

## HAFFMANS OGM IN-LINE O<sub>2</sub> GEHALTEMETER

### CASE STUDY

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### KEY FACTS

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#### Company

Major U.S. brewery

#### Application

Control of fermentation tank cleaning with In-line O<sub>2</sub> Gehaltemeter

#### Benefits

- Venting time reduced from 3 hours to 1 hour
- 20% savings realized in caustic usage
- Significantly reduced compressed air consumption
- Maximum safety achieved

### USE WHERE CAUSTIC MEETS CO<sub>2</sub>

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Pentair Haffmans, in collaboration with a major U.S. brewery, developed a new application for the OGM In-line O<sub>2</sub> Gehaltemeter. At the brewery, optical oxygen (O<sub>2</sub>) measurement is used to monitor whether the compressed air has sufficiently expelled carbon dioxide (CO<sub>2</sub>) from the fermentation tanks so that they can be cleaned with ambient caustic. This has allowed the company to significantly reduce caustic waste, compressed air consumption and process time. In addition, the chance for tanks to implode due to vacuum formation is eliminated.

The brewery has an annual capacity of 10 million barrels. The brewery's fermentation tank farms are cleaned with ambient caustic in a CIP system after the fermented beer is drained. Caustic is necessary to remove organic material from the tanks.

Before a fermentation tank can be cleaned with caustic, the CO<sub>2</sub> must be expelled as it reacts with caustic to form sodium carbonate. This reaction lowers the caustic's cleaning effect and the solution must then be replenished, which incurs costs. In addition, the reaction creates a vacuum in the tank, which is a danger for both fermentation and storage tanks as these are designed for a minimum vacuum load.

#### Savings with maximum safety

Before the installation of the OGM the brewery expelled the CO<sub>2</sub> from the tank at specified time intervals with compressed air flushing, which required a safety buffer and took about three hours.

With the OGM, the rise in O<sub>2</sub> and resulting compressed air concentration is measured in the exhaust air flow. When the O<sub>2</sub> content is between 20 and 23 percent, or a predefined O<sub>2</sub> limit value is reached in the exhaust air flow, the CO<sub>2</sub> content is low enough for cost-effective cleaning with maximum safety. This point is now reached after about a one-hour flushing time. Then, switching to cleaning can be done either manually or automatically by integrating the OGM in a process control system, which is very simple to do. At the brewery, the device is fitted with a CIP-compatible instrument housing connector. Another option is to integrate the OGM via a 25 mm connection.

With Pentair Haffmans' OGM measurement system, the brewery has significantly reduced the time required and the consumption of caustic and compressed air. During the past year caustic use has been reduced by 20 percent with maximum possible safety.

In brief, using a tried and tested standard meter in a new application achieves substantial process optimization. In-line O<sub>2</sub> measurement is useful where caustic is used for cleaning and it can react with CO<sub>2</sub>. In breweries for example, this is the case in the pressure tank and the tank for degasified water. Further potential application areas would be the fermentation tanks in sparkling wine or cider production plants. In general, the OGM measurement system is beneficial wherever a closed fermentation system is present or products are stored under CO<sub>2</sub> atmosphere.

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#### HAFFMANS BV

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