

Reference solution: DIAMANT Zucker

Active fire prevention in high-bay warehouse with **OxyReduct®** – a container solution





The customer

FIRE PROTECTION FOR SUGAR PRODUCTS WITH AN OXYGEN REDUCTION SYSTEM

Icing sugar, brown sugar, rock sugar, sugar in sachets and tins: The sweetener can be found everywhere at the factories of manufacturer Pfeifer & Langen. For 150 years, the company has made sugar products from beets and cane for the food industry, marketed under the name DIAMANT Zucker. The company was founded in Cologne and now has several locations across the continent, making them one of the largest sugar manufacturers in Europe. A newly built high-bay warehouse has taken up operations at one of the production sites in Poland this year, utilising a tailored fire protection solution from WAGNER Poland.

Pfeifer & Langen Polska S.A. built a new high-bay warehouse at the Śró-

da Wielkopolska production site near Poznań in 2019. Sugar specialities such as cinnamon sugar and syrup are stored here. Measuring 35 metres in height and 140,000 cubic metres in volume, the warehouse will offer up to 24,000 pallet spaces. It is connected directly to the sugar factory via an airlock. Goods are retrieved, stored, and picked fully automatically.

But it's not just the newly constructed warehouse and the associated new investments that need special protection. "In our case, the most important thing is to protect the stored sugar," says Andrzej Biedulski, Project Manager at Pfeifer & Langen Polska. From the start, the company decided against a water or foam-based solution, as damage due to the extinguishing agent generally

The protection goal:
Optimally protecting sugar while ensuring availability of the goods

In collaboration with the team of WAGNER Poland, headed by Managing Director Ireneusz Bruski, Pfeifer & Langen Polska defined their protection goals in detail during the preliminary stages. Besides the protection of persons, the following protection goals were also identified to be a priority:

- In case of emergency, no sugar may come into contact with smoke or soot, or be destroyed by extinguishing water
- Operational processes, the flow of goods and other logistical processes must be maintained, even in the event of an emergency
- The goods must always be available for customers

cannot be avoided when using these systems. This called for an alternative. The company came across the WAGNER Group and its expertise in active fire prevention.



▲ Packed on pallets, sugar products are stored in the 35m high automated highbay warehouse for dispatch.

“ In our case, the most important thing is to protect the stored sugar. This means foam or water-based solutions were not an option for us. ”

*Andrzej Biedulski,
Project Manager at Pfeifer &
Langen Polska S.A.*

TOP PRIORITY: PROTECTING THE SUGAR AND ENSURING ITS AVAILABILITY

The new high-bay warehouse at Pfeifer & Langen Polska S.A. is connected to the on-site production hall via an airlock. The sugar products and specialties made here are packaged and loaded on pallets before they are taken to the warehouse for forwarding. These steps are fully automated based on the latest standards, employing storage and retrieval machines as well as conveyor technology. Along with the packaging of the goods, this presents fire risks that must be identified through a risk analysis as a basis for tailored fire solutions for the protected area.

The following fire risks have to be considered in the Pfeifer & Langen Polska high-bay warehouse:

- A high degree of automation in the production hall and the warehouse itself, with a large amount of electrical components
- Tight packing of goods, as well as cardboard packaging materials and storage on pallets
- In the event of a fire, the warehouse height of around 35 metres and the narrow rack design promote the chimney effect in the warehouse
- Complex production processes, as the production hall is connected via an airlock
- High sensitivity of the goods to smoke and humidity

The right solution can only be developed by taking these fire risks into account. The top priority: Avoiding a fire in the warehouse at all costs!

The solution

The entire fire engineering technology is installed in a container, saving space.

“ Ideal for maintenance and service, an external technical room can easily be accessed. ”

Ireneusz Bruski,
Managing Director
WAGNER Poland

CONTAINER SOLUTION – FIRE PREVENTION SYSTEM PLACED OUTSIDE WAREHOUSE

Four OxyReduct V-Line systems form the core of the fire protection solution, together with very early smoke detection. The V-Line systems produce nitrogen using the ambient air, introducing it into the defined protected area and lowering the oxygen concentration under the specified ignition thresholds of the materials mainly stored there. This protective atmosphere makes it impossible for a fire to develop or spread. As a smouldering fire can still result despite oxygen reduction, the solution also includes a very early smoke detection system with air sampling smoke detectors.

The TITANUS® air sampling points hang above the aisles of the high-bay warehouse and continuously take samples from the ambient air, helping to detect ultra-fine pyrolysis particles as early as possible. TITANUS® units

are up to 2,000 times more sensitive than conventional point-type detectors.

