

# THE KEY TO SUCCESS

## An essential instrument of quality assurance: sensory analysis

*Julia Bär, from the Doemens Savour Academy, has been appointed as the new head of the sensory committee by the EBC (European Brewery Convention) based in Brussels. In an interview with BREWING AND BEVERAGE INDUSTRY INTERNATIONAL (BBII), Julia Bär reveals, how breweries benefit from methods developed at Doemens and how an efficient sensory analysis should be implemented in breweries.*

### **BREWING AND BEVERAGE INDUSTRY INTERNATIONAL:**

*You are the new head of the Sensory Group of the EBC appointed in May 2021. The work of the EBC is based on various working groups in which numerous experts from throughout Europe develop solutions to complex questions. What are the primary tasks of your group at the moment?*

**Julia Bär:** Through ongoing knowledge sharing, EBC working groups understand the breweries' demand for analytical methods and see the need to recommend validation tests for new or modified analytical parameters and instruments.

*Over the years, Julia Bär from Doemens Savour Academy has noticed that products that are subjected to regular sensory testings settle down at a higher levels of quality. (Images: Doemens)*



My task, together with my team, is to revise and optimize existing Analytica-EBC methods and to develop and establish new analytical regulations on current topics. Breweries use these methods for sensory analysis as part of their overall quality assurance management strategy.

**BBII:** *How do breweries benefit from the work of the EBC Sensory Group?*

**Bär:** The EBC contributes to the development of methods for modern quality control procedures in brewery, malting and hop laboratories around the world. In particular, establishing proper sensory analysis as an integral component of quality assurance management strategies represents one of the cornerstones of EBC's activities. Backed by the experience of experts and the proximity to scientific research with a view to current topics, analytical methods and validation tests are regularly assessed and updated.

The Analytica-EBC, a compendium of laboratory methods from all areas of brewing science, is available to both German and international breweries. These are methods that are not only regularly evaluated but also coordinated with the experience and expertise of the American Society of Brewing Chemists (ASBC).

**BBII:** *How can breweries benefit from ongoing sensory quality control?*

**Bär:** Along with chemical/technical and microbiological analyses, sensory analysis is

the most important instrument in quality assurance. Within the company, a broad-based and well-trained sensory analysis team – including brewers and non-brewers – is the key to success in order to gather as many judgments as possible and thus take advantage of every available opportunity for product testing.

In addition, the regular participation in external quality testing procedures (about once a year) provides valuable insights and offers the possibility of a standardized and independent evaluation of the own products. Over the years, as a result of various sensory projects, I can confirm that products which undergo regular sensory testing settle at a higher level of quality.

**BBII:** *Please describe the procedure for teaching employees the basics in sensory analysis and integrating sensory science into everyday operational and quality assurance procedures!*

**Bär:** The development of a sensory memory as well as the targeted perception and description of odors and flavors is crucial for recognizing and evaluating product defects and will also be of great benefit to product development.

You start with simple tasks:

- Distinguish basic tastes,
- describe and evaluate flavoring substances,
- identify possible off-flavors
- internalize typical product characteristics.

**BBII:** *What happens next?*

**Bär:** The planning and implementation of sensory test schemes must be adopted in operational practice. Breweries often don't have a concrete idea of how they can integrate the process into their everyday routine. First of all, it is important to answer the following questions:

- What is the significance of sensory analysis for the own company?
- Which questions should be answered by means of sensory tests?
- What goals can be achieved?

**BBII:** *What role does the time factor play here?*

**Bär:** Time definitely plays a central role in the effective implementation of sensory analysis in the brewery. The effort required in terms of preparing and carrying out sensory tests depends of course on the individual task: For regular tastings for quality assessment, tasters should include about 10 to 20 minutes time, depending on the number of samples. More complex tasks can also take more time. However, after a maximum of 30 minutes, a longer break should be taken to regenerate the senses.

**BBII:** *The parameters that influence the time frame of a tasting session are many and variable.*

**Bär:** Correct, so the duration of a sensory test depends primarily on the number of samples, the question posed or the objective and finally on the experience and routine of the individual tasters. However, the time factor should not only be reduced to sensory testing in everyday business, but must also be specifically scheduled for professional sensory trainings. The decisive factor here is continuity! It is preferable to schedule shorter, weekly tastings to evaluate product quality.

**BBII:** *It is important for the successful implementation of sensory tests that the resulting outcomes are taken seriously in all areas of the brewery!*

**Bär:** "Who cares? Even if we detect young beer aroma during tasting, the beer is still released for bottling," is occasionally noted by

brewery employees. Of course, it always depends on the type and extent of the sensory deviation, something the average consumer may not even recognize. Here, it is necessary to define internally at what point an impairment or reduction in quality exists that could ultimately affect the release of a product. In the event that sensory analysis as an instrument of quality assurance does not meet with the approval of management, it is still important to continue tasting and, above all, to document the results. Should customer complaints arise due to product defects which have already been identified in advance by means of sensory tests, a direct benefit of sensory testing will become apparent at that time at the latest.

