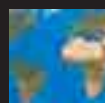


Haffmans Innovations at Drinktec 2005

KnowHow



Worldwide



Menno Holterman, Managing Director HAFFMANS.

At the upcoming Drinktec exhibition, HAFFMANS will again be introducing a large number of new innovations. With the development of its combined CO₂ and O₂ measuring equipment, Haffmans has become the world's first ever supplier to enable brewers and beverage producers to measure these vital quality parameters in one go. A new generation of in-line CO₂ measuring equipment, which uses the HAFFMANS oxygen measuring equipment, is also to be launched. Together with a new CO₂ dosing and regulating valve, the latest generation of carbonators has come onto the market. Finally, three possible ways of saving energy when recovering CO₂ will be on show alongside the successful CO₂-4U concept. The intelligent coupling of subprocesses that produce energy, on the one hand, and consume energy, on the other, can reduce energy consumption by more than 50%.

A world first: combined CO₂ + O₂ measurements

A real world first at this year's Drinktec is the new combined CO₂ and O₂ measuring equipment. The highly successful new generation of Gehaltemeters has been combined with an extremely accurate oxygen measuring device: c-DGM. The HAFFMANS oxygen measuring procedure is based on an optical electronic measuring principle with an extremely precise measuring range of 0 – 2 ppm and a detection limit of 1 ppb. This measuring technique is based on the principle that the fluorescence intensity of certain colourants, when agitated, is weakened by collisions with oxygen molecules. Temperature compensation is performed during the measuring process.

The development of this highly innovative measuring technique was preceded by extensive studies conducted at various breweries and production plants to ascertain the requirements for oxygen measurements. Apart from the explicit wish for a combined CO₂ and O₂ measurement that is both fast and accurate, a lot of time was spent on the ease of operation and minimisation of maintenance. During extensive tests in the R&D laboratory followed by field tests performed at a number of breweries, the sensor exhibited a high degree of accuracy and stability. The HAFFMANS O₂ sensor does not use oxygen while measuring.

The combined CO₂ and O₂ measuring equipment is also available in an in-line version: c-AGM. The new HAFFMANS oxygen measuring device is built into the latest generation of in-line CO₂ analysers. This innovation also incorporates the requirements and wishes of its world-wide clientele. The measuring technique is based on Henry's Law and the system is equipped with a great many features. The electronics have a self-diagnosis module and the analyser is easy to calibrate. The device is



In-line CO₂/O₂ Gehaltemeter.

built into a Varivent housing and a control cabinet is no longer necessary, since the required electronics are built into the analyser. The software is extremely user friendly and can be operated via the control panel or via an external communication port using a laptop, for example.

Both the c-DGM and the c-AGM are real world firsts and offer brewers and beverage producers the unique opportunity to measure CO₂ and O₂ at the same time.

New generation of carbonator

The latest generation of carbonators was specially developed for breweries wishing to use existing piping to carbonate their product. On the basis of the technical specifications, HAFFMANS supplies the required number of static mixing elements that are built into the available piping system by HAFFMANS or the customers themselves. A highly accurate new CO₂ regulating and dosing valve has also been developed which can dispense the required amount of CO₂ whenever necessary. The CO₂ dosing valve, the static mixers in the available piping and the c-AGM combine to form a highly economic carbonator. After all, the existing pipeline can be used to carbonate the product and a control cabinet is no longer necessary.

Energy saving when recovering CO₂

Cleaning CO₂ when it is recovered requires a lot of energy. The main energy consumers during the recovery process are gas compression, deodorisation and drying, liquefaction and, finally, the evaporation of the CO₂. Linking these two last process stages intelligently results in a significant reduction in operating costs. The evaporation energy can be used to cool other stages in the process. It was to that end that HAFFMANS developed three innovative solutions which can help breweries with a CO₂-recovery system to save a considerable amount of energy. Depending on the capacity of the system and capacity utilisation, as well as the costs of coolant, steam and electricity, cost recovery times of between 12 and 30 months can be achieved. The three systems are:

HRS Direct. In this system, a heat exchanger pre-cools glycol from a return line. The resulting heat is used to evaporate CO₂. Possible coolants are glycol, ice water or cooling water.

HRS Indirect. The working principle of this Heat Recovery System is identical to that of the HRS Direct system, but it was specially



Heat Recovery System-Indirect.

developed for breweries with an NH₃ cooling system. A special system was developed to prevent CO₂ and NH₃ coming into contact with each other.

HRS LiquiVap. In this system, the two main energy consumers in the recovery process are coupled to each other. Liquefying CO₂ extracts a lot of energy, which has to be returned during the evaporation process. Coupling these processes together reduces energy consumption by over 50%!

The HRS LiquiVap system makes it possible to liquefy CO₂ using hardly any cooling energy. Savings are made when CO₂ production and CO₂ consumption occur in the brewery at the same time. The consumed CO₂ is then used to liquefy the CO₂ being supplied. It goes without saying that this system also has a facility for the times when no CO₂ is being produced or consumed. At such times, CO₂ is liquefied in the traditional manner.

Extensive testing at a brewery with a capacity of 2,000,000 hl achieved a level of energy consumption over 50% lower than before installation of the system.

You are more than welcome to drop by and find out more about these innovations in person. You will find us at stand number 313-321 in hall B3.

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CO₂ 4U



HAFFMANS R&D Test Laboratory-CO₂/O₂ Gehaltemeters.