What makes the solution at Pfeifer & Langen special is that a majority of the fire engineering technology, such as nitrogen generators and control cabinets, is not installed in a separate technical room, but instead located in a container next to the high-bay warehouse. “Ideal for maintenance and service, an external technical room can easily be accessed. This also saved the company construction costs, as they didn’t have to provide a separate technical room in the warehouse for the fire prevention system,” states Ireneusz Bruski, Managing Director of WAGNER Poland, explaining the reasoning behind the container solution.

The high-bay warehouse went into operation this summer. Ever since, the various types of sugar have safely made their way to different countries across Europe.

Customer benefits at a glance

- **Reliable protection of goods** and new investments (newly constructed warehouse)
- **Safeguarding of operational processes and availability**
- **Very early fire detection** provides time to take counter-measures
- **VdS-approved and certified fire protection solution**

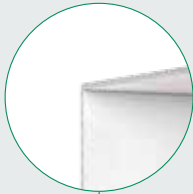
TITANUS® units detect fires at a very early stage.



SYSTEM DIAGRAM

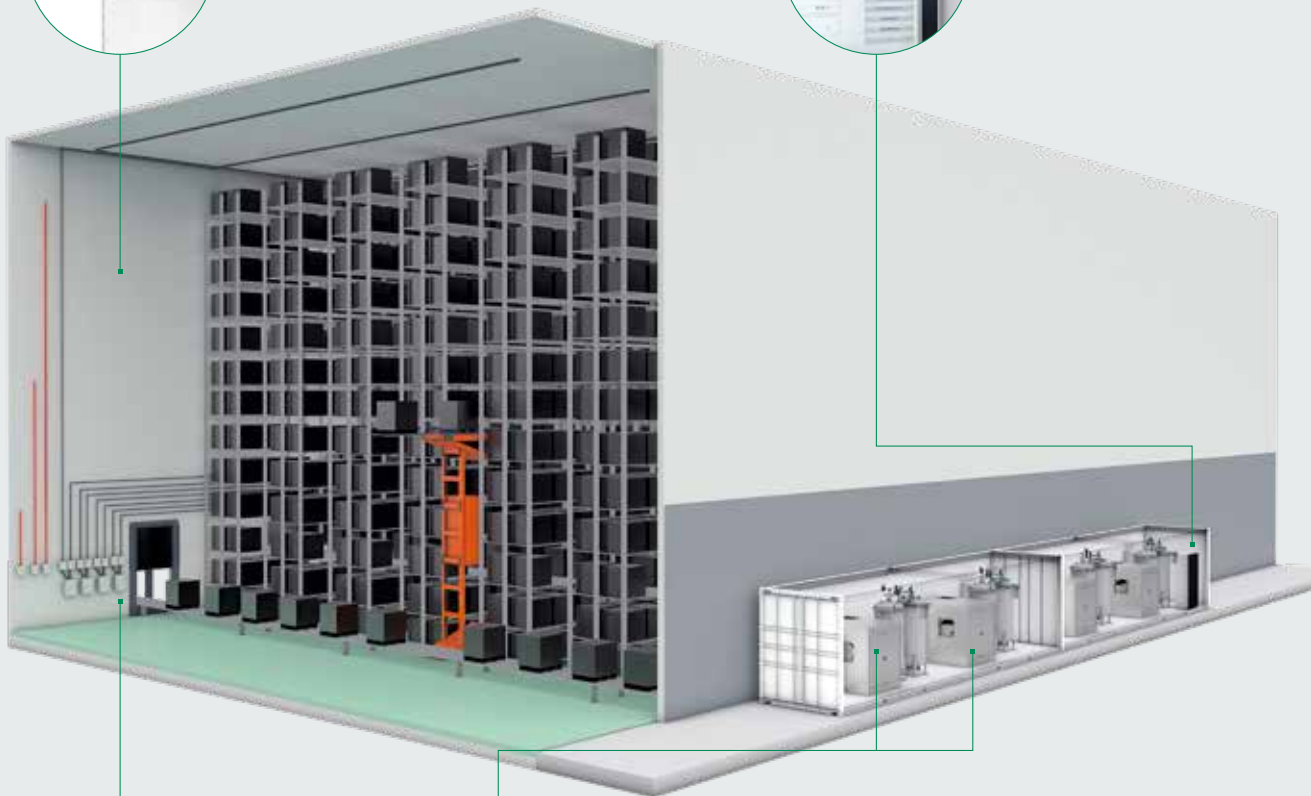
Housing

prevents nitrogen from escaping



OxyControl

The OxyControl controls all processes



OXY-SENS®
O₂ sensors
measures the oxygen concentration



OxyReduct® V-Line
uses the ambient air to generate the nitrogen for oxygen reduction



Want to find out more about fire prevention in high-bay warehouses?
Right this way!

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WAGNER sets standards in fire protection – with innovative and comprehensive solutions

Fire detection units

Very early fire detection systems (TITANUS®)

Active fire prevention (OxyReduct®)

Fire extinguishing (FirExting®)

Hazard management (VisuLAN®)