

Already too small

FOR 21 YEARS, THE BREMERHAVEN INSTITUTE FOR FOOD TECHNOLOGY AND BIO PROCESS ENGINEERING (BILB) HAS BEEN ONE OF THE MOST IMPORTANT CONTACTS FOR RESEARCH PROJECTS FOR THE BAKING INDUSTRY. BAKING+BISCUIT INTERNATIONAL'S EDITOR-IN-CHIEF HILDEGARD M. KEIL TALKED TO THE FOUNDER AND SCIENTIFIC DIRECTOR OF BILB, **PROF. DR. KLAUS LÖSCHE**

+ bbi: Prof. Lösche, strictly speaking, the BILB has been in existence for 21 years now. What were the reasons behind its foundation and what objectives did you have in mind then?

+ Lösche: At that time, there was some kind of change in paradigms amongst the universities of the Federal State of Bremen. Whilst formerly any cooperation with the industry was strictly forbidden, it then all changed and cooperation was sought. This is how the Technology Transfer Center (ttz) originated, luckily not as a trust but rather as an association in which the different social groups were present: the Senate of Bremen, the industrial chamber of commerce, the chamber of trade, the labor unions, the country of Cuxhaven, the city of Bremerhaven, the university and many more. This ensured not only a diversity of opinions, but also a broad basis for survival. Originally, BILB was a part of the ttz which was jointly initiated by Prof. Kurzhals (process engineering), Prof. Goßling (technology of animal food) and me.

+ bbi: Since 1988, you have been the scientific director of BILB alongside your main work as a university lecturer and professor. Why did you focus on the baking industry?

+ Lösche: Shortly after the foundation, Prof. Goßling left Bremerhaven due to other activities. Prof. Kurzhals became the president of the university and therefore, I continued to manage the institute. However, it is not quite correct that the main focus was placed on the baking industry. Our first contract work, at BILB, was dealing with the fining of wine. We also developed chitosan biofilters. In the early 1990s, the baking industry experienced a change in terms of concentration and automation and it was a „trend“ to deal with the baking process on a scientific level. Together with the Institute for Labor and Technology, we worked at that time on a project with the objective of eliminating the necessity for night work in the bakeries. From there, the first European CRAFT project for small and medium sized bakeries emerged. Maybe, another reason is that I have my roots in the bakery trade and that I also had been a trained baker before I started my academic education.



+ bbi: How important is the industry to BILB today?

+ Lösche: In the bakery field, we have developed a core competency with the result that currently about 80% of our projects are from this field. However, other subjects such as maritime biotechnology, for example, are currently also growing strongly.

+ bbi: When looking back, which ones have been the most important research projects over the past 21 years?

+ Lösche: This is a long list because all research projects have been and still are close to my heart. I enjoy working together with the industry

and their people. But if I should mention some important ones, then I would name the research into oxygen kneading, enzymes, transglutaminases, ultrasonic detectors for the determination of dough properties, vacuum and adiabatic cooling and last but not least ADAPT, the further education project for schools for master bakers.

+ bbi: When you compare the situation of the institute 21 years ago with the present situation - what has changed?

+ Lösche: The BILB has grown; we now have 12 employees. We really need twice as many because the institute is already too small. For many years now, we have had to reject projects. Today, the BILB is financially independent from any grants from the university. However, the interest of the university is still there but the respective funds are lacking. I regret that. In my opinion, the industry has a large demand for partners from the science side and this demand is still growing. On the other hand, the cooperation with scientists provides for input which the industry would not get otherwise.

+ bbi: In 2002, you founded the European Institute of Baking Technologies (EIBT) from BILB. What was your intention and what have you achieved so far?

+ Lösche: The EIBT is the logical continuation of BILB on a European level. The main objective is to present us as a service provider for research and development for the baking industry Europe-wide. This project still needs some development and I would like to expand it.



BILB

+ **bbi:** Speaking of the future – what will the future projects at BILB involve?

+ **Lösche:** The maritime biotechnology will, for sure, take up more room. In the bakery sector, there will be several developments which might be important in the future; the field of process engineering, measurement technology and the entire width of vegetable raw materials.

+ **bbi:** What are the issues in measurement technology?

