



**EDNA**



## OxyReduct<sup>®</sup>

Reference solution

Fire prevention

Cold Storage warehouse



EDNA chose the  
OxyReduct<sup>®</sup> Fire  
Prevention System  
with energy-efficient  
VPSA technology.

**WAGNER<sup>®</sup>** 

## THE CUSTOMER

The automated high-bay cold storage warehouse at EDNA International GmbH in Brehna, Germany is protected by a WAGNER fire prevention system.



Location: Brehna near Leipzig

**Customers from the Hotel, Restaurant, Catering and Bake – Off sectors have been relying on bakery products produced by EDNA International GmbH since 1987. With more than 1,000 different frozen products and 8,500 service articles, EDNA offers the largest complete range of frozen bakery products in Germany.**

### **Construction of a new, state-of-the-art high-bay cold storage warehouse**

EDNA's range of products leaves almost nothing to be desired and is continually being complemented with new products. In order to accommodate the ever-expanding

range, a new, state-of-the-art high-bay cold storage warehouse was commissioned in Brehna at the end of 2012.

### **Coordinated logistics processes**

The new high-bay cold storage warehouse at EDNA GmbH covers an area of around 7,000 m<sup>2</sup> and boasts a volume of 130,000 m<sup>3</sup>. It features an automated three-aisle tray store with 35,300 spaces and a mechanised four-aisle high-bay pallet warehouse with 9,600 storage spaces. Up to 13,000 trading units per day can now be picked automatically on pallets at -24 °C. This corresponds to around 400 order pallets and approx. 500 - 600 homogeneously loaded

pallets directly from the production department, which are temporarily stored in the warehouse.

### **Mission critical fire protection**

Production and logistics are particularly time-critical and are closely intertwined. Even short downtimes can quickly result in disruptions to operations and supply bottlenecks. In order to be able to meet obligations to supply customers and to protect the warehouse itself and the goods it houses optimally, a sophisticated fire prevention solution is indispensable.

## RISK ANALYSIS

Goods and logistic processes must be reliably protected against fire.

Studies by the renowned, German, VdS – Loss Prevention Laboratory from 2008 show that a quarter of all fires are caused by electrical faults. High-bay cold storage warehouses with their cooling units, electrical picking and transport systems are particularly at risk.

In addition, the structural composition of the warehouse itself as well as the goods and their individual ignition thresholds and fire loads also contribute significantly to the fire risk. Packaging materials like cardboard and films especially are highly flammable.

The risk of vertical spreading and consequently a flashover to neighbouring pallet racks is additionally increased in a high-bay warehouse.

### **Minimising losses in the event of fire**

High-bay cold storage warehouses are a particular challenge for planners of fire prevention solutions. In order to be able to function in a sub-zero environment, conventional

water-based extinguishing systems such as sprinklers must contain a high level of antifreeze or a dry sprinkler system must be used, whereby all the parts of the system which employ water must be located outside the cold storage area.

For the sprinkler system to trigger at all, the fire must already have developed to a certain extent. Damage to stored goods not directly affected by the fire caused by smoke and soot and from the water and antifreeze mixture is unavoidable. This may result in the total loss of the warehouse goods and substantial consequential loss.



## THE PROTECTION OBJECTIVE

**Losses and disruptions in case of fire must be reduced to a minimum.**

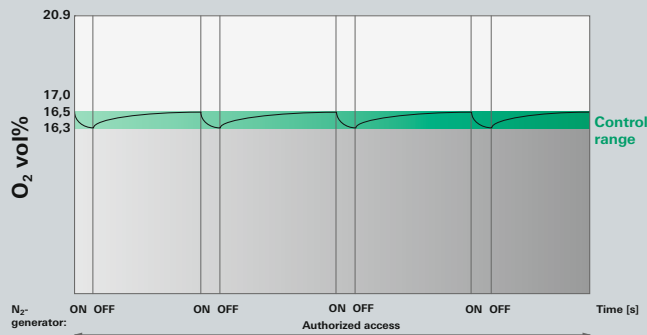
In addition to the protection of staff, the stored goods and the high-bay warehouse itself, securing and maintaining logistics processes was given top priority when developing a suitable fire prevention concept for the high-bay cold storage warehouse of EDNA

International GmbH in Brehna. In the event of a fire, the logistical processes within the warehouse and deliveries to customers should be disrupted as little as possible and extensive contamination or even destruction of warehouse goods by fire,

soot or extinguishing water should be avoided under all circumstances. The ability to deliver should be preserved even in case of damage, so as not to jeopardise the trust and supply reliability that we offer our customers.

## THE SOLUTION

Why fight fires when you can prevent them and save money at the same time? OxyReduct® with VPSA makes this possible.



Through the use of OxyReduct®, the oxygen concentration in the protected area in EDNA's high-bay warehouse is lowered to approx. 16.3 vol% and permanently maintained at this level.



S 6040001

WAGNER has VdS system approval S 6040001 for the OxyReduct® fire prevention system.



E 1905001

WAGNER is also an accredited system integrator for the OxyReduct® fire prevention system with VdS accreditation E 1905001.

EDNA chose the active fire prevention system OxyReduct® with VPSA technology because it was not possible to use a conventional water-based extinguishing system in the high-bay cold storage warehouse and other reactive fire prevention systems could not prevent a greater damage scenario and contamination of the foods stored in the case of a fire.

