money makes the world go round, but since I volunteer for EHEDG I know it’s the voluntary commitment of people who are willing to learn from each other that makes all the difference. In our global community, we genuinely dare to share. The result is that every one of us becomes a winner by feeling connected, appreciated and supported.

With EHEDG entering into adulthood, we also experience some growing pains, which is perfectly explicable, but something we have to pay serious attention to. In an organization run by volunteers, our means of obliging people to professionalize our core activities swiftly were somewhat limited. That is why our newly compiled Executive Committee decided to utilize some of its financial resources to hire professional support.

To name a few: in the past year, we managed to reshape the EHEDG management structure, centralize our certification activities, professionalize our communication activities, to develop our training programs further, to streamline our guideline formats and to establish firm connections with the Global Food Safety Initiative. You can read about all these activities in this EHEDG Connects. This is how we do it: we achieve a sustainable growth towards global presence through the Sub-Committee Regional Sections, we develop new products and services through the Sub-Committee Product Portfolio and we professionalize our communication efforts through the Sub-Committee Communication. These bodies adapt their projects to the demands of members from all parts of the food industry who are represented by the Advisory Board.

This is how Finances comes in: the EHEDG Executive Committee allocates budgets for the Sub-Committees, based on project proposals by the chairmen who are made responsible for the budgets. Halfway, I check the spendings and make use of possibilities to relocate funds to get things going in areas where additional financial support is needed. At the end of the year, I reset all financial budgets and present the new ones to the Executive Board.

Two things are crucial for keeping EHEDG successful in the years to come: financial transparency and fun. Financial openness is mandatory for our ANBI-certified nonprofit foundation to preserve our credibility as an independent knowledge platform. Fun is equally important because it allows people to relax, to get to know each other on a personal level and to have truly meaningful encounters.

Your Treasurer,
Piet Steenaard

EHEDG SUB-COMMITTEE PRODUCT PORTFOLIO

TURNING STRATEGIES AND POLICIES INTO VALUABLE PRODUCTS AND SERVICES

The consistent growth and globalization of EHEDG creates new challenges to keep EHEDG independent, flexible and effective. That is why EHEDG recently reshaped its own organizational structure. The goal is to effectively utilize the valuable time, expertise and contributions of EHEDG volunteers in the boards, (Sub)-Committees and Working Groups. EHEDG aims to reach this goal by making the organization leaner, with a slimmed down Executive Committee that focuses solely on the mission, vision, strategy and budget policy of EHEDG. Three Sub-Committees translate the strategies into actions, one of which is the EHEDG Sub-Committee Product Portfolio that has a special position within the new organizational structure. Chairman Dr. Peter Golz explains why.

Why does EHEDG need an EHEDG Product Portfolio Sub-Committee?

Peter Golz: "EHEDG is growing up to become a mature organization, formed by coordinated Working Groups that target their appointed objectives. The Product Portfolio Sub-Committee makes sure that these objectives are clear and that all tasks and responsibilities of all Working Groups within the total product portfolio are aligned efficiently and effectively. The Product Portfolio Sub-Committee focuses on aligning the forming, tasks and duties of EHEDG Working Groups and develops life cycle policy and terms of utilization of the EHEDG guidelines and EHEDG training material."

When would you consider your efforts to be successful?

"When we succeed to facilitate the Working Groups in all possible ways, when we succeed in making their work easier and when we succeed in helping them to work more effectively, for example by professionalizing the guideline development procedures. Last but not least, this Sub-Committee also defines the basic principles of the EHEDG product certification process. In a way, you could say that by turning strategies and policies into valuable products and services, we actively give direction to the development and implementation of hygienic design in the food industry."

"AT EHEDG THE COMMUNICATION LINES ARE PLEASANTLY SHORT."

How does the Executive Committee help your Sub-Committee to succeed?

"By implementing a clear vision on the strategies we need to follow to make the EHEDG product portfolio as effective as possible. After all, the guidelines and training and certification activities EHEDG deploys are not the goal itself but only the means to realize the real goal: to optimize food safety in the food industry by improving hygiene in all areas of the food chain through the utilization of hygienic engineering and design. Besides the foundation board members, the Executive Committee consists of the Sub-Committee chairmen, so the communication lines are short. We think that that recognizing weak spots in installations is an important starting point for improving hygiene. After that, food and equipment producers can start eliminating these weak spots by utilizing EHEDG guidelines and action plans."

Action plans? Is that something new?

"Yes, but we're still in the planning phase. For many years EHEDG has primarily developed guidelines, certification and training products, but lately we have been thinking about products and services that can help decision makers in food companies to decide on complete hygienic installation solutions for their goals. Since hygienic engineering and design is finally valued as an important element of making the world of food a safer place, EHEDG has received many request for assistance and pro-actively contributes to more and more initiatives, like the Global Food Safety Initiative (GFSI) where EHEDG members contribute to the development of a new chapter on hygienic design. We have to think about that, because usually we focus on new equipment only, but it certainly is in line with the ambition of EHEDG to be closely connected to other disciplines that serve the food industry from different areas of expertise."

In what other ways can product portfolio development make EHEDG more influential?

"I see two strategic routes to follow. The first one is to keep control over the ways that EHEDG guidelines are driving change in the food industry. The most influential tool that is driving innovation and is regulating implementation of hygienic design solutions is the EHEDG certification program. In the past, all certification tests were conducted by independent test laboratories, most of them EHEDG members, that based their testing procedures on EHEDG guidelines. However, this approach left room for interpretation, creating small but sometimes significant differences in the way individual testing institutes were rating products. That is why the EHEDG Executive Committee asked the EHEDG Sub-Committee Product Portfolio to start centralizing all EHEDG certification processes. Furthermore, some Working Groups now develop guidelines that focus on the installations rather than on individual components. We also aim to develop communities of practice where product users, contributors and stakeholders exchange their hands on experience on dedicated community platforms. And we like to challenge the chair persons of the Working Groups, for example by asking them to set up webinars and utilize other new communication channels like e-learning and online community modules. This way, we hope to reach more smaller food producing companies that might not have the time and resources to attend to our seminars or congress meetings in person. Finally, I would like to take this opportunity and ask all you readers to provide your feedback on these new product ideas. Thank you, I am looking forward to connecting with you."

"WE LIKE TO CHALLENGE THE CHAIRS OF THE WORKING GROUPS"

COMMUNICATING THE REAL VALUE OF EHEDG

SUB-COMMITTEE COMMUNICATION: LET ALL VOICES BE HEARD

To enjoy learning from each other in a great team that serves a good cause - that's the main reason why Karl-Heinz Bahr became chairman of the EHEDG Sub-Committee Communication. He wants to give all people of EHEDG a voice and he believes that innovative hygienic engineering and design, safe food processing and engaging communication go together perfectly.

Why does EHEDG need a Sub-Committee for communication?

Karl-Heinz Bahr: "Our drive to communicate is very old. Sharing stories while preparing and consuming food shaped our communities. The European Hygienic Engineering and Design Group is also a community, and unlike its name suggests it's a global community as well. A Sub-Committee for communication is important for EHEDG because sharing information and knowledge is at the heart of this community. The EHEDG Executive Committee provided us with a clearly defined mission: to convey EHEDG value proposition to attract new members, to support sales of EHEDG products and services, to convince members to contribute to EHEDG Working Groups and to stimulate EHEDG growth by supporting regional development. We also feel responsible for keeping the communication processes within EHEDG transparent, because we believe that open communication is a must for a community in which many companies and many commercial interests are represented. That's why we strive to engage our members to communicate their views and share their experiences and best and worst practices with each other openly - for the benefit of food safety and quality worldwide."

"WE BELIEVE IN THE COMBINED POWER OF GOOD INNOVATION AND COMMUNICATION"

What's special about this?

"EHEDG is a community of professionals who want to support each other. It's a global knowledge platform, based on consensus-based principles and scientific proof of concepts.

The volunteers who commit themselves to contribute value to EHEDG always manage to agree on things, even after strong debates. Maybe it's because many of us have a technical background and are hardwired to value valid arguments and convincing technical insights. That's the beauty of technology: ultimately, something works or it doesn't. This creates an honest level playing field for innovation and communication. Communicating transparently about new activities, policies, developments and ideas, straight from the heart of hygienic engineering and design, that is what we do to serve and support this knowledge community platform."

"SHARING INFORMATION AND KNOWLEDGE IS AT THE HEART OF THIS KNOWLEDGE COMMUNITY"

EHEDG is growing. Does that mean there will be more communication activities?

"Not more, but better activities, more on target and yet at the same time with a broader view. Our Sub-Committee serves the existing EHEDG members, but we also reach out to new ones and invite them to join this community, to share their expertise, views and hands-on experiences with each other on our global knowledge platform. The members of our Sub-Committee have an editorial task in this: they determine the relevancy and newsworthiness of stories and decide if they are interesting enough to share them with the rest of the EHEDG community. We share stories and expertise in various editorial formats to illustrate the value proposition of EHEDG for the different kinds of members. And we consistently position EHEDG as the designated knowledge platform for hygienic engineering and design - by providing tailored publications, targeted to various functional and regional needs. To preserve the transparency and objectivity of the publications, we include different viewpoints and search for multiple editorial angles. This way we also strive to reflect the diversity of EHEDG members in our communication activities."

You mention target groups. What are they and how do you plan to reach them?

"We differentiate between different target groups to provide everyone with relevant and useful information. Now there are two ways to categorize target groups: the first way is by means of the companies they represent. We communicate with people working at food producing companies, equipment and engineering companies and governmental, science and education institutes. Our goal is to reach and engage more food producing companies to establish a better balance between end-users and suppliers. The second way of categorizing is to address our members in accordance to their activities. We can differentiate engineers from product safety and quality managers and decision makers. Many former EHEDG publications focused on passing on technical information, so traditionally we mainly reached people with a technical background. EHEDG also wants to engage product safety managers and decision makers in the food industry, since they can really put EHEDG knowledge to good use to make a difference and drive the change. To reach these decision makers, we will communicate in less technical and more prudential ways, using our five main communication channels: the website, the newsletter, direct mailings, social media channels and this EHEDG Connects magazine that replaces the former EHEDG Yearbook."

How do the members of the Sub-Committee Communication communicate?

"Like regular people, they just need more time. We communicate thoughtfully because we recognize the importance choosing our words wisely. All members of this team believe in the combined power of good innovation and good communication. When someone has got something to say, I try to make sure that every Sub-Committee member gets the time he or she needs and that everyone else is listening carefully, because good communication starts with good listening – it provides room for thinking and creates a safe space for new ideas to emerge. In the end we all want to reach our common goal: to facilitate and stimulate the exchange of knowledge and stories in the world of hygienic engineering and design, for the benefit of food safety and quality."

What communication activities can we expect in the coming year?

"For each publication, we choose the content format that best fits the communication goals and resources at hand. There will be written editorials, interviews and video clips, and we aim to provide new means for online communication. The publications of new guidelines are of course good opportunities to give the Working Groups the attention they deserve for their hard work.

"GOOD COMMUNICATION PROVIDES ROOM FOR THINKING AND CREATES A SAFE SPACE FOR NEW IDEAS TO EMERGE"

However, instead of diving too deeply into the technical details of the guidelines, we rather illustrate their relevance. It's the value they offer in a practical context that we want to convey. We will continue to support the EHEDG Executive Committee in reaching their strategic communication goals and we do our best to provide all EHEDG members with valuable information and means of communication they need to be well informed, successful and well connected with each other."

SUSTAINABLE GLOBALIZATION ON A REGIONAL SCALE

EHEDG SUB-COMMITTEE REGIONAL DEVELOPMENT SUPPORTS, ALIGNS AND MONITORS GLOBALIZATION

Quality over quantity, that is the prime directive for the EHEDG Sub-Committee Regional Development when regulating the regional growth of EHEDG around the world. With a clear set of strategic objectives and key performance indicators EHEDG supports, monitors and aligns the activities of the EHEDG Regional Sections. Andres Pascual Vidal, chairman of the EHEDG Sub-Committee Regional Development, explains how every region can utilize financial and institutional EHEDG support to raise awareness for hygienic engineering and design and to make the world of food a safer place for everyone.

What strategic objectives does EHEDG want the regional sections to contribute to?

Andres Pascual Vidal: "To raise the awareness for hygienic design in their region, to provide guidance and to increase EHEDG recognition and technical abilities. Furthermore the EHEDG Regional Sections are expected to realize a well-balanced membership growth, to support to EHEDG products and the EHEDG communication strategy and to increase the cooperation among their surrounding regional sections."

How do you expect them to do that?

"One of the first things a newly established EHEDG Regional Section can do is to organize promotional meetings. Most Regional Sections do this once or twice a year, but to make EHEDG better known in the regions we stimulate them to organize at least three meetings yearly. The EHEDG Regional Sections can also develop regional EHEDG seminars, translate EHEDG guidelines into their regional languages and officially participate in external events and courses under the name of EHEDG. They are even welcome to submit ideas for stories to the EHEDG Sub-Committee Communication to put their region in the global spotlight. We have developed a comprehensive roadmap containing hands-on information on how to deploy all of these activities. We invite all EHEDG Regional Sections, the long existing and the new ones, to follow this roadmap to reach their goals."

"THE GROWTH OF EHEDG USED TO BE UNCONTROLLED AND UNLIMITED"

What does the Sub-Committee Regional Development do in the meantime?

"The Regional Development Sub-Committee leads and develops strategies and programs for the EHEDG Regional Sections. The Sub-Committee members help the EHEDG Regional Sections to interpret and apply the EHEDG strategies, to identify needs, gaps and opportunities, to strengthen the interaction between EHEDG and its local extensions as well as to monitor and support regional activities to maximize their impact."

Why assess and monitor the EHEDG Regional Sections in the first place?

"In the past, the growth of EHEDG was uncontrolled and unlimited. As a result, EHEDG grew very fast, but there was no structural performance data coming from the regions to base EHEDG admission and funding policy on. To control the growth and safeguard the quality of EHEDG products and services, the EHEDG Sub-Committee Regional Development introduced key performance indicators (KPI) that enable us to evaluate all EHEDG Regional Sections in the same way. This also creates an honest level playing field for funding. Some EHEDG Regional Sections never ask for financial support, others need more funding. On average EHEDG finances about half of the total costs made by the EHEDG Regional Sections. Thanks to the KPI's, the EHEDG Sub-Committee Regional Development and the EHEDG Executive Committee can support, regulate and motivate all EHEDG Regional Sections strategically and transparently. We can now offer expertise and financial means in a targeted way to maximize the EHEDG value proposition in the regions while safeguarding the quality of EHEDG products and services worldwide."

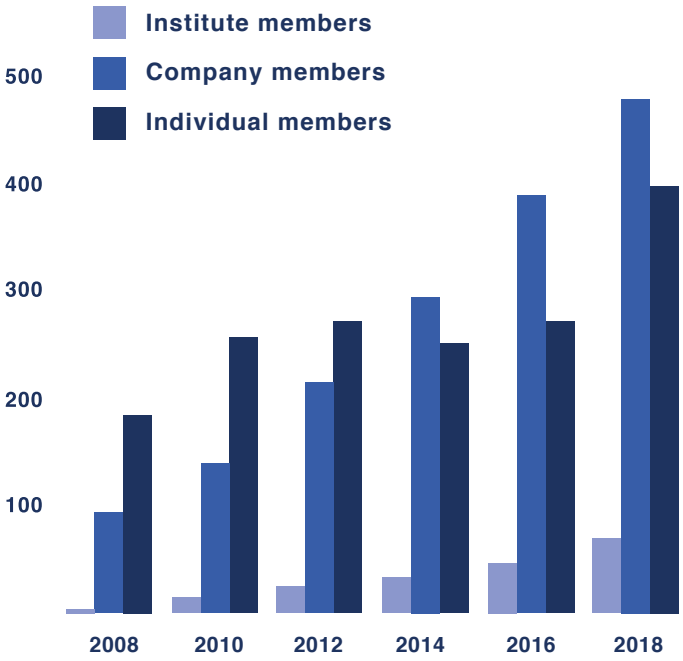
What are the main selection criteria for admitting new EHEDG Regional Sections?