+ **Lösche:** Roughly speaking, we are trying to understand food as an interacting electrolyte system and also to measure and determine the properties of raw materials. For example, we could then determine or predict baking or extruding properties. We still do not know the system of baked goods completely. What are the determining factors for a ▶



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crisp crust and what can be done to maintain it for a prolonged time, for some hours? Considering today's transportation routes, these issues are exciting. We need new approaches to find the answers which may significantly affect the baking industry as a result.

+ bbi: Prof. Lösche, you are now 60 years of age. May I ask how long the institute and the industry can hope to rely on you?

+ Lösche: Please ask my wife as she wants to travel with me more. But seriously, I love what I am doing, although I still hope to find someone within the next few years who is willing to continue the work and to manage the institute. But you know me – even then I will probably not sit down and twiddle my thumbs.

+ bbi: Prof. Lösche, thank you for the interview. +++

20 years of the Bremerhaven Institute for Food Technology and Bio Process Engineering (BILB)

+ 1988 University lecturers and professors from the former food technology department of the University of Bremerhaven established the Bremerhaven Institute for Food Technology and Bio Process Engineering (BILB) under the roof of the Technology Transfer Center (ttz). Its objectives included the integration of research and teaching as well as the promotion of the regional and national industry

+ 1989 Moving into its own rooms at the Columbus Center

+ 1991 Moving into its own building at the Lunedeich in the fishing port of Bremerhaven

+ 1993 BILB implemented on its own; the first EU project in the Federal State of Bremen within the scope of the EU CRAFT program for SMSE (BILB and later on the entire ttz become the largest service provider in Germany within the CRAFT program)

+ 1996/97 Foundation of a sensory evaluation laboratory in cooperation with the FROSTA company, Bremerhaven

+ 1997 Initiative for the foundation of a novel study course "Food Economics" in cooperation with companies such as BakeMark Germany in Bremen, Deutsche See in Bremerhaven, etc.

+ 2002 Foundation and establishment of the European Institute of Baking Technologies (EIBT)

+ 2003 Establishment of the first maritime biotechnology center (BioNord 1), "Blue Bio Technology"

+ 2009 Establishment of the second maritime biotechnology center (BioNord 2)

THE MOST IMPORTANT EU PROJECTS:

+ 1996 – 1998 Technical modernization in the European bakery trade (EU)

+ 1998 – 2000 Bakery know-how (EU)

+ 2001 – 2003 Rheodough – Development of an ultrasonic rheological sensor for non-invasive and non-destructive evaluation of dough (EU)

+ 2001 – 2004 BAK-TEC – Thematic network in the field of baking technology and bakery equipment (EU)

+ 2003 – 2005 SNP – Bread development of new gluten-free baked goods with improved structural and nutritional properties (EU)

+ 2006 – 2005 Cationic Bran – Development of a tech-

nology for the industrial production of cationic bran as an additive for papermaking (EU)

+ 2003 – 2005 COVAD – Development of a continuous vacuum dough preparation process for industrial bakeries (EU)

+ 2003 – 2005 HEBAGO – Development of a special heat chamber for baked goods (EU)

+ 2004 – 2006 E-Breadmaking – Development of an electronic trading platform for bakery machines and equipment, based on an expert system, multi-agent system and virtual reality (EU)

+ 2005 – 2007 SENBAK – Development of a multi-sensory system for the supervision of durable baked goods (EU)

THE MOST IMPORTANT NATIONALLY SPONSORED PROJECTS:

+ 2000 – 2001 Omega 3 – Health promoting food from resource conserving raw materials (BIS)

+ 2005 – 2006 Heat recovery (Ungermann I) – Development of a novel automatic proofer with integrated heat recovery and novel air humidification (AIF)

+ 2005 – 2007 Quick starter – Development and demonstration of enzyme complexes from disintegrated microbial cells for the development of novel sourdough starters (AIF)

+ 2005 – 2007 Water jet kneading – Development of a novel process for the preparation of dough using high pressure water jets (AIF)

+ 2007 – 2009 Gentle baking – Development of an energy saving and gentle baking system with targeted baking time reduction using a specified vacuum technology and heat transfer via infrared and/or microwaves (AIF)

CURRENT PROJECTS:

+ 2006 – 2009 EU-Freshbake – Optimization of freshly produced breads under consideration of improving their nutritional value and reducing the energy requirements (production process) for the benefit of the consumer and the environment (EU)

+ 2009 – 2012 NanoBAK – Novel climatic chamber with an innovative, energy saving nano-aerosol humidification system for the manufacture of high quality bakery products (EU) +++



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