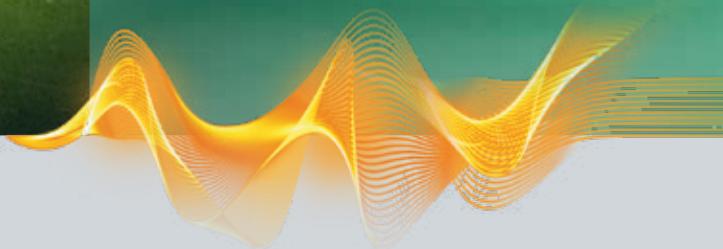




OxyReduct®

Reference solution
Fire prevention
High-bay warehouse



Phoenix Mecano chose the OxyReduct® Fire Prevention System with energy-efficient VPSA technology.

WAGNER The Wagner logo, featuring the brand name in a bold, sans-serif font next to a graphic element consisting of three parallel diagonal bars.

THE CUSTOMER

Phoenix Mecano chose the OxyReduct® fire prevention system with VPSA technology for its newly built high-bay warehouse in Kecskemét, Hungary.



Location: Kecskemét, Hungary

Founded in 1993 as a subsidiary of the Swiss-based multinational group of companies Phoenix Mecano AG, the Hungarian company Phoenix Mecano Kecskemét Kft. produces a variety of electrical parts for a wide range of applications such as enclosures, keyboards, input elements and drive technology.

Construction of a new high-bay warehouse

The company currently employs a workforce of roughly 1,100. In order to be able to meet continually increasing demand for its products, the company began with the construction of a new high-bay warehouse for raw and finished

goods in the Hungarian city of Kecskemét in early 2012, which was put into service in 2013. 2,155 m² in area and 26.5 m in height, the new high-bay warehouse provides enough space for a host of different goods and components.

Leaving nothing to chance

Phoenix Mecano regularly reviews its relationships with suppliers and the interfaces between individual manufacturing and logistics processes and is continually promoting development processes. Any negative deviations are responded to immediately. The company philosophy is based on preventing defects, as opposed to remedying

them. As concerns the success of the company, nothing is left to chance.

Reliable and environmentally friendly fire prevention

An effective and also cost-saving and environmentally friendly fire prevention solution therefore had to be found for the newly built 57,054 m³ high-bay warehouse in Kecskemét. The solution had to ensure that obligations to customers would not be jeopardised in the event of an emergency and that supply and financial losses would be kept to a minimum. The environmental impact also had to be minimised to the greatest extent possible.

RISK ANALYSIS

The risk posed to goods and supply obligations towards customers must be reduced to a minimum in the event of a fire.

The great number of electrical installations such as electrical storage and retrieval machinery or battery-operated shelf shuttles means that the fire hazard is particularly great in an automatic high-bay warehouse. Fires originating directly in the stored goods



are rare. VdS studies from 2008 showed that around one quarter of all fires occurred due to operating equipment defects.

Fire hazard in high-bay warehouses

Once a fire has broken out, the condition of the goods stored and the high-bay warehouse itself often seriously affects the progress of the fire. Easily flammable packaging materials made from paper or cardboard for all kinds of electronics components will give the fire plenty of sustenance. At the same time, the type of construction of the 26.5 m high Phoenix Mecano high-bay warehouse is conducive to fires.

Disadvantages of conventional extinguishing technology

A fire must already have developed to a certain extent in order for a sprinkler system to be triggered at all. This is not acceptable. Even goods not directly touched by the fire will still be damaged by the smoke and soot by the time the extinguishing system is triggered. The impact of the extinguishing water itself causes additional damage. Such damaged goods cannot be sold and must then be written off. This can result in financial losses and supply shortages with severe consequences for the company's reputation.

THE PROTECTION OBJECTIVE

Logistics processes and stored goods must be effectively protected in case of fire.

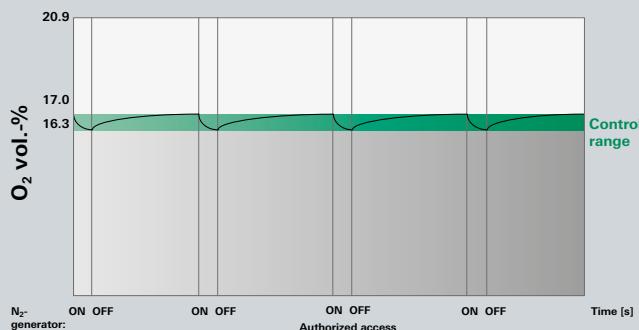
Protecting the stored electronic components from fire and the related damage from soot and smoke gases was given top priority when developing a suitable fire prevention concept for Phoenix Mecano's high-bay warehouse. In the event of a fire, the impact

on logistics processes and supply obligations to customers had to be restricted to the point of origin. Due to the high risk of damage for the stored electronic components from the extinguishing water used in sprinkler systems and the high cost of instal-

lation and acquisition of a water-based extinguishing system, an alternative fire prevention solution for the high-bay warehouse had to be found.

THE SOLUTION

Action rather than reaction: active fire prevention with OxyReduce® using environmentally friendly VPSA technology offers a double advantage.



Using OxyReduce®, the oxygen concentration in the protected area in Phoenix Mecano's high-bay warehouse is reduced to approx. 15.2 vol.-% and constantly maintained at this level.

In order to minimise the effects of a fire and the possible indirect damage from smoke and soot, conventional extinguishing technology was rejected as a fire prevention solution for the new high-bay warehouse at Phoenix Mecano. Instead of merely fighting fires reactively, the objective was to counter the fire in the earliest phase using active fire prevention. This is why the OxyReduce® fire prevention system by WAGNER with particularly energy-efficient VPSA (Vacuum Pressure Swing Adsorption) technology was used.