"First of all, every new EHEDG Regional Section must have a EHEDG Regional Committee, consisting of at least four members: a chairperson, a co-chair, a treasurer and a secretary. Since we strive for diversity, all EHEDG Regional Committee members should ideally originate from different private organizations. Secondly, the EHEDG Regional Committee has to sign the current EHEDG bylaws that contain all strategy and process related rules of conduct. Furthermore, the applying region has to turn in an annual activity plan and budget estimation that describes in detail how the EHEDG Regional Committee plans to contribute to the strategic objectives. The applications are handled by the EHEDG Executive Committee, advised by our Sub-Committee Regional Development and based on our preferences regarding the priority of admittance of regions."

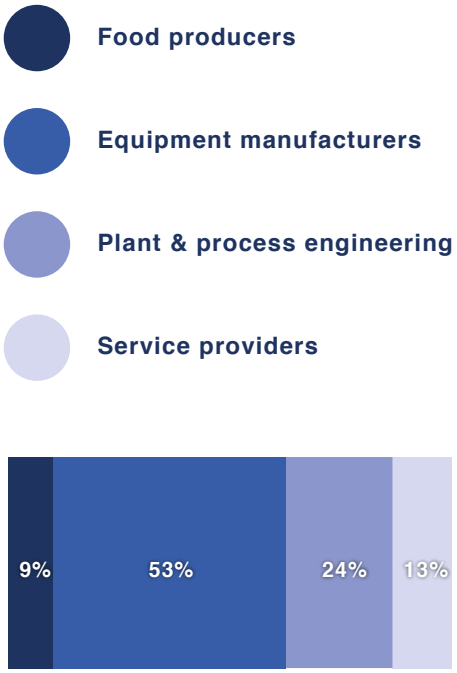
Do you have any suggestions on how to promote EHEDG on a regional scale?

"It depends on the region of course, but most companies in the world of food are sensitive for a general set of compelling benefits that hygienic engineering and design can offer. Securing food safety by reducing contamination risks goes hand in hand with optimizing plant productivity (as a result of shorter cleaning intervals) and with improving sustainability (through savings in chemicals, water and energy). These economical and environmental effects are substantial and real and are underlined by the attributions of the recent "Life Best Project Awards" of the European Commission. And let's not forget the business opportunities that the EHEDG community represents. Many EHEDG Regional Sections are hosted by universities and non-governmental organizations that promote EHEDG primarily from a perspective of food safety and social responsibility, but most potential EHEDG members are also interested in new business opportunities. I would suggest to always refer to several of these great benefits and opportunities that EHEDG has to offer."

Membership growth since 2008



Memberships by category



MEMBERSHIP DEVELOPMENTS & EHEDG VALUE PROPOSITION

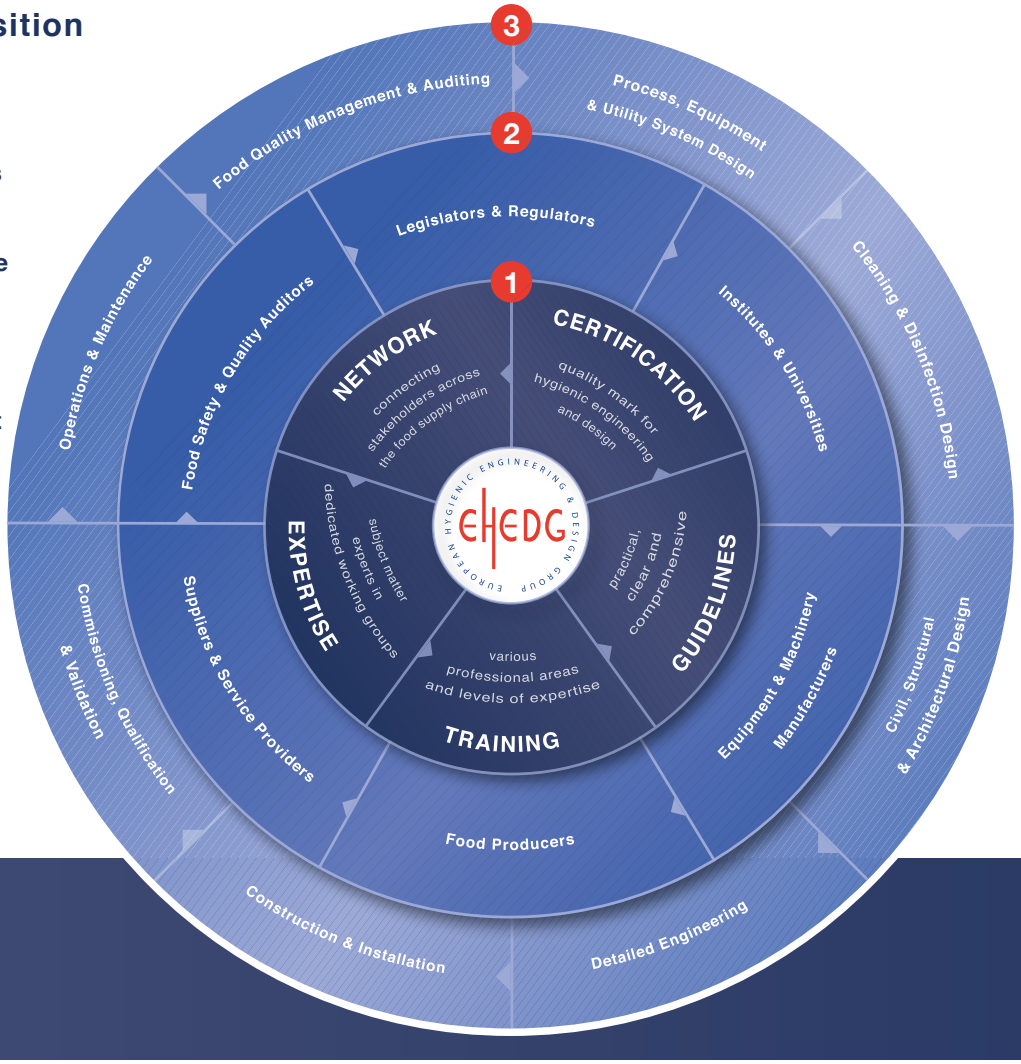
in the golden era of hygienic engineering & design

Number of Regional Sections
by geographical area

Number of Company & Institute Members
by geographical area

EHEDG value proposition

1. EHEDG offers these products and services
2. for the benefit of these stakeholders
3. for these development stages of hygienic food processing facilities



FRIESLANDCAMPINA & EHEDG: GUIDELINES IN THE REAL WORLD

DAIRY COOPERATION INTEGRATES HYGIENIC DESIGN IN PROJECT MANAGEMENT

EHEDG guidelines offer a clear understanding of the basic principles of hygienic engineering and design, but how about their practical usability? EHEDG Connects posed the question to two managers at Royal FrieslandCampina who offer technical project support and received a response in unison: "To apply the guidelines in the real world, they need to be translated to checklists and hands-on design standards."

For how long has FrieslandCampina been applying EHEDG guidelines?

Anneginus Hummel, Manager Capex Support FrieslandCampina:
"The way that our company integrates hygienic design is the result of a long cooperation. In the early nineties the first EHEDG documents where used as the basis for design processes, which have been developed further and completed in the years thereafter. In 2008 (prior to the merger with Campina) Friesland Foods became a full-fledged EHEDG company member. In 2014, FrieslandCampina founded the Subject Matter Experts (SME) team to enforce the compliance to hygienic engineering and design guidelines in the daily practice."

Kees Boon, Manager SME FrieslandCampina:
"Within our Ingredients Business Group we deal with projects varying from implementing a single machine to complete production lines. All these projects have to comply to the same high quality food safety standards. The subject matter experts in the SME team represent six disciplines that contain

hygienic design aspects: civil engineering, mechanical, E&I, HVAC/utilities, ATEX and safety & design. By now, more than 250 FrieslandCampina employees have participated in an hygienic design training and many of them gathered enough knowledge to actively contribute to EHEDG Working Groups."

What value has EHEDG for FrieslandCampina?

Hummel: "The EHEDG guidelines are valuable to us, but they are also too generic to be directly applicable in a dairy processing plant. To optimize their practical value

"HYGIENIC ENGINEERING AND DESIGN IS NOW INCORPORATED IN ALL OF OUR PROJECTS"

“WE ONLY DO BUSINESS WITH SUPPLIERS WHO ARE WILLING TO EVOLVE IN HYGIENIC ENGINEERING AND DESIGN”

we further develop these basic guidelines and translate them into checklists and our own design standards. These standards and checklists, together with our best practices documentations and EHEDG presentations, are part of our dedicated FrieslandCampina knowledge database. As a result, our project leaders have to pay close attention to hygienic design. It is simply not possible to submit a budget request for a project without the approval of the SME team.”

Boon: “The SME-team supports and monitors the projects and makes sure that hygienic design aspects are addressed in every project stage. We used to do this in a reactive way: when a design turned out to be incorrect, the project team had to start over. Sometimes, small mistakes were accepted to protect investments. Our Subject Matter Experts adopted a different, more proactive approach. During the early project stages, one of our SME team members visits the project team to explain how to implement hygienic design standards and what to do when no standards are available. During the basic design process we offer ad-hoc support and prior to the budget request for the building and construction we perform an audit to review all aspects of the technical design, including the hygienic conditions.”

What are the effects and results of your approach?

Boon: “Hygienic engineering and design is now incorporated in all of our projects. All of our employees now have the same mindset and we succeed in guiding our suppliers more effectively. Since we provide our own specific criteria, we prevent them from interpreting the EHEDG guidelines in various ways. In the past, this has been quite a challenge, even when ordering seemingly simple objects like a machinery platform. EHEDG guidelines stipulate that the surfaces should be smooth and easy to clean, but our suppliers were free to interpret these guidelines in their own ways, so we received very different platform designs with widely varying hygienic characteristics. To prevent this we now oblige our suppliers to stick to our checklists that clearly state what’s acceptable for us and what’s not.”

Hummel: “When we need a pump, a valve or a cable tray, it’s not so difficult - our suppliers are perfectly able to apply for an EHEDG-certificate themselves. But that changes when many of these components have to be combined in a system design. Many installation companies have difficulties dealing with this, so we have to supply them with specific requirements on a system level, for example with a standard on welding. The effect is that suppliers sometimes inform us right up front that they cannot comply, but the overall results are promising: in earlier days we rejected about 10 percent of all the welding projects - now the rejection rate has dropped to 5 percent.”

Where does your own expertise end and where do your partners take over?

Boon: ”We are obviously a dairy cooperation and not a machine building company, so we will always depend on the expertise of others. But we only do business with suppliers who are willing to evolve in the field of hygienic engineering and design. Fortunately, more and more companies adopt a constructive attitude - some installation partners even participate in EHEDG Working Groups.”

Hummel: “Our new approach is very effective, but we can’t build new production sites in a modular way using only standard components. The design of processing environment elements like stairs and platforms has been standardized, but some types of machines and processes still require tailor made designs. These designs will always be a subject to debate. However, there’s nothing wrong with having discussions - they help us to keep on learning and improving.”

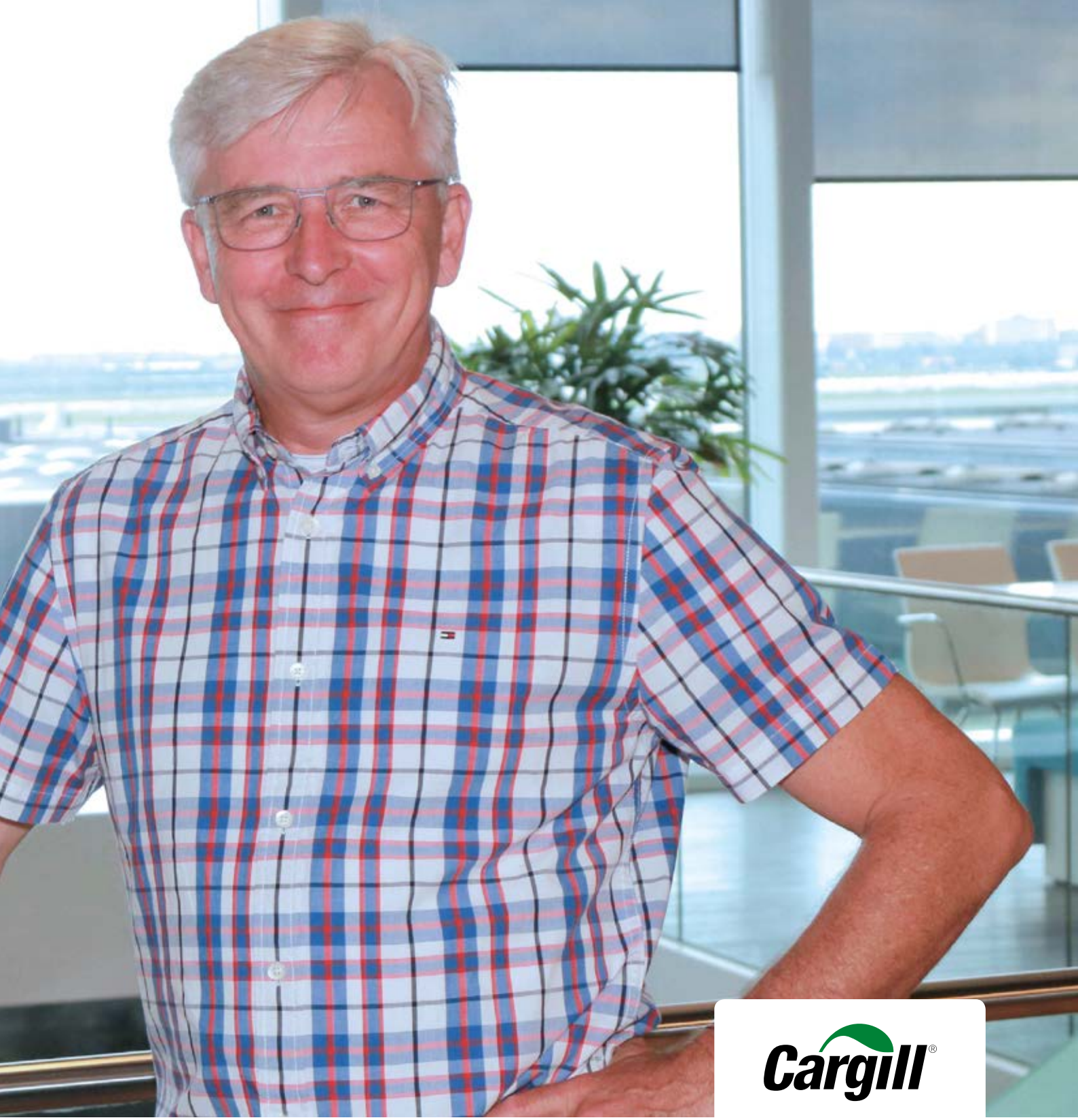
THE EXTENDED HAND OF CARGILL

CARGILL GLOBAL FOOD SAFETY MANAGEMENT STARTS AN INDUSTRY-WIDE DIALOGUE

This article series is about leadership in food safety and food quality. It investigates what industry leaders do on a daily basis to optimize their companies' performances regarding food safety and food quality. Jan Welberg, Vice President Food Safety & Quality at Cargill sets the bar by inviting EHEDG Connects readers to share their leadership challenges, because he believes that everyone is willing to improve but that no one can do it alone.

Can you describe one of your typical working days?