### OxyReduct® offers the best possible protection

With its preventative approach, the concept of active fire prevention offers the best possible protection against the development and spreading of a fire. The fire prevention technology OxyReduct® lowers the oxygen concentration in the protected areas by adding a controlled quantity of nitrogen in order to keep the oxygen concentration at a specified level. The oxygen concentration in the protected area is set individually for each project depending on the goods stored and the structural features of the building.

### Effective thanks to individual planning

Using active fire prevention, both the goods stored, the logistics and

supply processes involved can be effectively protected from the effects of a fire.

In the case of EDNA International GmbH, the fire prevention system OxyReduct® permanently lowers the oxygen content in the newly built high-bay cold storage warehouse from 20.9 vol% to 16.3 vol%.

### Special agreement with the insurance company

As part of the system design process, the individual ignition thresholds of the goods stored were determined in the WAGNER Group fire laboratories together with the insurance company. Based on these results, the oxygen concentration in the protected area was adjusted and fixed at 16.3 vol% accordingly. Optimal fire prevention can be ensured by tailoring the design of the system to suit the particular conditions found in the warehouse. The warehouse can still be entered by authorised personnel despite the reduced oxygen level.

**Increased efficiency with VPSA technology**

The core of the OxyReduct® fire prevention system is nitrogen generation. Using the highly energy-efficient VPSA (Vacuum Pressure Swing Adsorption) technology, it generates the nitrogen required to lower the oxygen level directly from the air in the room in an environmentally-friendly process. The VPSA system is extremely robust, designed for continuous operation and therefore for a life span and is particularly efficient. In comparison with the technologies used to harvest nitrogen in the past, this system achieves energy savings of around 50 %.

For the EDNA cold storage warehouse in Brehna, for example, two VPSA systems with a nitrogen output of approx. 480 m³/h are interconnected. The VPSA systems ensure a continuous protection level in the warehouse area and also compensate for the temporary

rise in the oxygen concentration which occurs when doors are opened for the daily storage and removal of goods.

**Double advantage**

The use of the OxyReduct® fire prevention system with VPSA offers the frozen bakery goods manufacturer EDNA International a double advantage: products and logistics processes are protected by active fire prevention and, at the same time, the new VPSA technology saves operating costs – without having to forego the high standard of safety.

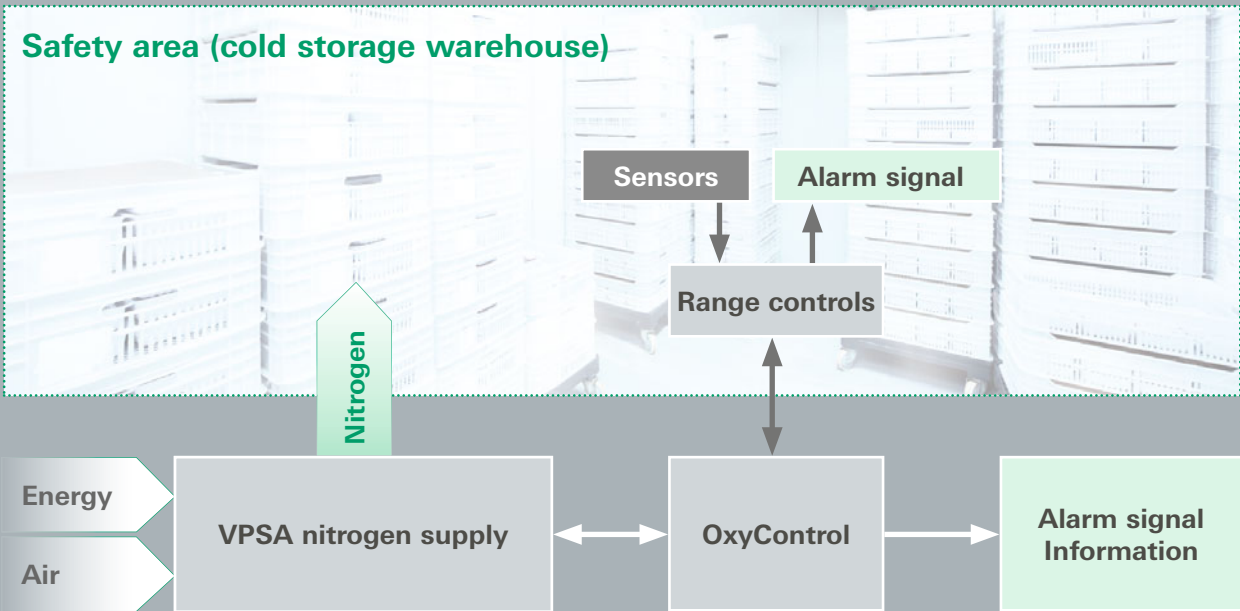
**Summary**

The concept of active fire prevention offers a high level of protection with its preventative approach and is suitable not only for protecting buildings but also stored goods and the logistics processes involved from the effects of a fire.



The OxyReduct® fire prevention system can be used in all kinds of areas, even where conventional extinguishing systems reach their limits. The system is designed individually to reflect the actual conditions. The use of VPSA technology also has an extremely positive effect on operating costs.

THE SYSTEM





WAGNER sets standards for innovative and comprehensive solutions in fire protection: with very early fire detection systems, TITANUS® for aspirating smoke detection, FirExting® for fire-extinguishing, OxyReduct® to actively prevent fires from breaking out and VisuLAN® for hazard management. [www.wagner.eu](http://www.wagner.eu)

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