CASE **STUDY**

MEHRER COMPRESSORS IN USE

MEHRER COMPRESSORS AS CORE COMPONENTS OF CO_2 RECOVERY AT BREWERIES

Not only planes and coal-fired power stations, but also breweries are significantly involved in the release of the greenhouse gas carbon dioxide (CO_2). A medium-sized brewery with an annual output of 200,000 hectolitres of beer releases approximately 200,000 tonnes of CO_2 into the atmosphere[1]. The CO_2 recovery system of Mehrer Compression GmbH allows this CO_2, which would otherwise be emitted into the environment, to be recovered, stored, and made available for other processes in beer production. After all, for every hectolitre of beer produced, about 4 kg of CO_2 are generated, but only 3 kg of CO_2 are needed. Therefore, breweries can not only cover their own demand for CO_2, but also use it for other business objectives.

The project

Haacht, a family-run brewery based in Belgium, purchased the first reciprocating compressor from Mehrer Compression GmbH for their CO_2 recovery system in 1972 and expanded its installation in the following years to a total of four Mehrer compressors. Although they were still fully functional after all this time, a modernisation was planned to create a state-of-the-art CO_2 recovery system and cover the rising demand. Impressed by the longevity, reliability and high quality of Mehrer's first set of compressors, Haacht decided to use Mehrer Compression GmbH again for this project.

The mode of operation

Beer and other fizzy drinks only become sparkling and refreshing through their CO_2 content. This CO_2 is generated in the beer production process as part of alcoholic fermentation and is also required later on for a number of processes, including carbonating the beverages, cleaning the bottles, pipes and tanks, and prestressing. The latter is a process whereby a counter-pressure is created in tanks, barrels or bottles with the help of CO_2 before they are filled with beer. This prevents the beer from foaming and going stale during the filling process.

Although the gas is produced in large quantities during fermentation, breweries often dispose of it as waste. To cover their own needs, the CO_2 required for the above-mentioned processes is then purchased from other companies. In-house recovery, however, can lower the need for such purchases from external suppliers

[1] https://www.welt.de/wissenschaft/article206480613

and therefore reduce production costs. Consequently, reducing greenhouse gas emissions is not only environmentally friendly, but also makes economic sense.

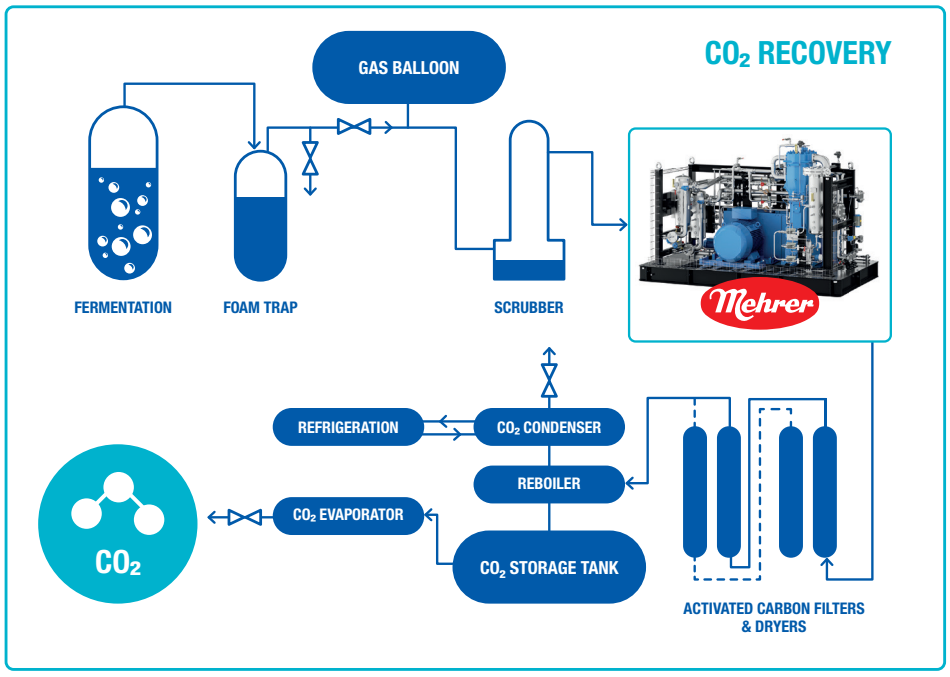
The CO_2 recovery system allows Haacht Brewery to recover the CO_2 produced during the alcoholic fermentation process and use it for other production processes.
The CO_2 produced is initially captured, filtered and stored in a gas balloon and then compressed from 1 bara to 18 bara by the Mehrer reciprocating compressors of the TZW-60 series and provided in liquid form in tanks, from where it is added to the final beer product. To prevent CO_2 contamination, Haacht made the sensible decision to use the Food-Line compressors of Mehrer Compression GmbH. These allow for a totally oil-free production process and ensure that no contaminants can get into the gas – thus meeting the high standards of the beverage industry.
For Haacht, in-house CO_2 recovery is an essential process to ensure the beer's flavour. This is because the carbon dioxide obtained from the recovery process has a beer flavour and is therefore better suited to carbonating the beverages than tasteless CO_2 purchased from other suppliers.

» The longevity of our first Mehrer compressors is an impressive testimony to the original quality of construction. It is fantastic to see that after all this time, our companies continue to collaborate. I will definitely contact Mehrer again when it is time to replace the new set of compressors. «

Bart De Ryck (Head of Maintenance)

Outlook

Approximately 48,000 tonnes of CO_2 are used every year by small and medium-sized breweries in Germany alone[2] – extrapolating from this figure, it is quite obvious how important it is to cut these emissions. The ratio between unused emitted CO_2 and CO_2 purchased from external suppliers shows that there is a high recovery potential of this greenhouse gas.
Our oil-free compressors are at the core of the CO_2 recovery system in breweries, because without compressors there is no compression and no utilisation of the emitted carbon dioxide for other business processes. Instead, the greenhouse gas continues to be released into the atmosphere, which ultimately contributes to global warming and stands in the way of transitioning to a low-carbon economy.
As a result, the Belgian brewery Haacht is making an important contribution to climate protection with its CO_2 recovery system because less CO_2 is released into the atmosphere. In addition, the CO_2 recovery system allows Haacht to ensure the highest quality in terms of the beer's flavour. Mehrer Compression GmbH is proud to be the supplier of a core system component in this project and a dependable and competent partner of the brewery.



[2] https://www.energieregion.de/aktuelles/co2-rueckgewinnung-bei-der-bierherstellung

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