Jan Welberg: "I travel frequently because it helps me to understand local circumstances, so what I do on a particular day depends on where I am located at that moment. The Cargill corporate head office is situated in Minneapolis, where I work quite regularly. From Minneapolis, I mainly focus on the Cargill production facilities in the United States. When I am working in my home country, The Netherlands, I concentrate on the rest of the 200 Cargill food-processing plants worldwide for which I am responsible for in regard to food safety and food quality. I am a member of a global Cargill Food Safety Quality & Regulatory (FSQR) team that aligns policies, implementation processes, and auditing procedures and offers support to other groups across Cargill. In spite of its size, Cargill does not have a notation at the stock exchange and continues to operate as a privately held company, so a big part of the revenue is re-invested in new factories and new acquisitions. Consequently, our FSQR team members are also busy ensuring that new factories and new acquisitions will comply with all of our food safety and food quality regulations."



Food Safety Quality & Regulatory? Sounds important.
“That’s because food safety and quality are indeed extremely important for Cargill. Our goal is to produce high-quality, safe food every time, everywhere, and to share our expertise with external partners. Cargill processes many types of food ingredients - from cocoa to vegetable oil and from sweeteners to texturizers - into an even wider array of semi-finished products for food and pharmaceutical brands. Since there’s a big difference between a corn storage silo and a processing line for infant food ingredients, one can imagine that the food

“EVERYTHING NEEDS TO BE ALIGNED ON A SYSTEM LEVEL”

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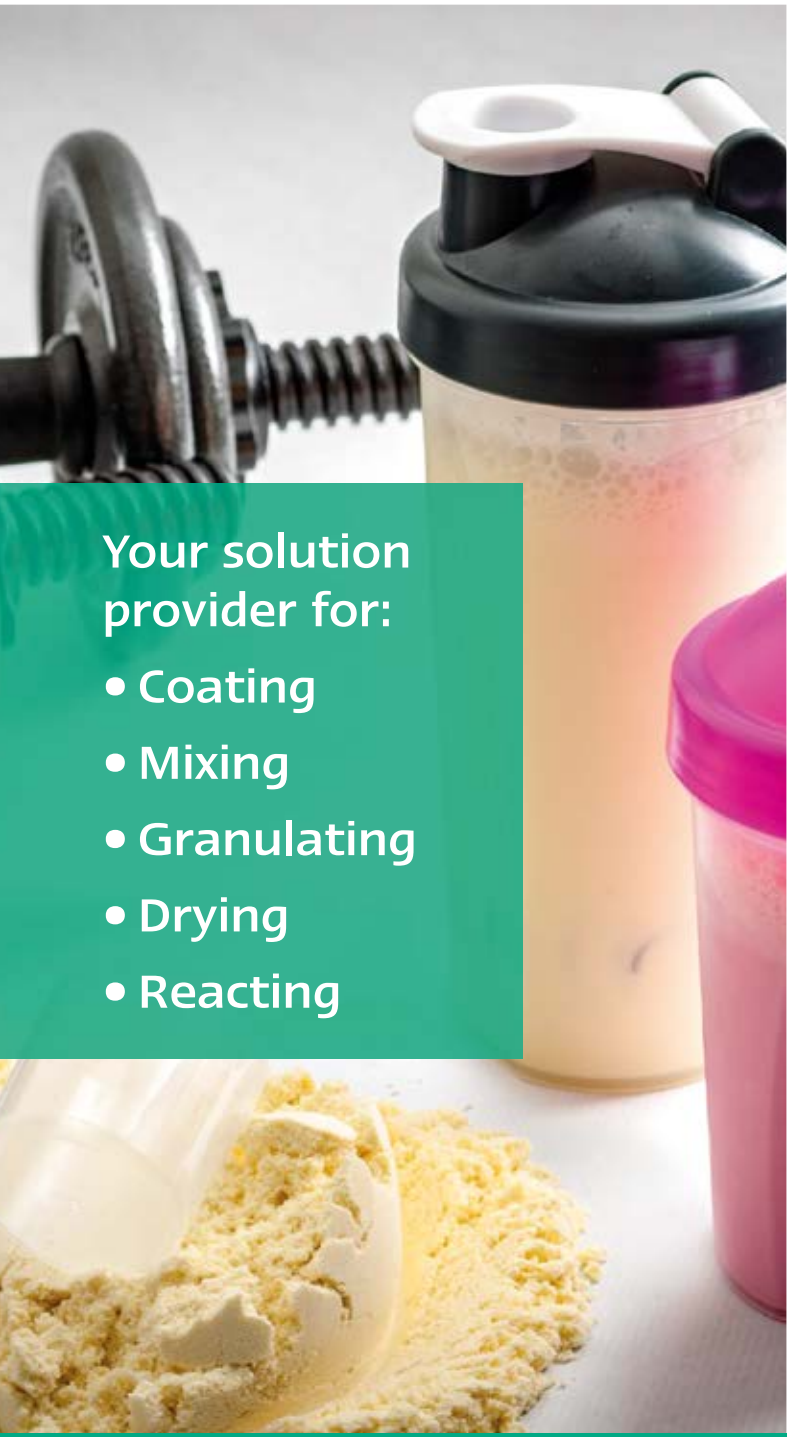

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safety and hygienic design requirements for all our different food-processing facilities vary widely. FSQR aligns all the different requirements with the correct guidelines, implementation and monitoring processes."

How does this relate to managing accountability?

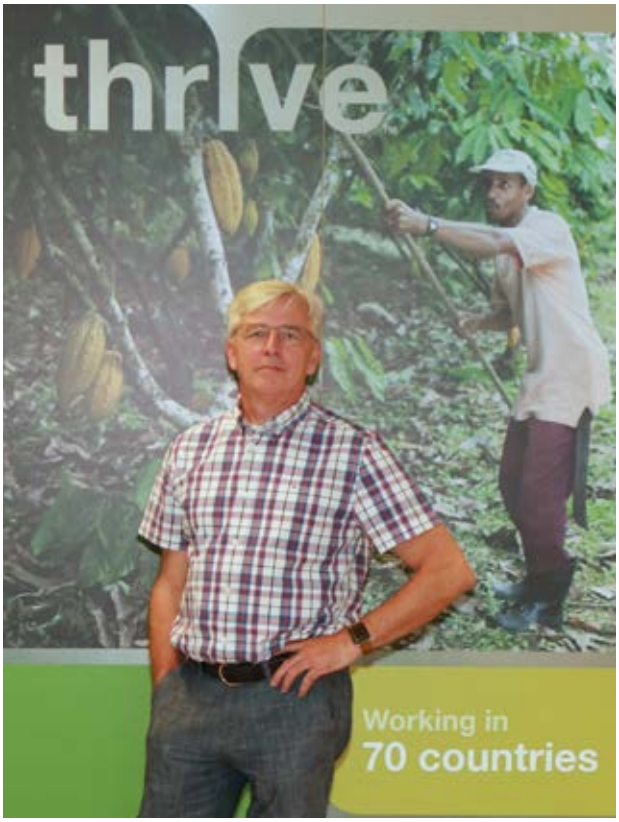
"Cargill is a decentralized organization by default, that owes a great part of its success to individual entrepreneurship and accountability. Until just a few years ago, Cargill consisted of eighty independent business units, each with their food safety and quality teams. Now we have twelve functional product groups that work together on a global scale. Cargill transferred the accountability for food safety and quality from the decentralized business units to a more centralized and regional FSQR organization. We also have a reliable system of checks and balances to monitor the guideline implementation in the more than 1400 Cargill production plants worldwide. These control systems contain a series of mandatory procedures and audits and include stage gate implementation procedures with minimum requirements per stage and validation steps with sets of factual deliverables. They provide FSQR with all necessary monitoring data and management tools to optimize food safety and food quality across the board, without annoying locally responsible managers and supervisors with micromanagement policies. It is a balance that works well for Cargill, and probably also for other food processing companies."

What value has EHEDG for your leadership?

"FSQR partly utilized basic guidelines to develop its guidelines for each type of food processing. EHEDG played a helpful role in establishing those guidelines, as well as in developing training programs for Cargill employees. The guidelines, however, have to be implemented and used locally by operations, engineering and build managers. Also, since local conditions, regulations, and suppliers vary by region, we continuously strive to find a good balance between directing and leaving enough room for local interpretation to keep projects practically enforceable. In 2009 Cargill appointed a team of employees with broad experience in site and project management to align and implement our policies and guidelines in a more centralized and structured way. I am happy to say that our combined efforts resulted in a measurable reduction of food safety and food quality incidents worldwide."

How do food safety and quality criteria influence business decisions at Cargill?

"At Cargill, food safety and quality criteria determine strategic investment choices right from the early stages of investigating new business opportunities. FSQR plays a role in determining if a site location is suitable for safe food production and continues to be involved in the design, engineering and build, up to the final testing of the production site. Of course, this intensity of involvement depends on the type of processing plant at hand. For high-risk processing plants it's not enough to choose for EHEDG certified hygienic design equipment from trusted suppliers, because everything needs to be aligned on a system level: the building construction materials, the zoning, the air treatment and drainage systems, and so on. In the course of developing or redesigning these types of production sites, the right people need to communicate with each other at the right moments. It is smart to acknowledge that when implementing hygienic engineering and design guidelines on a system level, no one can do it alone. I am convinced that, like myself, every food safety and quality leader is willing to improve for the benefit of food safety and food quality. That is why I invite my colleagues from other food companies for an open dialogue on the challenges that lay ahead."



FOOD SAFETY DESIGN AT DANONE

LEADING THE WAY IN LARGE-SCALE INVESTMENT PROJECTS

Michiel Louwe Kooijmans manages to keep his large-scale investment projects under control. It's one of the reasons why he is a senior project manager at Danone. He knows which questions to ask and what project details to pay extra attention to, and he masters the art of motivating his project stakeholders to take their own responsibilities. Together with his colleagues, he uses his practical knowledge of hygienic engineering and design and a selection of EHEDG guidelines to educate suppliers and to secure and optimize the food safety design at Danone.

Do you need to be a control freak to succeed in your line of work?

Michiel Louwe Kooijmans: "If so, then only to a certain extent. I've been working on Danone projects for over fifteen years now, often in challenging environments where I had to take control and be inventive. During these projects, me and my colleagues acquired most of our knowledge of hygienic engineering and design. We also learned how to make good use of each others expertise. Hygienic engineering and design is teamwork and needs to be controlled and promoted on a detailed as well as on a global level."

What do you mean by 'on a detailed as well as on a global level?'

"When food safety is concerned, the devil is not only in the detail. In order to get the details right we make good use of the EHEDG guidelines. They help us to pinpoint vulnerable areas and to direct our equipment suppliers in the right direction. The guidelines drive our investment choices on a detailed level, because we demand all equipment components in our food safety zones to be EHEDG certified. However, when building a new plant from the ground up, like our new ESTIA processing plant

for blending, packaging and spray drying of infant milks powders, we first need to take the big picture into account, to understand how everything fits and works together: the processing lines themselves, but also the buildings they are situated in, the utilities, the materials used for the floors, walls and ceilings, the air treatment systems, the cable routing systems and so on. The hygiene demands for baby food processing are very high: the building has to be airtight, humidity must be controlled at all times, we can’t even permit trees growing directly adjacent to the plant building. So the building design is as much a hygiene

“THE HYGIENE DEMANDS FOR BABY FOOD PROCESSING ARE VERY HIGH”

“ WE LIKE THE EHEDG GUIDELINES THAT ARE SPECIFIC AND COMPLETELY INTEGRATED IN THE EHEDG CERTIFICATION SYSTEM. ”

determining part of the food processing as a conveyor belt and we want to have complete control over it.”

Does EHEDG support you with that?

“We use EHEDG guidelines to give our project teams control over the food safety determining factors in our process plants. Our quality control department defines the product quality criteria and EHEDG helps us to translate those demands to guidelines that we can actually work with. You could say that for Danone EHEDG is the connecting link between food product quality and process infrastructure design.”

Which EHEDG guidelines are most valuable to you?

“Some guidelines are more valuable to us than others - it depends on the type of project. We like the EHEDG guidelines that are specific and completely integrated in the EHEDG certification system. Because when we ask our suppliers to produce say a milk coupling without any dead spaces, I will get very different results, with hygienic effects that are difficult for us to ascertain. If I say that I want an EHEDG certified coupling, then there’s no doubt. We are happy with the recently released building materials guideline as well, because we experienced that many building construction companies don’t know how to build in an hygienic way. When we approach engineering and design agencies for this, it turns out they also often lack expertise of hygienic engineering and design related to building and utilities. We use the EHEDG building materials guideline to instruct the agencies and building designers, especially in greenfield building projects where we can optimize our process environments conditions on all levels. EHEDG is a great help on a detailed level, but on a larger scale we still feel that we have to lead the way ourselves.”

How much effort is needed to put EHEDG guidelines in practice?

“EHEDG guidelines are purely design principles, so we invest quite some time in translating the design principles into actual specifications that we can send to engineering and design agencies and to process equipment suppliers. Based on our experiences with hygienic engineering and design we developed our own food safety design standards that all of our suppliers have to comply with, and when EHEDG publishes a suitable new guideline, we incorporate the new hygienic design principles in these standards. So yes, it takes some effort to implement the newest insights in our practice, but it’s definitely worth it.”

ENGINEERING CLEANABILITY

EHEDG AND GEA: TWO GROUPS, ONE MINDSET

What's GEA's secret to global success? The company group offers practical solutions for many industry challenges and manages to pull it off with smart process engineering and demand-driven product development. Other companies do likewise you say? How then did GEA become a leading supplier in so many global industries? Ulf Thiessen, Head of Flow Components & Homogenizer Sales at GEA Germany, believes that it's the innovation-oriented development strategy that sets GEA apart. Thiessen points out that this 'optimization-by-innovation' mindset was also why GEA was one of the first company members to become part of the EHEDG community twenty-seven years ago. Now, Thiessen enters the EHEDG Connects stage with a proposal. Is it an offer we can't refuse?

What's the proposal?

Ulf Thiessen: "I'll come to that shortly, but let me start by saying that the value of the EHEDG value proposition has changed over the last couple of years. Ten years ago, we still made good use of EHEDG expertise to develop our hygienic design product line. It started with the guidelines on the basic components that slowly evolved into more complex and process-oriented guidelines. By that time we had developed our own hygienic design standards and started implementing them in our projects. In the past couple of years we had less use for the equipment documents but more so for the process and engineering-oriented guidelines. This shift makes EHEDG even more valuable than before for GEA because engineering is what connects all processes of our customers and determines the food safety of the design."

It all happens in engineering?

