



Beverage

Weihenstephan validates optical oxygen sensor for use in brewing industry

Frank Verkoelen, Norit Haffmans



Norit Haffmans products have been synonymous with quality for over 60 years. The newly developed optical oxygen measuring procedure, which is used in a series of quality control products, must therefore meet the highest standards, as the determination of the concentration of oxygen (O_2) plays a prominent role in the various stages of beer production. Only the most accurate, stable and rapid measurement processes for determining the O_2 levels in beer are suitable for use in breweries.

For this reason, the Weihenstephan Research Centre for Brewing and Food Quality at the Technical University of Munich conducted an evaluation of this optical oxygen measurement system – which is applied in equipment such as the CO_2/O_2 Gehaltemeter (c-DGM) – for use in the brewing industry. Through a series of tests, the c-DGM was compared to an oxygen sensor already accredited for use in the beverages and brewing industries.

The main focus of the evaluation was the precision and accuracy of the device. The former was concerned with the quality of a measuring procedure and the latter with the level of correlation between shown and actual values.

In addition to a preliminary test, four other experiments were to determine the quality of the c-DGM with respect to oxygen measurement: a long-term measurement to establish precision, a gas measurement to determine accuracy and two other concluding tests that were also concerned with determining accuracy.

The results were very satisfactory: Weihenstephan validated the c-DGM as the new optical oxygen sensor for use in the brewing industry. Besides the fact that the c-DGM optical measurement system is very efficient, precise and accurate, according to the Research Centre, it is characterized by rapid response times and little calibration expenditure compared to conventional electrochemical measur-

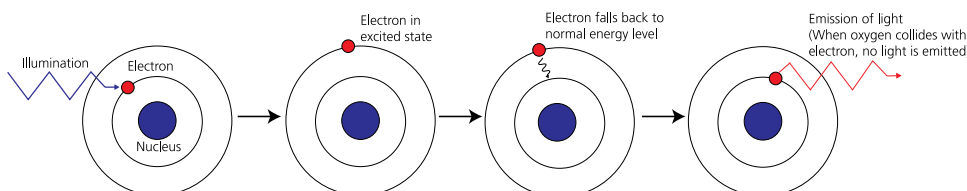


ing systems. Consequently, it is extremely suited to oxygen measurement applications in the beverages and brewing industries.

Principle of optical O_2 measurement

The oxygen sensor measures the O_2 content of the liquid using an optical luminescence measurement process (dynamic luminescence quenching) involving the irradiation of an oxygen-sensitive sensor layer. This excites the molecules in the oxygen-sensitive layer, increasing their energy level. When the molecules fall back to normal energy levels, they luminesce. Oxygen speeds up the normalization of the molecule's state, whereupon light is emitted. The oxygen values and the temperature of the product are calculated based on the time lapse between irradiation and luminescence, which is measured in the form of a phase shift.

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SEMINARS EXHIBITIONS

25/3-27/3

WorldFood Uzbekistan - Tashkent, Uzbekistan

26/3-28/3

WQA Aquatech USA - Las Vegas, Nevada, USA

6/4-11/4

IBD Convention Asia Section,
Auckland, New Zealand

9/4-11/4

CPHI - Tokyo, Japan

16/4-19/4

Craft Brewers Conference
& Brew Expo America - San Diego, California

13/4-15/4

Intervitis Vienna 2008 - Vienna, Austria

5/5-9/5

IFAT - Munich, Germany

20/5-23/5

Pivo 2008 - Sochi, Russia

21/5-23/5

Aquatech China - Shanghai, China

3/6-6/6

Ecwatech - Moscow, Russia

19/6-20/6

VLB Symposium "Brewing & Filling
Technology 2008" - Sevilla, Spain

23/6-27/6

Singapore International Water Week -
Singapore

3/8-6/8

World Brewing Congress 2008
Honolulu, Hawaii U.S.A.

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