**BBII:** *"The most important measuring system in sensory analysis is and remains the human being." You emphasized this over and over during the numerous in-house training courses you've already conducted for many renowned mid-sized and large breweries.*



*Teaching theoretical content provides the basis for sensory understanding."*

**Bär:** Although proper sensory analysis cannot be carried out using a standardized measuring device, it is now mostly considered as an indispensable tool. No matter how much we measure and analyze our beer, the most important measuring system is and remains the human being. Precisely because no „analysis device“ is used, sensory analysis is still sometimes viewed with some caution with regard to reproducibility.

**BBII:** *And this is exactly where you have to start?*

**Bär:** That's right! Just like any analytical instrument, the human being as "sensory measuring instrument" must also be calibrated. Regular training is therefore the be-all and end-all. On the one hand, improvements in reproducibility can be achieved by a well-trained tasting panel. Unfortunately, especially in small/mid-sized companies, there is often not enough time set aside for periodical trainings.

# BREWING AND BEVERAGE INDUSTRY INTERNATIONAL

Editor  
Christoph Seifried -317

B. Eng. Brau- und  
Getränketechnologie

Schloss Mindelburg  
St. Georgenberg 17  
D-87719 Mindelheim

Telephone +49 (0) 82 61/999-0  
Fax +49 (0) 82 61/999-391  
www.sachon.de  
info@sachon.de

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Publication  
VERLAG W. SACHON GMBH  
Schloss Mindelburg  
St. Georgenberg 17  
D-87719 Mindelheim

Managing Directors  
Sandra Wulkan -150  
wulkan@sachon.de

Dr.-Ing. Klaus Krammer -310  
krammer@sachon.de  
HRB 19790 Memmingen

Advertising Services  
Sabine Reggel -338  
reggel@sachon.de

Advertising Administration, Coordination  
Michaela Schölderle -361  
schoelderle@sachon

Distribution Manager  
Yvonne Musch -451  
y.musch@sachon.de

Print  
Holzmann Druck GmbH & Co. KG  
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*In-house sensory analysis training at the Bergmann Brewery in Dortmund*

**BBII:** *And on the other hand ...?*

**Bär:** ... well, reproducibility can also be increased by a larger number of tasters, which brings up the issue of availability. Breweries know that product defects could often be discovered through tastings and thus sensory-related complaints could be prevented. So if sensory-trained employees are available, sensory analysis is a relatively simple „means to an end.“

**BBII:** *Please describe some key advantages of in-house training.*

**Bär:** Quality plays a key role, of course, especially when you want to prevail over the competition. Every brewery has its own approach, but sensory analysis in general has become a hot topic. The concept of in-house sensory training offers individual approaches that focus specifically on the intention and concerns of the company. In particular, training with the own products makes a lot of sense, especially with regard to product descriptions and profile tests.

**BBII:** *What is the basis of your concept?*

**Bär:** The concept of in-house sensory training is based on a multi-level basic training program that I have designed over the last few years and already conducted several times. The basics can be built upon with more advanced in-house trainings.

The contents are individually tailored to the participants and consolidated through intensive practical exercises.

**BBII:** *Please illustrate this with an example.*

**Bär:** At a middle-sized brewery, for example, after a brief basic training session, we tasted selected beers from its product range and described them in detail in order to work out sensory vocabulary and train the language using different beer styles.

**BBII:** *A common sensory language is crucial?*

**Bär:** Of course! A common language must be developed and then applied in its everyday routine! Uniformity in terms of expression within a taster panel is crucial and the focus should always be on training sensory memory.

**”** *Of course, it always depends on the type and scope of the sensory deviation...“*

**BBII:** *In addition to a uniform language, it must surely also be possible to differentiate varying flavor intensities.*

**Bär:** Yes, that's why it's particularly important for tasters to work towards distinguishing concentrations and identifying thresholds. In a sensory test, merely noting that something

is wrong does not help the brewmaster at all in daily operational practice to narrow down, localize, and even eliminate production errors.

**BBII:** *To what extent do Doemens flavor standards help in training sensory quality parameters?*

**Bär:** The Doemens flavor standards are an important tool for sensitizing tasters to desirable and undesirable flavors in beer. Due to the diversity in terms of hop and malt varieties as well as the use of different yeast strains, completely new aroma profiles can be created. In order to achieve a high quality standard with both traditional and innovative products, a well-trained taster panel is absolutely crucial.

**BBII:** *How are the flavor standards applied in practice?*

**Bär:** First of all, the flavor standards should be added to the own beer, because a high training effect can be achieved due to the already familiar flavor profile. In addition, it will be highly beneficial to consciously test the flavor standards in different beer styles, as each matrix can have an enormous influence on the sense of smell and taste. There are substances that are perceived quite differently depending on the beer style, which will ultimately have an impact on the rating.

Moreover, there can be an enormous shift in the threshold values of individual aroma substances. For example, if a taster detects a certain concentration of diacetyl in pale lager, this does not mean that this aroma can also be perceived to the same extent in wheat beer.

**BBII:** *How were the concentrations of the Doemens flavor standards chosen?*

**Bär:** They were selected in such a way that trained sensory experts can identify them in a beer with a balanced aroma profile. Depending on the beer matrix and the training level of the taster panel, the concentration for each flavor can be varied individually. For the panel, it is primarily a matter of sharpening the senses to detect the direction in which a flavor can "collapse" and how this can be noticed in their own beer. (mon/jb) □