"Yes, because you can implement as many hygienic materials and vigorous cleaning regimes as you want, but if the initial engineering of components is not done in line with hygienic engineering guidelines, the cleanability

and therefore the factual hygiene will be compromised. I mean: you simply cannot undo bad engineering decisions. Even the smallest engineering choice can have significant effects on the operation phases of a food factory. That's why engineering and design agencies should obtain more hygienic engineering and design expertise and integrate it into their engineering processes. Also, the first thing every engineer needs to internalize is that the foremost prerequisite for good hygienic engineering is that all components should be easily cleanable. Our engineers broadened their scope from functionality to cleanability orientated engineering

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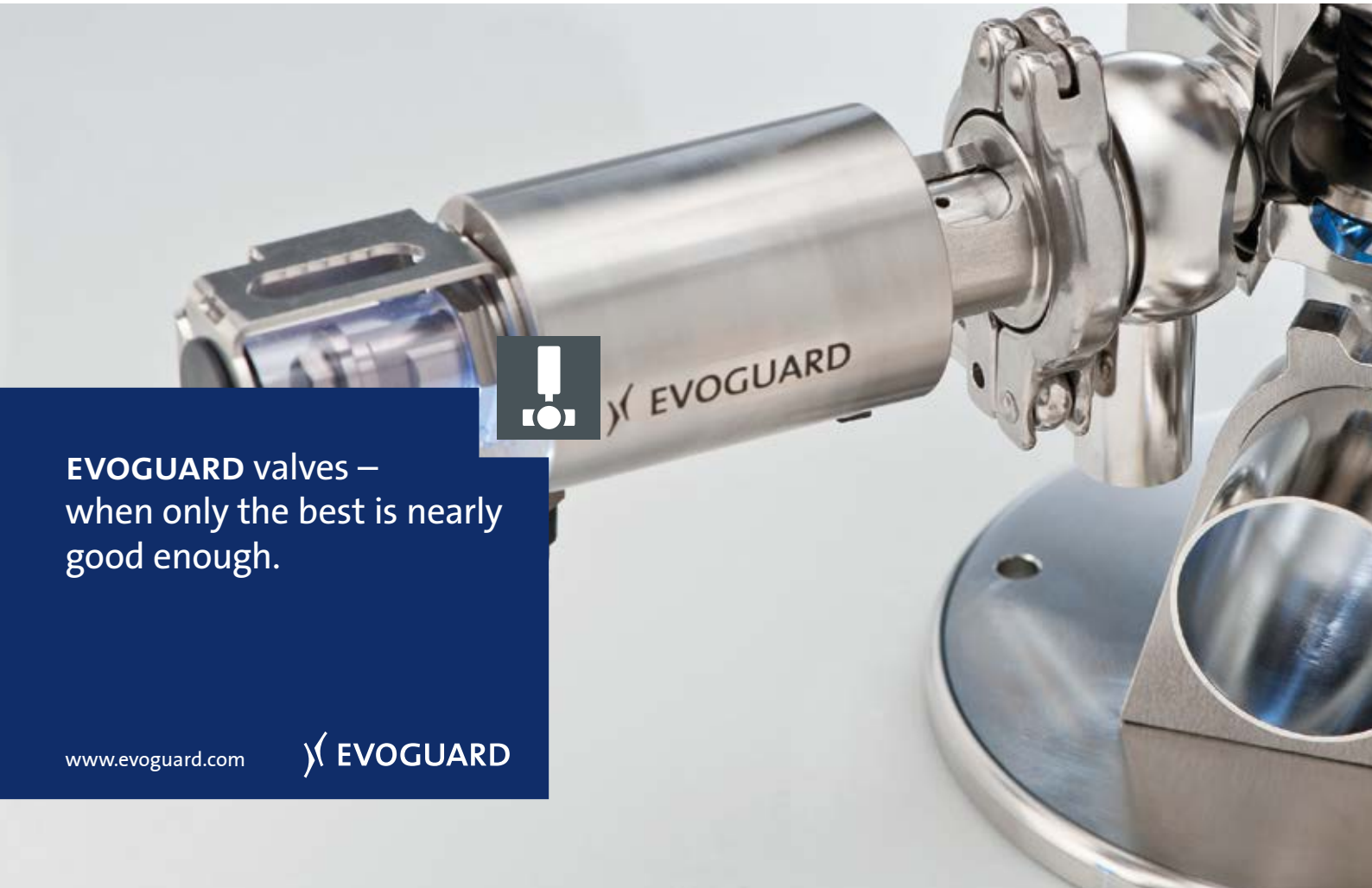

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and passed this mindset on to other engineers in the supply chain. Now they focus on hygienic engineering on a system level: by incorporating feedback from end-user customers, they optimize the hygiene of complete process installations."

How can EHEDG help GEA to innovate?

"EHEDG established an awareness about hygienic engineering and design that influenced the way our engineers and our suppliers think and work. By now, hygienic engineering and design have become a natural part of our DNA. In our component engineering departments, we are no longer talking about hygienic design; we are living it every day. Their work is never standard; it's always tailor-made engineering. Again, years ago EHEDG mainly helped us to understand how we should adapt our engineering in line with their hygienic engineering guidelines. For example: when our engineers had to design a valve, EHEDG helped us to engineer the valve in such a way that it would stay hermetically sealed so no external contaminants could enter the closed food processes.

"IT TAKES MORE THAN A SET OF CERTIFIED EQUIPMENT COMPONENTS TO GUARANTEE HYGIENIC ENGINEERING DESIGN PROCESSES"

By now, our engineers know how to do it, and how to transfer the principles to other components. They also developed a fundamental understanding of the practical effects that specific combinations of hygienic engineering and design components have on the cleanability of the whole process system. It's in this new field of integrated hygienic process engineering were GEA, and EHEDG can support each other to help food producers to optimize food safety and quality in their process environments."

So what do you propose?

"The food industry already accepted EHEDG certificates as the main prerequisite for food safety and quality, but it takes more than a set of certified equipment components to engineering a hygienic process. It's only because EHEDG doesn't yet certify complete processes that EHEDG certificates haven't become legally mandatory yet. This is why I propose to investigate new possibilities to develop a system certification program collectively. Because that is what food companies are asking for: a reliable way to ascertain and optimize the hygiene and cleanability of their complete processing systems. GEA offers the system integration expertise, scale and practical experience with hygienic engineering and design to support EHEDG in developing such a program. Some will say it's too complex to set up a system certification program like that, but let's first investigate where we stand, what's possible now and how far we can get with optimizing food safety and quality together."

VISIT EHEDG CONNECTS ONLINE TO SHARE YOUR OPINIONS AND JOIN DISCUSSIONS:

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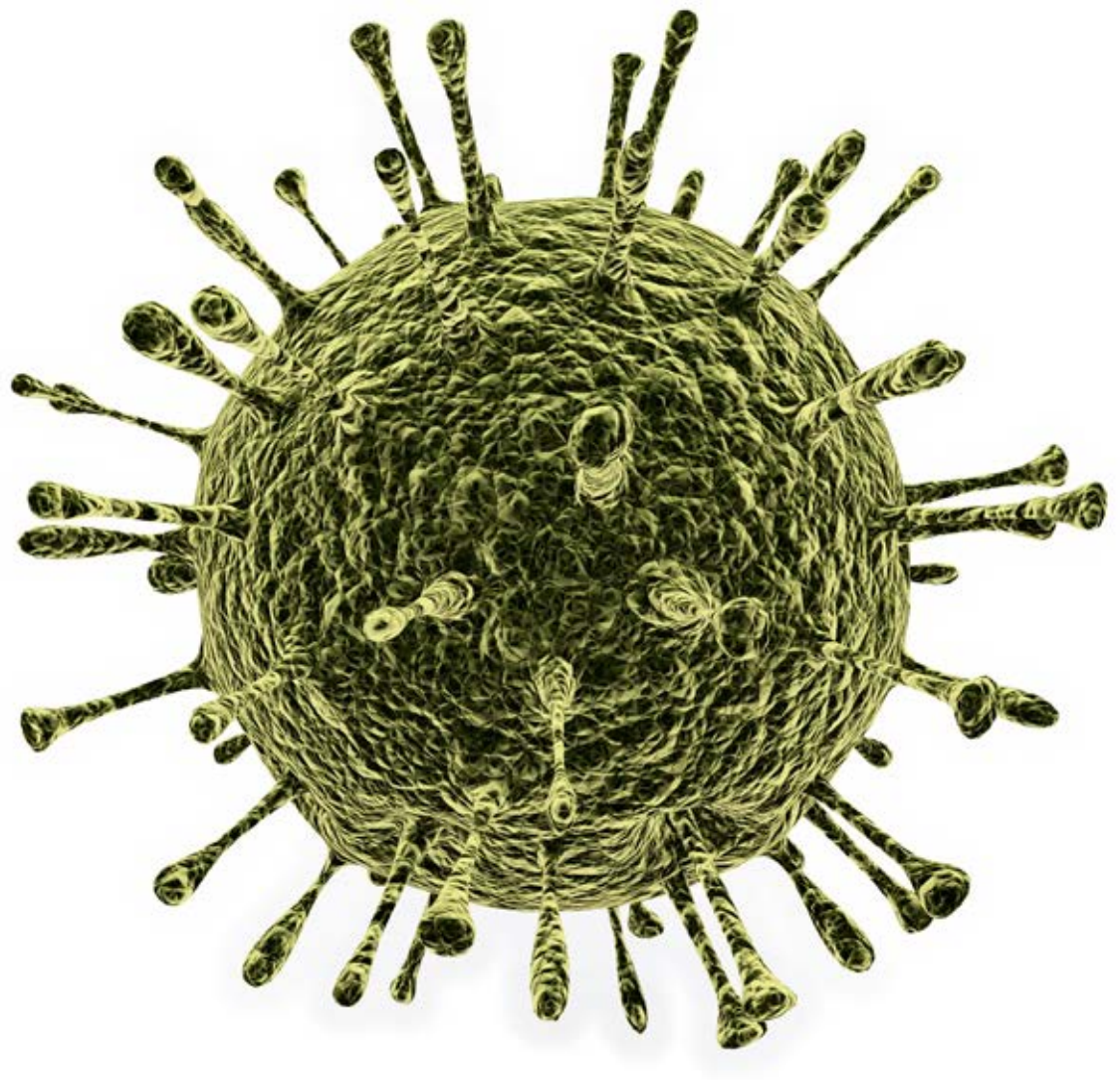


MICROBES:

FACING THE COMMON ENEMY

COUNTERING SURVIVAL TACTICS OF MICROORGANISMS

The first thing that's striking is how tiny they are - millions of microbes can hide in the full stop at the end of this sentence. Then you realize that their microscopic size is just one of their survival tactics. Microorganisms rule by sheer numbers. They can multiply rapidly by dividing themselves in the most unexpected places and under the most hostile conditions.

How can we beat them?

Microorganisms tend to be elusive, until they strike and poison our food - and harm our health and the reputation of our food companies. To know our enemies a little better, EHEDG Connects puts the most common (and most dangerous) microbes under the microscope of microbiologist Richard Brouillette. He helps us understand how they live and grow, how they survive attacks and how they multiply and eat - for these are our common enemies we need to defeat.

THE EXPERT:
For an explanation of the types, hazards and survival tactics of microbes, EHEDG Connects turned to microbiologist Richard Brouillette. After obtaining his degrees and working as an industrial microbiologist, Brouillette moved to corporate sanitation and quality roles in which he developed sanitation and training programs for Kraft Foods North America and Mondelez International. Nowadays, Brouillette works as an independent Food Safety Director for Commercial Food Sanitation.

What types of microbes represent the biggest threat for our food safety?

Richard Brouillette: "First we need to understand that the term microorganism, or microbes, encompasses all species of fungi, bacteria and viruses. When we focus on microbes that can be found on food processing equipment, we could say that most fungi are merely spoilage organisms that don't cause food poisoning. Some fungi are even used in food processes like baking and brewing to transform sugar into carbon dioxide gas and alcohol. Some bacteria can be useful as well, for example for making yogurt or cheese out of milk. Viruses form a league of their own. The ones that can be found in food can be very dangerous, but they usually don't derive from equipment since viruses cannot survive without a living host, so they are less an issue in food processing than bacteria that can very well grow on non-living surfaces. It's safe to say that within the vast domain of microbes, pathogenic bacteria (the ones that can make people ill) represent the biggest threats in food processing environments."

What characteristics do most bacteria have in common?

"Bacteria are individual living cells. They can have a number of shapes, ranging from spheres to rods and spirals. Despite their simplicity they have well-developed and unique cell structures which are responsible for their ability to adapt, to survive and to ultimately cause a variety of negative health effects. Unlike most other types of cells, the bacterial DNA is not situated inside a membrane-bound nucleus but moves around freely in the bacterial cytoplasm (the gel-like substance enclosed within the cell membrane). Also, their organelles (small organs that fulfill a variety of functions) are not membrane-bound like in many other types of cells. In bacteria, all the components, typically a few micrometers in length, roam around freely in the cytoplasm, rather than in separate cellular compartments. This enables the bacteria to easily transfer cellular information and to interact with other bacteria. This helps them to quickly adapt to changing environmental conditions. Perhaps the most

"SOME BACTERIA CAN DOUBLE THEIR MASS IN 20 MINUTES"

obvious structural characteristic of bacteria is (with some exceptions) their small size, which allows for rapid uptake and distribution of nutrients and excretion of wastes. This makes bacteria evolutionarily very fit."

How do they grow and multiply?

"Just like multicellular organisms, single celled organisms like bacteria also have their own distinct process of growth and reproduction. They reproduce through a form of cell division called binary fission: the cell grows to twice its starting size and then splits in two. This process is then followed by another phase of enlargement if conditions like moisture, nutrition, pH and temperature are favorable. By absorbing water and food, a cell enlarges to its original size. Under favorable conditions, some kinds of bacteria can double their mass in about 20 minutes. Within 12 hours one single microorganism can produce almost 17 million cells. Depending on the type of surface and conditions, the bacteria cells will form long chains, flat plate-like colonies or irregular three-dimensional colonies."

Are bacteria consistently growing at all times?

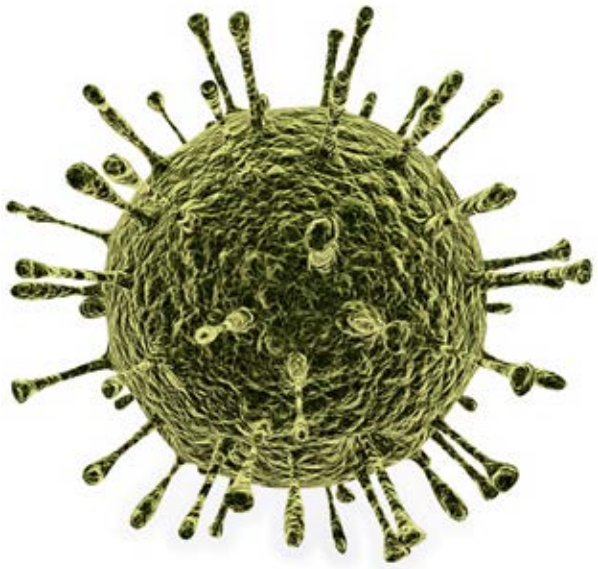
"During an initial period of one to several hours, there is little or no increase in cell numbers. This is the time the cells need to adapt to the new environment. When the cells begin to divide, they usually continue to do so at regular intervals until the maximum growth that can be supported by the environment is achieved. After this logarithmic phase of growth, the rapid growth can be halted again, this time by a depletion of nutrients or an accumulation of waste products. Unless the cells are transferred to new environment that is capable of supporting continuous growth, they will eventually die."

So they'll die by themselves? That sounds comforting.

"Only if there's not enough nutrition, which is rare in continuous food processing environments. Moreover, if the environmental conditions become unfavorable as a result of a lack of water and nutrition or severe temperature fluctuations, some bacteria types deploy an effective defense mechanism to protect the cells from dying. They will go into a sort of dormant state, by forming an endospore. In this stage most metabolic activity is suspended, the bacterium duplicate its DNA and a hard resistant wall is formed around it, the endospore, which makes it very resistant to external influences. This way, endospores can remain alive even for a long time, even in poisonous chemical substances. When the conditions are favorable again, the endospore is set free and can start growing and reproducing again."

What other survival mechanisms of bacteria do we have to know about?

"Bacteria have some amazing survival mechanisms incorporated into their genome. They can for example produce a diverse group of enzymes and proteins, which help them overcome adversity. Bacterial cells also have amazing DNA repair mechanisms to preserve the integrity of the genome and are capable of lateral gene transfer. If there is a particular strain of bacteria that has acclimated to adverse conditions, the genes for that adaptation can be shared between bacteria. One of the most effective survival mechanisms of bacteria in food processing is when they form biofilms on surfaces. To do so they produce chemicals that keep them together and protect them from the outside environment. The outside cells are more likely to be killed but they then form even more of a barrier between the inner cells and the adverse conditions. Their ability to replicate quickly is one of the most effective defense mechanisms of bacteria. This allows them to gain both high populations and to evolve quickly. They can take large hits and as long as a few survive, they can grow back without losing the mutations that are beneficial to their survival."

