

HAFFMANS c-DGM FOSTER'S

CASE STUDY



KEY FACTS

Measurement

Combined CO₂/O₂ Measurement

Application

Brewery

Benefits

- Cost saving
- Accurate product control
- Reproducible and operator independent results

FOSTER'S, AUSTRALIA, STANDARDIZES ON C-DGM FOR BEER

With an Australian brewing and winemaking heritage stretching from the mid 19th century, Foster's remains at the forefront of innovation. The Foster's Group is the leading alcohol producing company in Australia and the Pacific. It is a premium global multi-beverage company with a portfolio of beer, wine, spirits, cider and non-alcoholic beverages. Foster's supplies more than 38,000 customers, from wholesalers and importers, to hotels, bottle shops and restaurants. As part of a unique cross-category drink portfolio, Foster's operates three distilleries, two cideries, six breweries and 16 wineries. Employing approximately 6,200 people, Foster's sells more than 120 million equivalent cases across the region, with export brands growing swiftly in key markets such as Japan, China and India.

Oxygen measurement

For the Foster's Group, the content of dissolved carbon dioxide (CO₂) and oxygen (O₂) are determining factors in the quality, taste and flavor stability of their products. Particularly, O₂ is an important parameter as it causes a rapid decline of the flavor stability and shelf life. Because of this, Foster's continuously controls and measures the concentrations of CO₂ and O₂ during production.

O₂ measurement – challenges

During the last 10 years, Foster's measured the total package oxygen (TPO) content by using the traditional (membrane - electrochemical) technologies. However, Foster's was facing the following difficulties:

- The electrode solution depletes and drifts with time
- The membrane degrades with time and prolonged exposure
- High calibration frequency (weekly) was needed.

Together with the introduction of new technologies in the market, Foster's decided to re-evaluate the existing O₂ measuring technologies in order to reduce the service frequency and with that the operational costs. At the same time the cost/benefit ratio needed to be attractive.

Pentair Haffmans developed an optical O₂ measurement via a luminescence principle. The main advantages of this principle are:

- Better response times compared to traditional O₂ measuring instruments
- Less frequent calibration.

Several companies have instruments capable of measuring dissolved oxygen (DO) with luminescence detectors.

Among these, however Pentair Haffmans is the only one that introduced the CO₂ Gehaltemeter, type c-DGM, which combines the internationally accepted method of the dissolved CO₂ content measurement based on Henry's Law with a highly accurate DO measurement. As a result, the operational efficiency is optimized and the quality assurance improved. In 2008 Ian McInerney BSc (Hons), Analytical Specialist at Foster's, validated this new O₂ measurement.

Evaluation

Yatala and Abbotsford each purchased one c-DGM, with the idea that it would be used in the bright beer cellars. After successful trials in the bright beer cellars it was decided to adapt the c-DGM for package analysis.

The package samples were equilibrated by shaking them for 5 minutes horizontally at 150 rpm and after reaching the equilibrium allow to rest for 5 minutes horizontally in a refrigerator prior to the analysis, as per standard Foster's methodology.

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ACCURATE PRODUCT CONTROL

The c-DGM results were converted to TPO via the use of a spreadsheet utilizing the EBC-method. From the Yatala and the Abbotsford data, there was very little, if any, difference in the measured DO and TPO between the c-DGM and other total package measuring instruments.

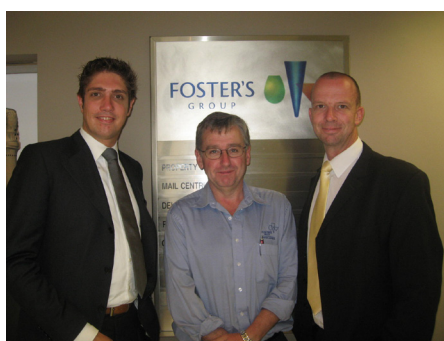
One of the main advantages of the c-DGM is that the same instrument can be used for measuring CO₂ and dissolved oxygen either in the finished product and/or in the bright beer tank, eliminating errors from using different instruments.

Conclusion

With the support and the great work of our local sales and service partner (JWII), Melanie Hignett, Glen Wright (both Foster's Yatala Queensland) and Ian McNerney BSc (Hons), Analytical Specialist of Foster's, it was decided to validate the c-DGM for the entire Foster's Group.

Ian McNerney is convinced that the c-DGM is a great replacement for their existing Total Package Analyzer. The benefits are:

- Cost saving
 - Lower investment costs (one device for CO₂ and O₂ measurement)
 - Lower operational costs:
 - easier to maintain
 - less beer losses
 - less frequent calibration
- Accurate product control
- Reproducible and operator independent results



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