Individual fire prevention

Although the local company PIRO-Plan Kft. was assigned with the installation of the system, the planning, delivery and commissioning of the fire prevention system were carried out by the manufacturer WAGNER directly. In order to determine the individual ignition thresholds of the goods stored, detailed warehouse and parts lists were aligned with values obtained in fire tests already carried out in the past so as to define the optimal oxygen concentration for the high-bay warehouse. In Phoenix Mecano's case, the oxygen content is constantly reduced from the original 20.9 vol.-% to 15.2 vol.-% for optimal protection.

Active fire prevention by means of oxygen reduction

An active fire prevention solution designed individually according to the local conditions can effectively protect goods and supply processes from the effects of fire. In order to prevent a fire from developing and spreading, the oxygen concentration in the protected area is reduced by introducing a specific amount of nitrogen based on the ignition thresholds of the goods stored, thus taking the support energy in the form of oxygen out of the fire. Storage areas are still accessible to authorised personnel.



S 6040001

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



E 1905001

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

Safety even in the event of a malfunction

Three VPSA subsystems connected to the system produce the nitrogen required to continually reduce oxygen levels in order to guarantee that the protected atmosphere is maintained at all times.

An automatic fault message is sent to the system if the reference value of the operating concentration is exceeded by more than 0.2 vol.-% or if the nitrogen generator fails. Warehouse operations are immediately suspended and the automatic high-speed doors are closed. At Phoenix Mecano, the time period from when the operating concentration is lost until the ignition threshold is reached is around 68 hours – enough time to take troubleshooting measures.

Environmentally conscious and cost-effective

The nitrogen generators with VPSA technology are highly energy-efficient and save around

50 % in energy compared to the PSA technology used by WAGNER until now. Fire prevention with OxyReduce® and VPSA technology therefore offers Phoenix Mecano a double advantage: the high-bay warehouse is protected from the effects of a fire and, at the same time, the company saves on operating costs. Another plus: the Hungarian company has already been operating under the guiding principle of reducing its environmental impact for many years. WAGNER's efficient technology also makes a valuable contribution to this.

Summary

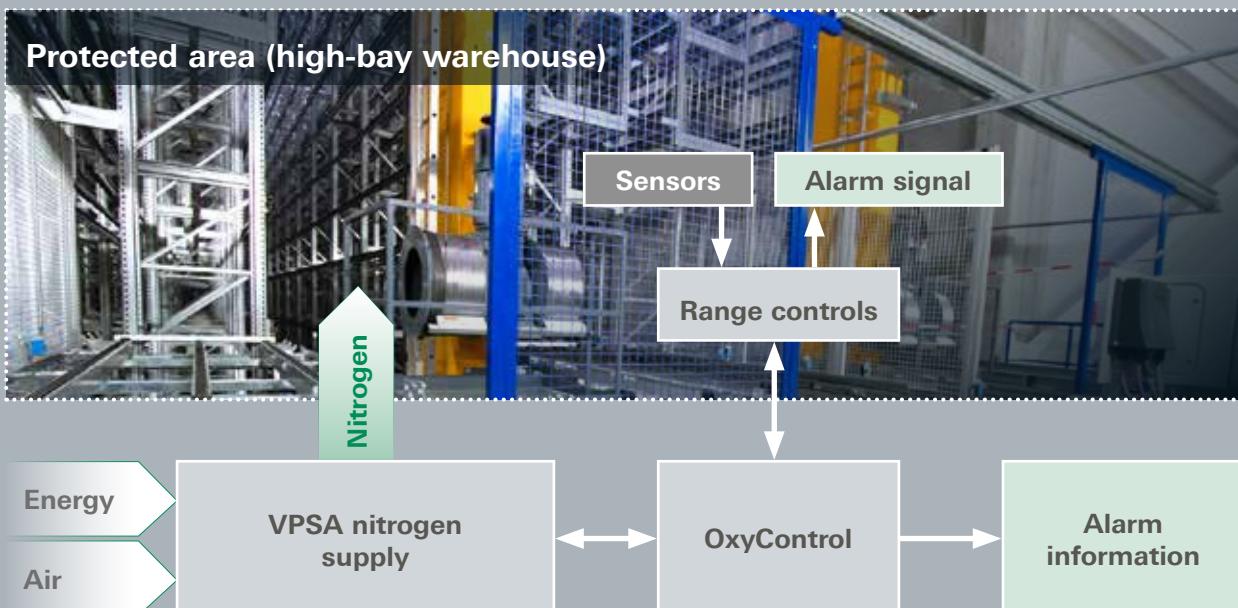
Active fire prevention with OxyReduce® offers a high level of protection from the effects of a fire and is particularly suitable for areas in which conventional extinguishing systems reach their limits. The VdS-approved fire prevention system OxyReduce® has been used for many years in warehouses, IT



installations, archives and many other areas.

It is increasingly becoming a standardised solution in fire prevention.

THE SYSTEM



WAGNER Group Plant Engineering & Construction



WAGNER Group GmbH (Headquarters)
Schleswigstraße 1–5
30853 Langenhagen, Germany
Phone: +49. 511. 97383-0
E-Mail: info@wagnergroup.com

Find your personal contact at
www.wagnergroup.com



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

Fire detection and alarm systems

Very early fire detection systems (TITANUS®)

Active fire prevention (OxyReduct®)

Fire extinguishing (FirExting®)

Hazard management (VisuLAN®)

BETTER SOLUTIONS IN FIRE PROTECTION

WAGNER®