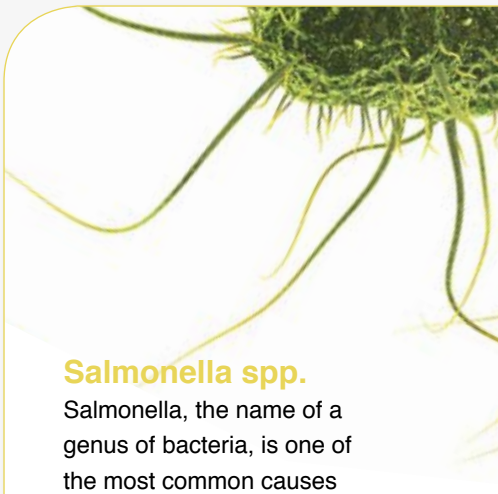


Common enemies:

Bacteria and Viruses

Strengths, weaknesses and defense strategies

An overview of the most common pathogenic enemies of the food industry and the best ways to defeat them in our continuous battle to keep industrial food processes safe.

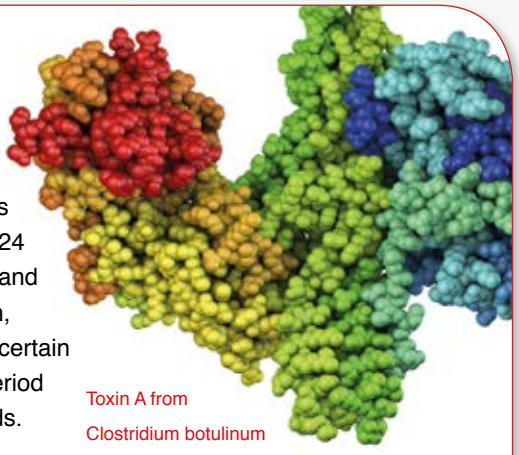


Salmonella spp.

Salmonella, the name of a genus of bacteria, is one of the most common causes of food poisoning. It causes gastrointestinal illness following the ingestion of the bacteria. The number of cells required to cause disease was once thought to be high, but we now know that few cells, perhaps only one cell in a contaminated product may be sufficient. Salmonella can also cause typhoid fever.

Clostridium botulinum

Clostridium botulinum (C. botulinum) is a spore-forming bacterium found in a variety of environments and makes toxins that can cause death in less than 24 hours, if not treated. While we understand the control mechanisms for C. botulinum, it remains a source of contamination for certain homemade products kept over a long period of time, for example, home canned goods.



Toxin A from Clostridium botulinum

Food sources prone to Clostridium botulinum

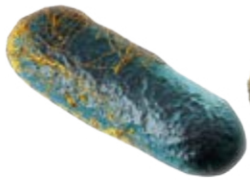
C. botulinum is widely distributed in the environment and can contaminate many types of foods if not handled, processed, formulated, or stored adequately.

Best ways to prevent and defeat Clostridium botulinum

Following proper canning instructions or formulating the food to a pH of < 4.6 will prevent toxin formation. Keeping the food refrigerated also helps to prevent sporulation and toxin formation.

Best ways to prevent and defeat Listeria monocytogenes:

Cooking and pasteurization kills Clostridium botulinum.



Clostridium perfringens

Clostridium perfringens is one of the most common causes of food poisoning. These bacteria thrive between 4-60˚C (40-140˚F), also known as the "Danger Zone"), which means that they multiply at room temperature, but they cannot grow at refrigerator or freezer temperatures. They can produce spores that are heat-resistant.

Food sources prone to Clostridium perfringens

Clostridium perfringens infections often occur when foods are prepared in large

Listeria monocytogenes

Listeria is the name of bacteria found in soil and water and some animals, including poultry and cattle. It can be present in raw milk and foods made from raw milk. It can also live in food processing plants and contaminate a variety of processed meats. Listeria is unlike many other germs because it can grow even in the cold temperature of the refrigerator.

Food sources prone to Listeria monocytogenes

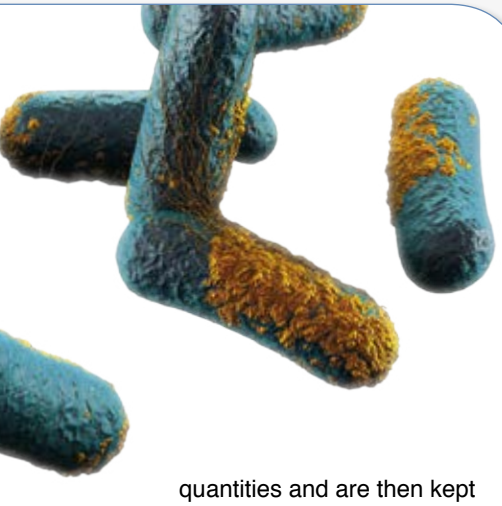
Ready-to-eat deli meats and hot dogs, refrigerated pâtés or meat spreads, unpasteurized (raw) milk and dairy products, soft cheese made with unpasteurized milk, such as Feta, Brie, Camembert, refrigerated smoked seafood and raw sprouts.

Best ways to prevent and defeat Listeria monocytogenes:

Cooking and pasteurization kills Listeria monocytogenes.

Food sources prone to Salmonella:
Contaminated eggs, poultry, meat, unpasteurized milk or juice, cheese, contaminated raw fruits and vegetables, spices and nuts.

Best ways to prevent and defeat Salmonella:
Cooking and pasteurization of food kills Salmonella.



quantities and are then kept warm for a long time before serving. That's why outbreaks of these infections are usually linked to institutions such as hospitals, school cafeterias, prisons, and nursing homes or events with catered food.

Best ways to prevent and defeat Clostridium perfringens
Cooking kills the growing C. perfringens cells that cause food poisoning, but not necessarily the spores that can grow into new cells. If cooked food is not promptly served or refrigerated, the spores can grow and produce new cells.

Norovirus

Noroviruses can cause acute infections of the stomach and intestines. The virus can also survive on surfaces that have been contaminated with the virus or spread through contact with an infected person.
In many countries, this is the leading cause of foodborne illness.

Food sources prone to norovirus:
Produce, shellfish and ready-to-eat foods touched by infected food workers. It is, therefore, one of the reasons why food workers must wash their hands regularly.

Best ways to prevent and defeat norovirus:
Handwashing is very important in preventing propagation of the virus.

Campylobacter

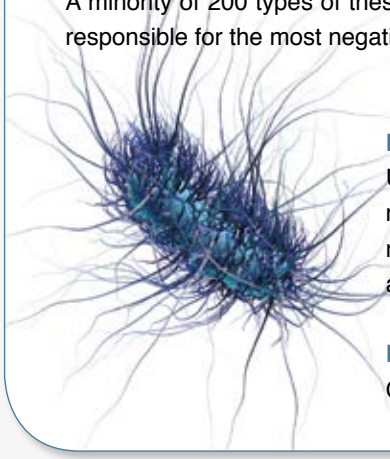
Campylobacter is a genus that can cause a disease called campylobacteriosis (with symptoms like fever, diarrhea, muscle pains and abdominal cramps) which is the most reported foodborne disease in the European Union.

Food sources prone to Campylobacter:
Raw and undercooked poultry, unpasteurized milk and contaminated water.

Best ways to prevent and defeat Campylobacter:
Cooking and pasteurization of food kills Campylobacter.

Escherichia coli

Escherichia coli (E. coli) is the name of a bacterium that lives in human and animal intestines where it offers protection against other harmful bacteria. There are different groups of E. coli bacteria. Most E. coli bacteria don't cause illnesses. A minority of 200 types of these bacteria produces the toxin Shiga toxin that is responsible for the most negative health effects.



Food sources prone to E. coli
Undercooked ground beef, unpasteurized (raw) milk and juice, soft cheeses made from raw milk, raw fruits and vegetables, contaminated water and animals, particularly cows, sheep, and goats.

Best ways to prevent and defeat E.coli:
Cooking and pasteurization kills E.coli.

EHEDG CONTRIBUTES TO GLOBAL FOOD SAFETY INITIATIVE

HYGIENIC ENGINEERING AND DESIGN IN BROAD FOOD SAFETY CONTEXT

In November 2017, the Global Food Safety Initiative (GFSI) sent out a call for participation in the GFSI Working Group for Hygienic Design of Food Facilities and Equipment. The objective was to define hygienic design benchmarking requirements for the GFSI recognized food safety certification programs covering food processing equipment and food processing/ handling facilities. This Working Group has now been established, and it incorporates a significant body of EHEDG expertise. This is what the selected team members of the GFSI Working Group Hygienic Design of Food Facilities and Equipment are working on:

- Define benchmarking requirements for design, installation, engineering and (preventative) maintenance to benchmark Certificate Programme Owners (CPO's).
- Develop criteria that are suitable to be included in the GFSI Benchmarking Requirements.
- Include references to relevant recognized industry standards regarding hygienic design.
- Provide a basis that, in conjunction with the other elements of the GFSI Benchmarking Requirements, could be used for equipment manufacturing certification.
- Develop a proposal on how to handle connections with existing benchmarking requirements.
- Recommend relevant definitions to be included in the GFSI Benchmarking Requirements glossary.

Growing awareness

Alongside the call for participation, GFSI issued a statement illustrating the growing awareness that hygienic engineering and design is vital to optimize food safety: "Correct design of food handling and processing equipment and food manufacturing facilities are more important than ever before. As we move forward with the implementation of food safety programmes, we also need to give more scrutiny to the hygienic design of facilities and equipment for the entire food supply chain. In most regulatory and industry food safety programmes, this is momentarily addressed in a general manner. However, the terms used are only broadly defined, and interpretation of acceptability is left to the individual auditor and their particular aptitude for equipment evaluation. GFSI, powered by The Consumer Goods Forum (CGF), is uniquely positioned to bring the key stakeholders together to address this issue collectively."

EHEDG experts at work

The experts who dedicate their time and expertise to GFSI Working Groups do so on a voluntary basis. To ensure the entire industry spectrum is taken into account in an unbiased way, the GFSI Working Group for Hygienic Design of Food Facilities and Equipment is composed of a wide variety of representatives including retail, manufacturing and food service representatives, as well as international organisations, governments, academia and service providers to the global food industry. The following experts take part in the GFSI Working Group for Hygienic Design of Food Facilities and Equipment:

Stay tuned

Subscribe to the EHEDG media channels to follow their activities and support them in their efforts. Please find all the relevant links on www.ehedg.org

Patrick Wouters	Cargill / EHEDG Foundation Board & EHEDG Executive Committee member
Edyta Margas	Bühler AG / EHEDG Working Group Dry Particulate Material Handling member
Rick Heiman	3-A Sanitary Standards
Hugo Piquet	Nestlé / EHEDG Advisory Board member
Yi Xu	Tetra Pak Processing System / EHEDG Working Group Foreign Bodies member
John Holah	Holchem Laboratories Ltd Cleaning / EHEDG Working Group Hygienic Design Principles for Food Factories member
Jonathan Hopkinson	The Coca-Cola Company
Melanie Neumann	Neumann Risk Services Matrix Sciences
Juliane Gonçalves	Flavor Food Consulting / EHEDG Authorized Trainer and member of the EHEDG Working Group Training & Education
Joe Stout	Commercial Food Sanitation
Adriaan Van Deventer	Hygienicon Consultancy
Corinna Begueria	Fromageries Bel / EHEDG Working Group Foreign Bodies member
Mark Morgan	The University of Tennessee / EHEDG Authorized Evaluation Officer
Muhammad Shahbaz Muhammed Nawaz	Mawarid Food Company
Anna Starobin	Ecolab
Justyna Kostarczyk	Metro
Zach Becks	Gray Construction
Katie Satterthwaite	Marks and Spencer / EHEDG Working Group Cleaning & Disinfection member
Izabela Palgan	IFS

Karmenu Vella, EU Commissioner for the Environment, Maritime Affairs and Fisheries

EU AWARD FOR HYGIENIC ECODESIGN PROJECT

EUROPEAN UNION PROMOTES HYGIENIC ECODESIGN AS BEST AVAILABLE TECHNIQUES (BAT)

During the 2018 edition of EU Green Week, the biggest annual European Union conference on European environment policy, EU Commissioner Karmenu Vella announced the winners of the 2016 and 2017 LIFE Awards. The award for "Best LIFE project" was granted to the LIFE ECODHYBAT project that mapped the effects of hygienic ecodesign techniques on food processing equipment cleaning routines.

ECODHYBAT received the "best of the best" award because it demonstrates that hygienic ecodesign is a feasible technique to significantly reduce the environmental impact of cleaning processes. To further promote the project outcomes, the EU included several hygienic ecodesign techniques in the updated Best Available Techniques (BAT) Reference document (BREF) for the food sector.

About LIFE

LIFE ECODHYBAT is an initiative of four food industry related organizations based in Spain (Grupo Leche Pascual, Pescanova, the technology centre AINIA and the Association of Internationalized Industrial Companies AMEC) and is co-financed by the EU LIFE+ Financial Instrument for the Environment Regulation, which manages a total budget of €3.4 billion for the funding period 2014 to 2020. LIFE+ is one of the most important EU’s financial instruments supporting environmental, nature conservation and climate action projects throughout the EU. Since 1992, LIFE has co-financed more than 4500 projects that contribute to the protection of the environment and climate.

LIFE ECO-DHYBAT project approach

The hygienic ecodesign project asserted the consumption of water, chemicals and energy related to the sanitation on two dairy processing lines at Leche Pascual and two fish processing lines at Frinova (subsidiary of Pescanova). All four of these industrial scale food processing lines were equipped with in total 14 pieces of equipment that were re-designed according to new hygienic and environmental criteria. Two new soiling and cleaning protocols were defined for sanitary and environmental performance in closed (diary processing) and open (fish processing) equipment, respectively. Sanitation demonstrations compared the environmental impacts of eco-hygienically designed equipment with those of conventionally designed equipment. Comparisons were made using Life Cycle Assessment (LCA) methodology.

“UP TO 50% SAVINGS
ON WATER CONSUMPTION”

LIFE ECO-DHYBAT project results

The results showed that all of the project’s eco-hygienic design equipment provided environmental benefits, including reductions in the use of water, energy and chemicals. Furthermore, the equipment was more easily cleaned and provided a better guarantee of sanitation.

Water consumption

An overall average of 44% estimated savings in water consumption. For the dairy processing industry, the project tests achieved up to 50% savings and in the fish processing industry up to 28% savings were obtained.

Energy and CO2 emissions

According to the EU Best Available Techniques Reference (BREF) document, dairies use 80% of their energy as thermal energy to generate steam and hot water from fossil fuels. An average 21-33% reduction in energy consumption was obtained, equating to a reduction of 20- 49% in CO2 emissions.

Wastewater

The new eco-designs reduced the quantity of sanitation chemicals used and the amount of wastewater produced. Overall, the average wastewater production was reduced by 36%.

Follow-up activities

The results of the LIFE ECO-DHYBAT project were sent to the European IPPC (Integrated Pollution Prevention and Control) bureau. As a result, eco-hygienic design techniques

were included as a candidate to Best Available Techniques (BATs) in the first draft of the updated version of the BAT Reference document (BREF) for the food, drink and milk sectors. This was conducted within the framework of the Industrial Emissions Directive (IED) (2010/75/EU).

The project also contributes to the implementation of the EMAS Regulation (EC) 1221/2009, which aims to improve the environmental performance of companies, and the SCP/SIP (Sustainable Consumption and Production/ Sustainable Industrial Policy) Action Plan (COM (2008) 397), by demonstrating production technologies that encourage innovation in two strategic sectors (food industry and food machinery). The project helps achieve policy objectives relating to increased water efficiency and water savings in the EU, particularly through the Water Framework Directive (Directive 2000/60/EC). By introducing eco-hygienically designed equipment into food processing industries, the project also contributes to the EU Circular Economy Package and the transition towards a circular economy.

