



Sustainability in Fire Protection

Deep-freeze Warehouse of Coppenrath & Wiese

One of the major challenges facing fire protection in deep-freeze warehouses is the fire load of products and packaging materials. In addition, there are flammable insulating materials in the building structure. Second, water as an extinguishing agent is not appropriate due to the temperatures in the cold storage facility.

The solution: oxygen reduction

In deep-freeze warehouses, oxygen reduction systems are often used instead of classic firefighting methods. These systems reduce the oxygen concentration in enclosed spaces by a few percentage points through the controlled

supply of nitrogen. This significantly reduces the ability of fire to develop and spread. Conventional systems incur high operating costs for nitrogen generation using conventional air compressors.

Minimax OXEO ECOPREVENT FC/VG

The award-winning Minimax OXEO ECOPREVENT FC (fuel cell) solution is unique and particularly economical. It generates nitrogen by means of a connected fuel cell. During power generation, the fuel cell produces clean, nitrogen-rich exhaust air as a by-product, which can be used for oxygen reduction. With this environmentally friendly solution, a return on investment can even be achieved, since the significant energy costs of the nitrogen generator that would otherwise be required are eliminated.





Conditorei Copenrath & Wiese KG, based in Mettingen, North Rhine-Westphalia, produces frozen baked goods such as cakes, pies, desserts and rolls. The company was founded in 1975 by two cousins, the merchant Aloys Copenrath and the confectioner Josef Wiese.

In 2020, the company employed around 3,000 people at its production site in Mettingen in the Tecklenburg region and 200 at its administrative and logistics site in Atter, close to Osnabrück. The company has been part of the Oetker Group since March 2015.



Minimax protects Copenrath & Wiese deep-freeze warehouse

The deep-freeze warehouse based in Osnabrück comprises 97,540 m³ in three protected areas. The temperature is around -22 °C. By introducing nitrogen, the oxygen concentration is reduced from 21 % by volume (normal) to approx. 15 % by volume and can still be accessed by verified personnel.

The assignment was to replace the existing oxygen reduction system with Minimax OXEO ECOPREVENT in order to reduce the considerable energy costs of the existing oxygen reduction system.

Since Minimax can offer any type of oxygen reduction system, a hybrid system is now in use, combining the fuel cell (FC) with a VPSA generator (VG): OXEO ECOPREVENT FC/VG.

Saving up to 650 tons of CO₂ annually

The fuel cell consistently delivers just under 100 kW of electricity (equivalent to 876,000 kWh/year) and just under 100 kW of thermal power, which the company uses to cover part of its energy load (electricity and heat). Whereas 132 kW was consumed with the old system, 86 kW of electricity is now generated on balance.

As a redundant energy source, the fuel cell also offers security in terms of emergency power supply and thus a degree of independence. In figures, this means a reduction of up to 650 tons of CO₂ per year.

At a glance

- Superior fire protection through oxygen reduction
- Reduction of operating costs
- Electricity and heat generation as a side effect
- Additional emergency power supply
- High CO₂ savings
- No operating room (outdoor installation)
- VdS-approved

"Minimax OXEO ECOPREVENT FC/VG is hard to beat in terms of versatility and efficiency. The fuel cell allows us to make the best use of exhaust air, electricity and heat. The advantages have convinced us so much that we have already purchased another system for our new cold storage building."

*Wolfgang Menger,
Project Manager Copenrath & Wiese*