Future potentials

If the concept of ecodesign is replicated, the environmental, economic and social benefits can be significant. There is a good potential for transferability. The LCA data showed that the eco-hygienic design equipment is about 5%-10% more expensive, on average, than conventional equipment. However, the cost of the sanitation operations could be reduced by up to 30% (considering savings in water, water treatment, energy and chemicals).

ACADEMIC MASTER'S PROGRAMME HYGIENIC ENGINEERING & DESIGN

North-Caucasus Federal University (NCFU, Russia) is the first academic education institute worldwide that offers a Master's programme in Hygienic Engineering and Design.

The academic training aims to develop and integrate modern hygiene science into food processing installations and tool design as well as maintenance and operations in the fields of food technology and engineering, pharmacy, biotechnology, cosmetics and chemical engineering.

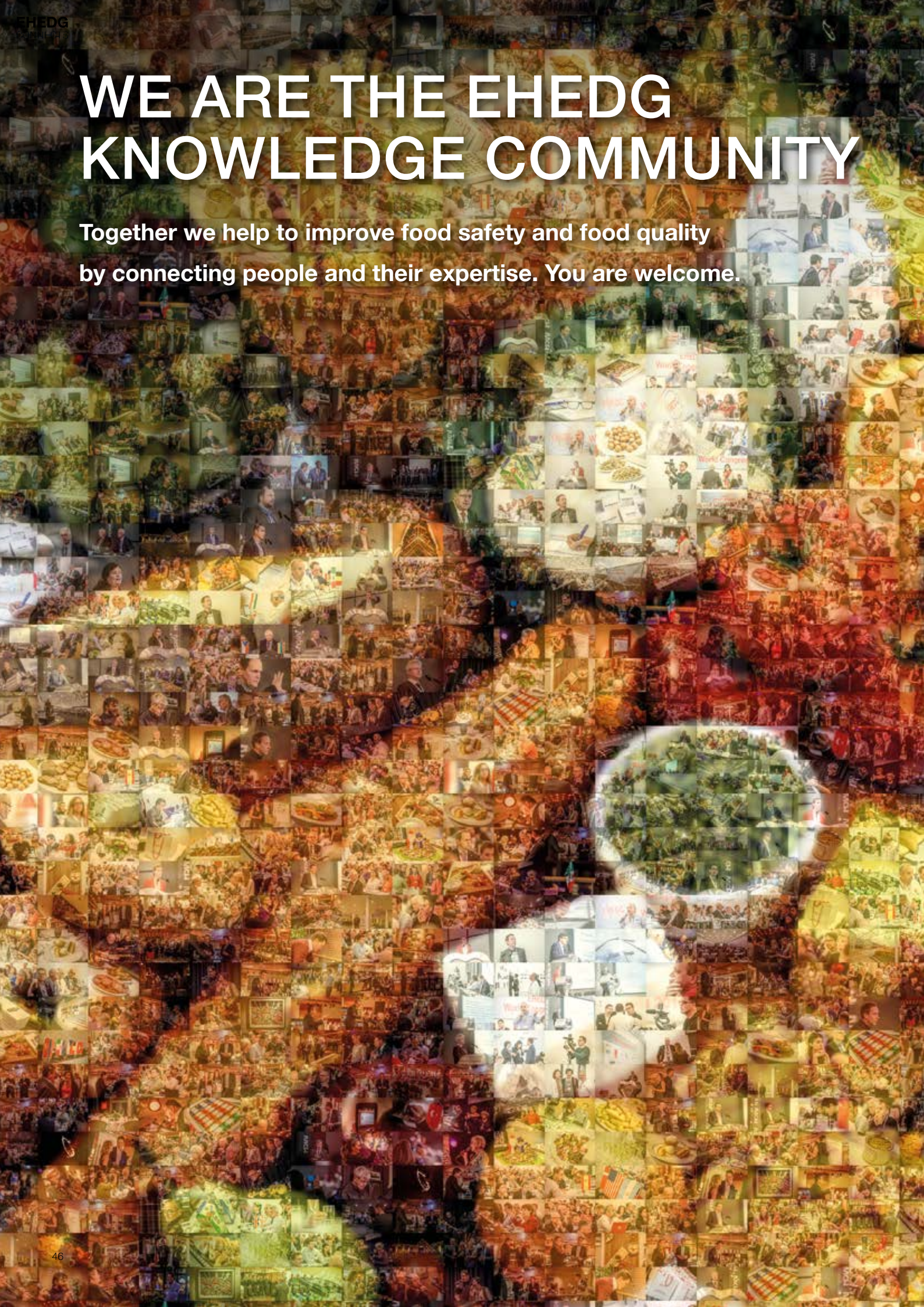
The full-time courses, covering four semesters (two years), have been developed with support of EHEDG and its EHEDG Regional Sections Macedonia and Russia. They include disciplines such as legislation in food safety and hygienic engineering, hazards in hygienic processing, food processes and apparatus, hygienic factory design for food processing, hygienic design of food processing equipment, cleaning and disinfection, machine installation, maintenance and lubricants, welding in food engineering, food technologies for products from animal and plant origins, biotechnology and pharmaceutical technology, verification of hygienic design, assessment methods for food equipment and certification, and food safety systems and standards.

Each of the topics cover theoretical as well as practical aspects. Students will conduct scientific research, overseen by professors in a variety of food and food-related areas. Prospective students are graduated students (Bachelor, Master) in mechanical engineering, food engineering, food science, food technology and biotechnology, students in standardisation and certification, microbiology, pharmacy and chemical engineering, specialists from food enterprises, machinery units, pharmacy companies, quality assurance and food safety staff, food safety regulators and auditors specialised in machinery, foods, beverage, cosmetics, pharmaceutical, biotechnology and chemical industries.

North-Caucasus Federal University was established in 2012 by merging Stavropol State University, North-Caucasus State Technical University, and Pyatigorsk State University of Humanities and Technology.

WE ARE THE EHEDG KNOWLEDGE COMMUNITY

Together we help to improve food safety and food quality by connecting people and their expertise. You are welcome.



WELCOME TO THE EHEDG TRAINING ACADEMY

EDUCATING THE WORLD ABOUT HYGIENIC ENGINEERING AND DESIGN

"Welcome to the EHEDG Training Academy, the accredited EHEDG training platform that offers easy access to multilevel, interactive learning through digital E-learning modules. In these modules you are invited to train and educate yourself in various hygienic engineering and design disciplines."

This could be the future welcoming message for EHEDG members, students and professionals all over the world who want to enhance their knowledge about hygienic engineering and design. Digital E-learning modules represent just one of many ideas that EHEDG Vice-President Patrick Wouters discusses with his co-members of the EHEDG Working Group Training & Education, and the EHEDG Executive Committee. In this article, Wouters sketches the first outlines of an emerging EHEDG Training Academy. A new EHEDG Training Roadmap defines goals and actions for the next three to five years. It will lead the way to provide access to EHEDG courses for anyone at any time and any place in the world.

What do we need a roadmap for?

Patrick Wouters: "This new Training and Education Roadmap builds on former achievements of EHEDG volunteers who appointed knowledgeable EHEDG Accredited Trainers. These trainers developed valuable training materials and realized various types of training programs around the globe. Attendees value the EHEDG hygienic engineering and design training courses highly and the demand for training courses keeps growing. That is why, with support of our EHEDG Regional Sections, we keep accrediting new trainers all over the world. This already resulted in a higher reach and impact of our training and education activities. Meanwhile, we keep striving for a flawless execution of all currently existing training and education offerings. However, as we also have a responsibility to start deploying our resources more effectively now, we need to find new, more effective ways to train and educate the world about hygienic engineering and design."

Why is that?

"Theoretical expertise and practical insights are at the core of the EHEDG value proposition. Knowledge is instrumental to the EHEDG product portfolio, the EHEDG guidelines and the multilevel value proposition of EHEDG. However all this knowledge on hygienic engineering and design is only useful when industry professionals are properly trained and educated to incorporate it in their daily work. It is a known fact that the way people absorb information has changed dramatically in the last couple of years. Although EHEDG has adopted new technologies and online collaboration tools, most of the formal EHEDG training programs still take place in classroom or seminar settings. These traditional learning approaches alone don't suffice for the modern workforce. They exclude those who are just not able to follow our training courses in person. We want anyone working anywhere in the world to have equal learning opportunities, so our EHEDG Training Strategy Taskforce has been working on new approaches to make this happen."

"THERE'S A GROWING DEMAND FOR EHEDG TRAINING COURSES"

So what's the plan?

"With the new Training and Education roadmap we strive to utilize contemporary digital learning possibilities to accelerate the average learning speed and to efficiently develop new member capabilities. The Roadmap envisions an online training and education platform that creates a social, accessible and personalized learning experience. We currently conceptualize several digital learning experiences and develop and implement technology-based training and education solutions within an agile E-learning environment. Just like robotics and machine learning are transforming the way our food is produced, digitalization and analytics are transforming the way our members learn. We are currently implementing a Learning Management System (LMS) that allows for course creators to streamline E-learning content for easy integration of content and tools. So the plan is to enable more EHEDG members to participate in learning courses, to access them from anywhere and at any time on

any device and to collaborate with peers around the globe. Learners will also have the option to consume specific targeted and personalized content in short timeframes, in line with the current needs and interests of each trainee."

What steps do you plan to take next?

"Our next step is to define a clear overview of the specific training programs that we need, based on our existing segmentation of the EHEDG product portfolio users. After that we will develop a modular training program system that allows us to provide our members, students and professionals with multilevel and practically relevant training possibilities. That will be the foundation of our future training program, of our EHEDG Training Academy. Besides learning concepts based on conventional face-to-face classroom sessions, new E-learning modules will be developed. A first EHEDG E-learning module has just been completed and is now being translated into various languages. Based on the feedback after the launch we will determine the exact number and contents of the modules."

Is there room for suggestions?

"I will be happy to receive suggestions from EHEDG community members on how we should move forward in the upcoming years. We want to learn from each other so we can educate the world about hygienic engineering and design and help to optimize food safety and quality together. Please visit the EHEDG.org website to find out more about our plans and about how you can contribute to realizing them."

EHEDG CENTRALIZES CERTIFICATION PROCESSES

SECURING VALIDITY OF CERTIFICATES AND PRESERVING LEVEL PLAYING FIELDS

After the reorganization of the EHEDG management structure, one of the first decisions of the newly compiled EHEDG Executive Committee was to centralize the allotment of EHEDG certifications. Dr. Peter Golz, chairman of the EHEDG Product Portfolio Sub-Commission, explains why retrieving the mandate for issuing EHEDG certificates was necessary to secure the validity of EHEDG certificates in the years to come.

For many years, certificates were issued by independent testing laboratories. Why change that?

Dr. Peter Golz: "The testing laboratories are doing a great job and will continue to take care of all the product testing in the future. EHEDG only centralized the final stage of the allotment of EHEDG certificates to make sure that all tests are harmonized and that all current EHEDG certification criteria are applied. Another reason for the centralization is that EHEDG needs to have control over the prolongment of the certificates. Prior to the centralization, there was no system in place for the recertification and re-evaluation of formerly certified products. Equipment that was certified in a time when old certification schemes were operative remained valid after new guidelines and certification schemes came into effect. This created an uneven playing field for new applicants. By centralizing its mandate for issuing certificates, EHEDG can continue to drive innovation and can guarantee that every single piece of EHEDG certified equipment listed on its website complies with the applicable EHEDG certification criteria."

How does this centralized certification and recertification process work?

"To assess whether a specific application meets all the necessary current EHEDG certification class criteria, one needs reliable test results and the right expertise to interpret those results. The test institutes still gather their test results based on clear testing instructions, but the evaluation of these results is done collectively by the members of the EHEDG Certification Working Group. This group consists of Authorized Evaluation Officers who control each other and must follow strict procedures that are defined by the EHEDG Executive Committee and guarded by an independent EHEDG Certification Officer. This Certification Officer is also responsible for granting or denying EHEDG certificates and reports to the EHEDG Executive Committee. A comprehensive system of checks and balances secures that all Working Group members can act objectively and independently and that all approvals and rejections of certification applications are well substantiated. Furthermore, anything that can have an impact on the certification and recertification process is discussed by the members of the Working Group. They also prepare, monitor, update and develop test methods and assessment schemes."

"WE ARE MAKING GREAT PROGRESS NOW, BUT INITIALLY WE EXPERIENCED SOME UNEXPECTED DRAWBACKS"

What does this mean for holders and applicants of EHEDG certificates?

"According to the new certification scheme, certificate holders have to sign up their components for a recertification process once every five years. Once a year they are requested to declare that the design of their certified component has not changed since the certification date. Certificate holders who want to renew their certificates need to initiate the recertification process in time to receive a new certificate issued under the current EHEDG certification scheme. As the re-evaluation needs to be done by one of the EHEDG Authorized Evaluation Officers, the applicant should contact one of them to initiate the process. A list of these officers is published on the EHEDG website. For equipment that was tested and certified before the introduction of the current certification scheme in 2015, EHEDG implemented a transition policy. By 2020 only certificates which have been issued or reissued under the current certification scheme will be listed on the EHEDG website."

Is everything going according to plan up to now?

“We are making great progress, but initially we experienced some unexpected drawbacks because we underestimated the time and efforts it takes to obtain all the certification data from the various test institutes. Some contact data was outdated, and some test institutes that issued old certificates no longer exist. As a result, some holders of old certificates weren’t noticed about the need to recertificate their certificates as timely as intended. Our apologies for that. In hindsight, it would have been better to have finished the centralization first and to implement the recertification policy later. For now, we are completing our certification database and developed an online registration tool that certification holders can use to update their information and help us to reach the appropriate people within in their organizations before we have to take down their equipment from the EHEDG website.”

Does equipment that is withdrawn from the EHEDG website bear a higher hygiene risk compared to the listed components?

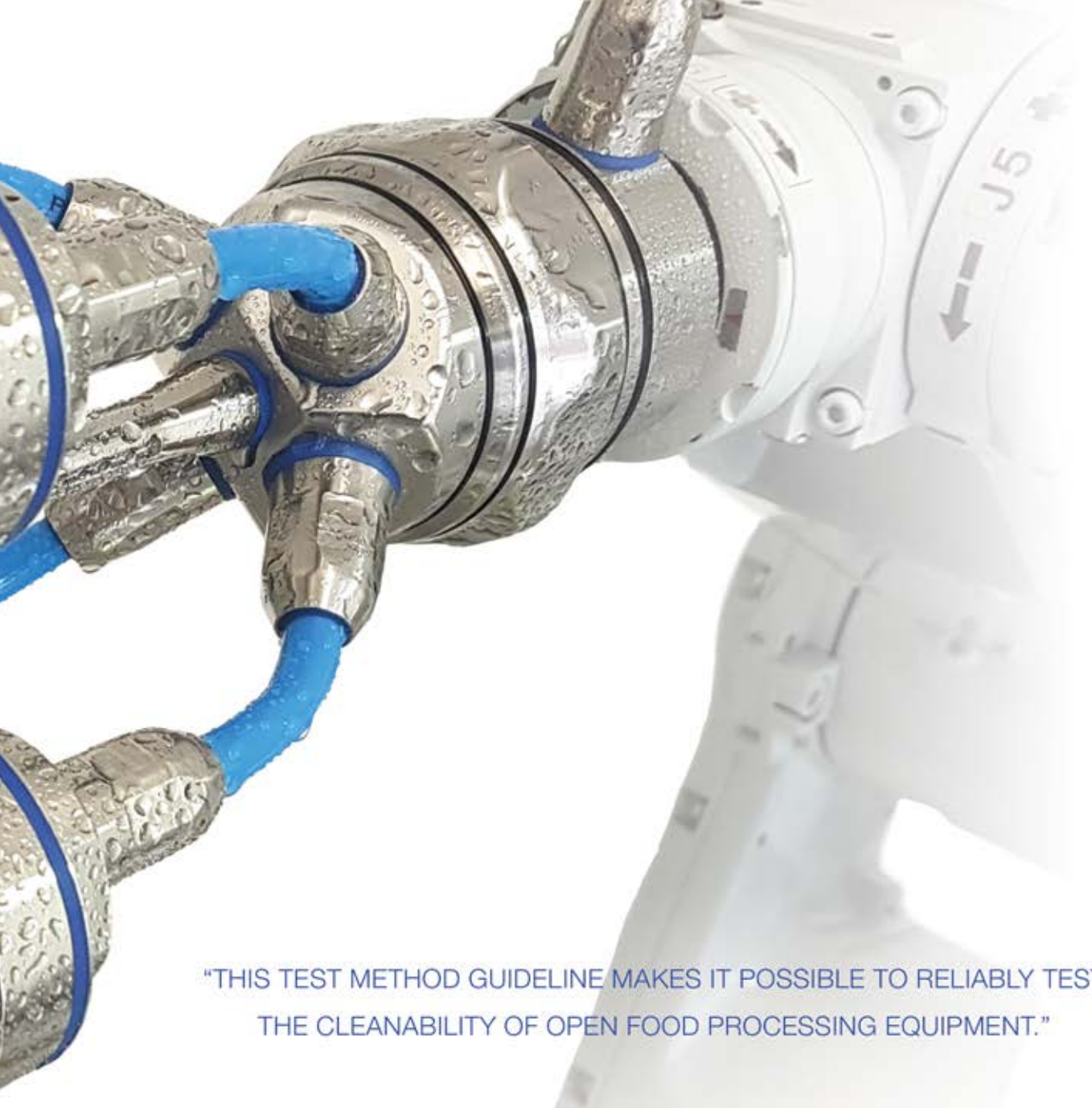
“Not necessarily. It simply means that the withdrawn equipment was due for recertification and hasn't been recertified in time. Nothing may have changed from a technical point of view, and the equipment might still meet all requirements of the current EHEDG certification scheme, but EHEDG cannot guarantee it. There is no other way for EHEDG to ensure that every single piece of equipment listed on its website complies with the current EHEDG certification criteria than to clean this list up. It’s in the common interest of food producers an all stakeholders contributing to the advancement of hygienic design. There are clear procedures on what needs to be done to get withdrawn equipment back on the list. If in doubt, please contact us. We are happy to help out.”

OPEN FOOD PROCESSES BEWARE:

HERE COME THE ROBOTS

ROBOT TECHNOLOGY OFFERS COMPARABLE CLEANING TEST RESULTS

EHEDG Executive Committee member Knuth Lorenzen believes that uniformly executed EHEDG certification and test methods are crucial to create an honest level playing field for hygienic design innovation. The EHEDG President Emeritus deems that distinct EHEDG test methodology development is even more relevant after EHEDG reclaimed its rights for allocating EHEDG certificates. Together with EHEDG experts and the EHEDG Working Group Testing & Certification he developed a new approach that enables EHEDG authorised test institutes to assess the cleanability test for open food processing equipment in exactly the same way.



"THIS TEST METHOD GUIDELINE MAKES IT POSSIBLE TO RELIABLY TEST THE CLEANABILITY OF OPEN FOOD PROCESSING EQUIPMENT."

Why was this new test method guideline developed?

Knuth Lorenzen: "The first EHEDG test method guideline focused on assessing the in-place cleanability of food processing equipment and dates back to 1997. Between this publication and the last one launched in 2012 EHEDG published three more test method guidelines that focused on closed food processing equipment as well. This new and long awaited EHEDG test method guideline is the first one specifically developed for testing open food processing equipment. It was requested by many food producers who want to be able to separate the wheat from the chaff when selecting new components - just like they do with closed processing equipment. This new test method guideline is the result of an extensive process of investigating and discussing the differences between testing closed versus open food processing equipment. In open food processes there are many more factors that can influence the test results than in closed processes where testing conditions are much easier to control."

How did you come up with the idea to introduce robot technology?

"After their first meeting in 2015, the Working Group members started to investigate methods to compare cleaning effects for various types of open process components. For a long time we've been looking for reliable and repeatable methods to first stain, then dry and finally clean open process equipment. This had to be done in ways that would justify comparing the cleaning results with our self-built reference components. In order to make the cleaning results comparable, both the test components and the reference components had to be stained, dried and cleaned in exactly the same ways, with identical angles and distances between the cleaning nozzle and the surfaces during the whole staining and cleaning process. This was quite a challenge, because many components for open processing have irregular shapes, corners and surfaces. Eventually I realized that the only reliable way to do this would be to use a programmable robot that traces all surfaces, based on a virtual twin model of the component."

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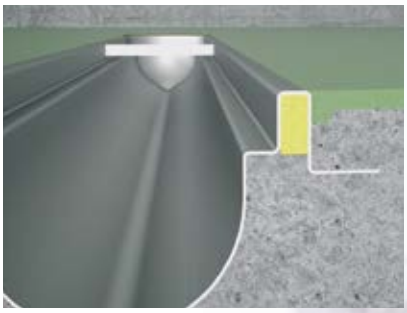
"**EHEDG** guidelines EHEDG 44 recommend a deeper drainage frame to avoid or reduce hygienic problems"



EHEDG HYGIENIC ENGINEERING & DESIGN GROUP EUROPEAN COMPANY MEMBER 2018

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“IN OPEN FOOD PROCESSES THERE ARE MANY FACTORS THAT CAN INFLUENCE TEST RESULTS”

nearly not as complicated as it sounds. Most hygienic design equipment is already designed in 3D-modelling software, so the equipment producers can deliver the models to the EHEDG authorized test institutes. The test institutes can then feed the 3D-model to the robots and calibrate their testing procedures accordingly. The robots are off-the-shelf-products and can easily be obtained by the test institutes themselves. Just like the food processing companies, the EHEDG authorized test institutes are eager to read this new EHEDG test method guideline - because once they know which test method criteria they have to comply with, they can immediately start offering EHEDG testing and certification services for open food processing equipment. In cooperation with the EHEDG Working Group Testing & Certification, the Fraunhofer Institute is momentarily beta testing the new methodology in a real life test setting. Please check the EHEDG website and the EHEDG social media news feeds to stay tuned.”

Knuth Lorenzen graduated in 1971 as mechanical engineer in Hamburg. He started his career in the powder business with pneumatic conveying machinery. In 1985 he joined GEA-Tuchenhagen as Export Manager, putting the idea of hygienic design on his flag. In 1995 he moved to the United States to lead the GEA-Tuchenhagen subsidiary as its President. In 1997 he returned to Germany to lead the key customer group for GEA TDS. He is an EHEDG member since 1992 and guided EHEDG as its President from 2007 to 2015.

GATEKEEPERS OF EHEDG CERTIFICATION

WORKING GROUP CERTIFICATION ALIGNS METHODOLOGIES

Andy Timperley has been working with several EHEDG Working Groups since the inception of EHEDG in 1989, but he acknowledges that his most important voluntary contribution to this community is in his current role as Chairman of the EHEDG Working Group Certification. Andy leads this group into developing effective evaluation, testing and certification procedures that are consistent, repeatable and controllable - thus creating an honest level playing field for EHEDG Certificate applicants and testing laboratories alike.

Why is this Working Group important for EHEDG members?

Andy Timperley: "Since we started our Certification Scheme in 2000, EHEDG Certificates have become widely adopted by the global food industry. As a result, the commercial value of the EHEDG Certificates has increased significantly. As EHEDG approaches its' 29th Anniversary, an EHEDG Certificate now represents more than a hygienic design validation for equipment developers - it's being considered as a prerequisite to supply the global food industry. The members of this EHEDG Working Group are the independent experts who collectively assess certification applications and ensure that testing laboratories deliver consistently reliable and repeatable test results. One could consider the members of this Working Group as being the 'Gatekeepers' of EHEDG Certification."

How do you feel about the EHEDG Executive Committee decision to centralize the certification?

"I believe that the centralization of the certification allocation was necessary for a number of important reasons. EHEDG Certificates are now issued directly by EHEDG rather than by the individual testing laboratories. This contributes to the uniformity, transparency, credibility and value of the EHEDG Certificates, and that's what ultimately matters most to our members. We took the opportunity of this adaptation to streamline the EHEDG certification processes and align them with other international certification procedures. The new recertification requirements derive from these adaptations as well. They ensure that EHEDG Certificates can maintain their validity on a rolling basis and are reviewed on a regular cycle to take into account any developments of the EHEDG design requirements and/or test methods."

Your group mainly consists of subject matter experts - how do they get along?

"Great. Centralization or not, it's still the same core group of EHEDG experts that conduct the design assessments and collate the certification files with the reports coming in from the test laboratories. This Working Group is a valuable pool of knowledge that incorporates many years of practical experience in evaluating and certifying hygienic equipment, so there's a lot of mutual respect amongst the participants. In fact, over the years, we've all become good friends. We stay in contact with each other constantly and we meet regularly. I am confident to say that this is one of the most active and dynamic EHEDG Working Groups. We all have the courage of our own convictions and every Member feels free to be very frank within our forum, but we all speak the same international language of design and technology and always establish mutual consensus."

"CENTRALIZATION OR NOT,

IT'S STILL THE SAME CORE GROUP

OF EHEDG EXPERTS"

Who decides which testing laboratories get accredited for EHEDG testing?

"Our Working Group members make recommendations to the EHEDG Executive Committee when a new application is received. We consider not only the geographical spread of testing laboratories around the world but also the volume

"AN EHEDG CERTIFICATE IS BECOMING A PREREQUISITE TO SUPPLY THE GLOBAL FOOD INDUSTRY"

"THIS WORKING GROUP IS A VALUABLE POOL OF KNOWLEDGE. AND OVER THE YEARS, WE'VE ALL BECOME GOOD FRIENDS"

of testing that is envisaged in any particular region. Any equipment developer that wants to have its equipment certified by EHEDG is completely free to choose any AEO they prefer to submit their request to, but for the actual testing most developers turn to EHEDG Testing Laboratories in their own region. We don't nominate a new testing laboratory if we think it might geographically compete with existing ones, because each testing laboratory has invested a great deal of money and time in establishing the facilities and obtaining the ISO Certification so the testing laboratory must be sustainable. Meanwhile we are maintaining our strict control parameters with regards to monitoring the test laboratories. We conduct regular ring trial testing, which involves testing an identical piece of equipment at all the testing laboratories, followed by writing up reports and design reviews and getting all results independently reviewed to confirm that we continue to obtain comparable results amongst all testing laboratories."

What will the future bring?

"The global need for food is constantly rising and with it the increasing demand for safe food production, processing and transportation and the global interest for hygienic engineering and design. More and more food processing companies recognize the benefits of hygienic engineering and design for their food safety, sustainability and productivity. Since EHEDG is also constantly growing, our connections with organisations like GFSI, 3-A, BRC and others will become even more solid. Meanwhile, the EHEDG Working Group Certification will continue to safeguard that all EHEDG Certification and testing is conducted according to current EHEDG requirements in order to enhance safe food production."

RAISING THE BAR WITH RENEWED PRINCIPLES

HYGIENIC DESIGN PRINCIPLES DRIVE AND REFLECT CHANGE

The globalizing food industry is evolving and so is the world in which it operates. Every ten to fifteen years these changes become so significant that EHEDG decides to update its 'famous' guideline document number 8. The fundamental design principles in this document define the meaning of hygienic engineering and designing in any given period. The first draft dates back to 1993, the second version was published in 2004, and now the members of the EHEDG Working Group Design Principles finalized a third official update that can be downloaded from the EHEDG website. Dr. Jürgen Hofmann, chairman of the Working Group Design Principles, tells us why they did it.

What is the significance of document 8?

Jürgen Hofmann: "This guideline contains a set of definitions and focus areas that define our current understanding of hygienic engineering and design. It covers fundamental functional requirements, intended usage of materials, hygienic design and construction and assessment methods. These principles are the foundation for all other EHEDG guidelines. If you want to stay safe by learning more about the fundamentals of hygienic design, document 8 is a great place to start. It also is the basis for the EHEDG certification programme and therefore drives the future development of design, construction and installation processes in the food industry. When comparing the three editions of this document that were published since 1993 one can see that they reflect the slowly but constantly evolving attitudes, control systems and social, legislative and commercial mechanisms driving the world of food production."

How so?

"When EHEDG published the second version of these design principles back in 2004, the food industry mainly focused on primary food production processes - based on the idea that sufficient hygienic control over direct food contact areas equals optimum food safety. By now, most producers know that this is only partially true, since every part of the equipment that's installed, from drainage to cable routing and air treatment systems, can also be hazards as well. As a result, we've seen a consistently growing interest in a wider array of food safety determining production factors. The support that EHEDG offers in developing a new

"THESE PRINCIPLES ARE THE FOUNDATION FOR ALL OTHER EHEDG GUIDELINES"

Hygienic Design Chapter for the Global Food Safety Initiative (GFSI) illustrates that the significance of hygienic designed equipment and production facilities is getting recognized more widely."

What has changed since the publication of the previous guideline?

"Food companies realize that hygienic design saves money, that machines developed on EHEDG design principles have a lower total cost of ownership than conventional designs, while on top of that reducing food safety risks. Some components may be more expensive, but you need less of them. All this growing interest in hygienic engineering and design doesn't necessarily justify a renewal of design principles, but changing regulations, stricter control processes and new business hazards for food producers definitely do. That is why, for example, we extended the functional, hygienic design requirements in this renewed guideline. Nowadays many recalls derive from non-microbiological contamination, so besides microbiological hazards, this guideline now also covers risks like allergens and foreign bodies. Society simply doesn't accept irregularities in food products anymore, even if they are not directly compromising health and food safety."

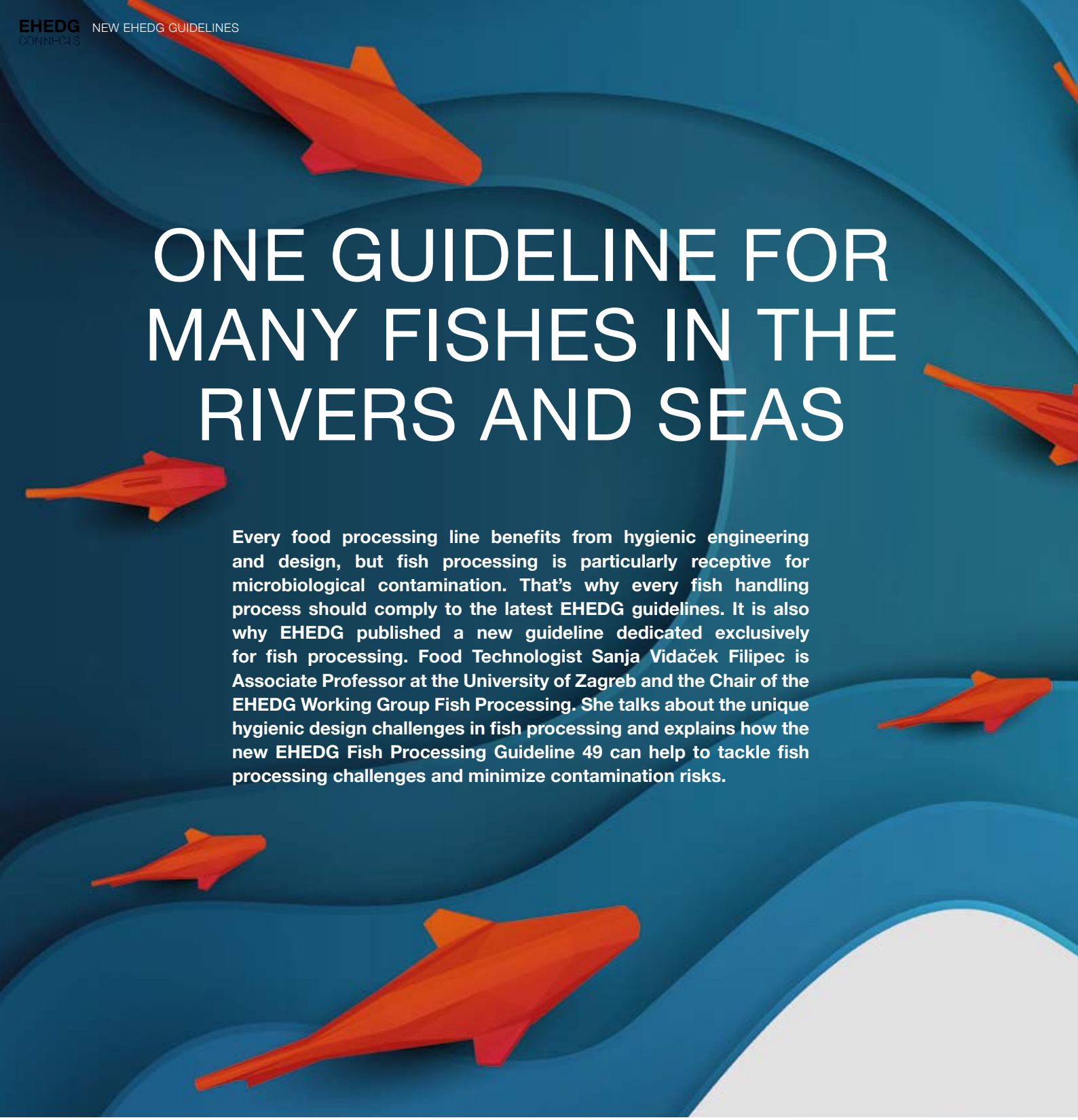
Can you give an example?

"Not too long ago, consumers wouldn't confront food producers when finding a piece of broken bone in their steak or a piece of rubber in their yogurt. They would take it out and continue consuming their food. Now food producers are forced to recall a complete batch when something like this happens. Moreover, because food producers have been upscaling their production facilities, these batches are bigger than ever. So naturally, the companies want to minimize these risks. The renewed principles in document 8 contribute to preventing recalls, and that makes them valuable. And then there is the growing demand and diversity in fresh convenience food. To maximize the relatively short shelf life of these products, the complete processing and delivery chain has to keep everything as clean as possible. The best way to do this is by following our EHEDG Design Principles."

So consumers are raising the bar and EHEDG helps the food industry to comply?

"Pretty much, but there are also new legal requirements that drive the change. For example, there have been quite some changes regarding the legal admission of production materials that are in direct contact with food ingredients. Of course, these renewed design principles in document 8 also give practical guidance to comply with these new requirements. So there's quite some new information in there, but we managed to limit the total number of pages of new document 8 by structuring the information according to the new guideline formatting rules and by making the chapter on construction materials shorter (EHEDG has that covered in guideline 32 that deals exclusively with materials of construction). I am happy to say that this new guideline is more comprehensive, more practically useful and better understandable than any other document 8 before. So enjoy the reading, learn and stay safe."

"FOOD COMPANIES REALIZE THAT HYGIENIC DESIGN PRODUCTS REDUCE FOOD SAFETY RISKS AS WELL AS OPERATION COSTS"

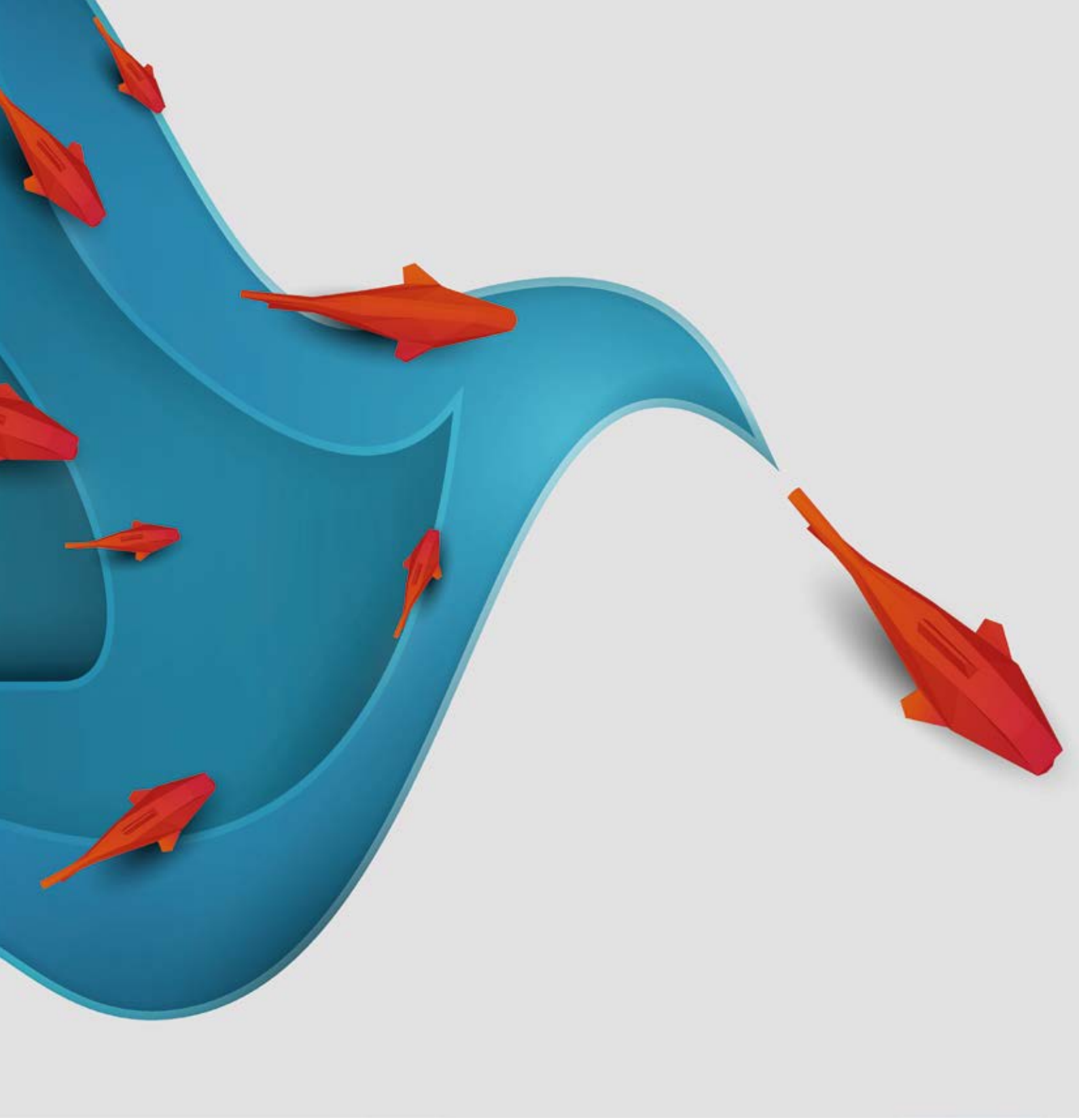


ONE GUIDELINE FOR MANY FISHES IN THE RIVERS AND SEAS

Every food processing line benefits from hygienic engineering and design, but fish processing is particularly receptive for microbiological contamination. That's why every fish handling process should comply to the latest EHEDG guidelines. It is also why EHEDG published a new guideline dedicated exclusively for fish processing. Food Technologist Sanja Vidaček Filipec is Associate Professor at the University of Zagreb and the Chair of the EHEDG Working Group Fish Processing. She talks about the unique hygienic design challenges in fish processing and explains how the new EHEDG Fish Processing Guideline 49 can help to tackle fish processing challenges and minimize contamination risks.

What sets industrial fish processing apart from other food handling processes?

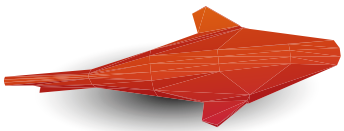
Sanja Vidaček Filipec: "Fish come in all sorts, shapes and sizes and varieties differ greatly around the world. Consequently there are many technical approaches to processing fish. This represented a challenge for our Working Group members who committed themselves to develop a comprehensive and international industry guideline. Secondly, fish processing environments are always humid, and humidity is the single most compromising factor for food safety because it manifolds the risk of microbiological contamination. Thirdly, since fish is highly perishable, speed and efficiency is particularly important in fish processing, even more so than in processing red meat or even poultry. That's why fish trailers freeze their fish right after each catch. It is also why modern industry fish processing lines that make good use of EHEDG guidelines not only optimize their food safety and food quality conditions, but also their efficiency and productivity."

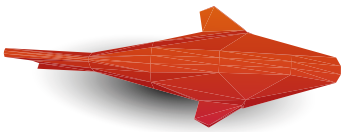


Why did it take until now to develop this guideline?

"In the past years EHEDG published technical guidelines on specific areas of open processing that also apply to fish processing - we refer to quite a lot of them in this new guideline. It took quite some time before all those seperate guidelines were detailed enough to support a really comprehensive guideline on fish processing. In the meantime our Working Group focused on developing a set of fundamental hygienic design principles that would be applicable to different types of fish processing plants, in line

"SPEED AND EFFICIENCY ARE PARTICULARLY IMPORTANT IN FISH PROCESSING"





“ALL MEMBERS OF OUR WORKING GROUP WANTED TO MAKE SURE THAT EVERYONE COULD UNDERSTAND THE PRINCIPLES.”

with the basic hygienic design principles in EHEDG Guideline 8. This EHEDG Fish Processing Guideline 49 offers just that and more, because it also addresses hygienic aspects that are specific to contemporary fish processing techniques, like the use of vacuum systems to remove by-products. EHEDG Fish Processing Guideline 49 took several years to develop because there are so many food safety and food quality determining aspects to industrial fish processing that had to be investigated. On a detailed level, every fish processing plant has to apply this guideline in accordance to their own circumstances.”

Who should read this guideline?

“Everyone involved in the processing of salmon, white marine fish and freshwater fish can put this guideline to excellent use. EHEDG Fish Processing Guideline 49 is even applicable for fish processing on fishing vessels. Overall, this new guideline offers great value during the procurement process, the plant design, installation and microbiological sampling fase. It provides a comprehensive overview of all the typical hazards and challenges of fish processing and does so in clear, non-technical descriptions. All members of our Working Group wanted to make sure that everyone could understand the principles. We expect this guideline to contribute to a more widespread awareness of food safety and food quality determining aspects of fish processing on all levels in the industry. Now every decision maker in the fish industry can refer to this guideline and specify what is meant when requesting hygienic design solutions. And equipment producers striving to certificate new equipment for the fish processing industry know what criteria their components have to comply to. The EHEDG Working Group Fish Processing is convinced that this guideline will help to optimize food safety and food quality in fish processes all over the world.”

BREAKING NEWS:

KNOW-HOW TO OPTIMIZE FOOD SAFETY, PRODUCTIVITY AND ENERGY EFFICIENCY

RENEWED EHEDG GUIDELINES ON PASTEURIZATION AND STERILIZATION OF LIQUID FOOD

Are these renewed EHEDG guidelines really breaking news? Judging from the assertions of the chairman of the EHEDG Working Group Heat Treatment Bengt Eliasson they certainly are. Eliasson: "These completely renewed guidelines contain many valuable insights. They are structured in a user-friendly way and contain extensive know-how on how to optimize the food safety, productivity and energy efficiency of continuous pasteurization and ultra-high temperature sterilization processes."

"THESE NEW GUIDELINES OFFER HANDS-ON INFORMATION FOR FOOD PRODUCERS, MACHINE EQUIPMENT DEVELOPERS AND PLANT DESIGNERS"

We've been pasteurizing and sterilizing for ages. Why renew these guidelines now?

Bengt Eliasson: "Pasteurization and sterilization are well established, most widespread and important methods to preserve liquid food. This is why the initial guidelines for continuous pasteurization and sterilization were the very first guidelines that EHEDG published to optimize food safety in the food industry. That was back in 1992. Since then, new technologies and new legal requirements and regulations have emerged. EHEDG translates all those new developments into practical guidelines that the food industry and its suppliers can work with to comply with all requirements. EHEDG also wants to help its community members to find the information they need more efficiently. Therefore, all EHEDG Working Groups recently agreed to structure their guidelines in a new format. So now the guidelines for the pasteurization and sterilization of liquid food are published in this new, more user-friendly format."

So what's new?

"These guidelines contain hands-on information aimed at food producers, machine equipment developers and plant designers who need to comply with the latest food hygiene regulations. The old versions of these guidelines focused primarily on milk production, thus limiting the possible applications of these guidelines. The renewed guidelines also cover the production of other liquid foods and high acid products like fruit juices. They provide practical technical frameworks that include a wide array of topics ranging from general considerations regarding the applied pasteurization and sterilization techniques to hygienic process design and technical matters concerning effective flow diversion, recirculation and cleaning and control processes. All information is presented in line with new EHEDG guidelines formats that structures information into categories like design, production and maintenance aspects. These guidelines also contain useful information on how to optimize energy efficiency and minimize maintenance intervals.

Do the guidelines cover everything we must know?

"There's always more to know, but these publications are very comprehensive. They help readers to make sure that correct temperatures and processing conditions are maintained, that any unacceptable deviation in key process variables results in an automatic flow diversion or shutdown and that the production process is stopped before fouling becomes significant or before thermophilic bacteria growth becomes too intensive. The guidelines relate to the importance of hygienic design in the different stages of the pasteurization and sterilization processes. The guideline on pasteurization, for example, states that the process equipment downstream of the holding tube must be hygienically designed and hence cleanable, possible to disinfect and bacteria tight. This guideline furthermore offers means to prevent the risk of mixing pasteurized and unpasteurized products. Moreover, both of these guidelines even include practical guidelines on how to utilize hygienic design principles to tackle specific regional legislation requirements."

"THESE GUIDELINES ALSO CONTAIN USEFUL INFORMATION ON HOW TO OPTIMIZE ENERGY EFFICIENCY AND MINIMIZE MAINTENANCE INTERVALS"

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LET US BE ABLE TO SAY,
WHEN WE COME NEAR
TO THE GREAT GOAL:
I HAVE DONE WHAT I COULD"
LOUIS PASTEUR.

How sustainable is hygienic design?

"Energy efficient solutions in general, and heat recovery techniques in particular, are becoming more and more important for food producers. They are willing to invest in new techniques to optimize efficiency - not only to save energy, water, and chemicals but also to maximize their productivity by minimizing cleaning time intervals and waste. Hygienic design offers many possibilities to save energy and minimize downtime. These guidelines contain several chapters that help EHEDG community members to make sustainable choices to minimize contamination risks and to save energy and money.

The guidelines illustrate that investing in hygienic design solutions is economically viable. By applying hygienic design we can shorten CIP times, make the production more efficient by overall increasing availability and reduce the total cost of production. Since investing in hygienic design improves overall efficiency, it's is a cost saving investment it. It also avoids recalls and public health hazards."

Is there a link between hygienic design and new forms of energy re-use?

"The guidelines also illustrate how certain systems work, for example, a system that enables producers to preheat their products by heat recovery using a secondary circuit. Heat recovery systems are in general more complex regarding plant design, but the results are very satisfying because they require significantly less energy. Even when investment budgets are limited, these guidelines offer interesting options. In sterilization processes, for example, it's also possible to preheat a product after the holding section with a sterilized product in a regenerative heat exchanger, making for less complex plant designs and realizing the same amount of energy savings."

So it's not the germs we need worry about then - it's our inner terrain?

"Exactly. And let me conclude with yet another famous quote of the great Louis Pasteur, who not only discovered the power of pasteurization, but who also had a very clear vision on how to handle food safety in general: 'Whether our efforts are, or not, favored by life, let us be able to say, when we come near to the great goal, I have done what I could.'"

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