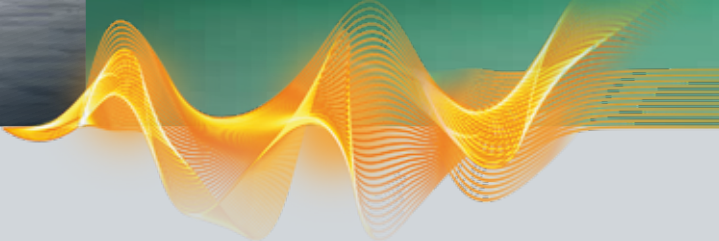




LENBACHHAUS

**Comprehensive
Fire Protection
with
OxyReduct®
TITANUS®
VisuLAN®**

**Reference solution
Archives and museums**



The Lenbachhaus, Munich's
Municipal Art Gallery, is
protected by a combined
system solution consisting
of fire prevention and very
early smoke detection.

WAGNER® 

THE CUSTOMER

Munich's municipal gallery, the Lenbachhaus, relies on a comprehensive fire protection solution using intelligent, cutting-edge technology to protect its art collection.



The Lenbachhaus art museum in Munich after being renovated

Built between 1887 and 1890, the Lenbachpalais in Munich has served as an art museum since 1929. Today, the ensemble of buildings houses the Städtische Galerie im Lenbachhaus and presents works by Vassily Kandinsky, Paul Klee, Andy Warhol, Joseph Beuys and many others.

Beginnings

The Lenbachpalais started out as two separate buildings: an artist's workshop dating back to 1888 and the residence of painter Franz von Lenbach, built in 1890 in the style of a Tuscan villa. Lenbach died in 1904. 20 years later, his widow

sold the estate to the city of Munich, leaving many of Lenbach's pieces and much of the artwork in the house along with it. The donation laid the foundation for a new municipal art gallery, which moved in to the building on Munich's Königsplatz in 1929.

Much of the house was destroyed between 1944 and 1945, and was rebuilt using rudimentary means during the early years of the post-war era. The poor construction materials and outdated entrances put the house in dire need of extensive restoration and renovation. The gallery closed its doors in 2009 until its celebrated reopening on 8 May 2013.

The renovation

It cost € 59.4 million to renovate the old villa from the ground up and construct a modern new building. Today, visitors can enjoy not only the 2,800 m² of exhibition area, they also have an auditorium, museum gift shop, café and restaurant at their service. However, there are also many structural modifications which are concealed from visitors' eyes: one such alteration is the comprehensive fire protection solution which was installed in the basement archives to protect the precious collections stored in the Lenbachhaus from fire.

RISK ANALYSIS

The top priority was to protect the art archive's valuable collections from fire and its consequences.

The material damage and loss of intellectual property which even a small fire can cause are especially great in archives and museums. Special exhibition objects made of paper, cardboard, wood or textiles are particularly vulnerable. The great concentration of protected objects stored in a relatively small

amount of space makes it even easier for a fire to spread quickly in archives. The prestigious and historical buildings which house museums, archives and collections require state-of-the-art fire protection technology. Conventional fire alarm and detection systems are only activated once the fire has already started.

In such cases, the time factor is the only variable which determines how great the extent of the damage to the precious collections will be. This is a critical situation for museum proprietors, who are often left helpless if their theoretical emergency plan doesn't work in practice.

Safety even in case of fire

Even small amounts of smoke and soot can permanently damage or even destroy the sensitive, irreplaceable exhibition items. If water is used to extinguish the fire, the side effects may even destroy the entire archive. In the case of museums, archives and other historical collections, the material damage is always accompanied by the loss of intangible artistic and intellectual value. This makes a comprehensive and dependable fire protection solution all the more important in order to prevent the horror scenario which a fire entails.



THE PROTECTION OBJECTIVE

Valuable works of art demand optimum protection against fire.

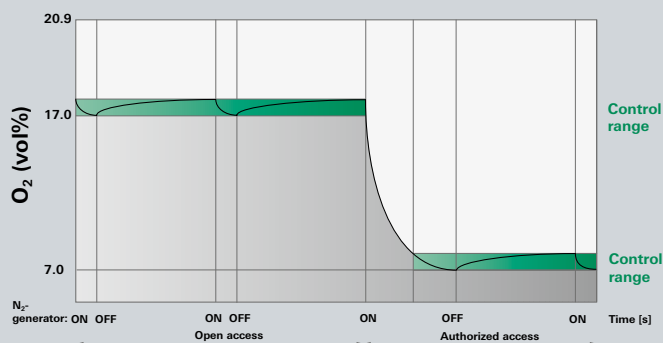
Comprehensive protection of the artworks stored was the top priority in the planning of an ideal fire protection solution. If a fire breaks out, it is essential to prevent damage caused by water, soot and smoke, as well by the fire itself.

Since the use of conventional water-based extinguishing technology would merely put the valuable and extremely sensitive exhibition items in even greater danger, the mission was to find a suitable alternative which takes action long before the fire

even starts: oxygen reduction. The valuable, irreplaceable artefacts should be kept as safely as possible while allowing everyday business operations to continue normally.

THE SOLUTION

Active fire prevention combined with very early smoke detection and quick release (rapid oxygen reduction) protects precious works of art.



The OxyReduct® fire prevention system reduces the oxygen concentration in the archive to 17.0 vol% and leaves the protected area accessible to personnel at the same time. If the TITANUS® early smoke detection system detects any products of pyrolysis, it uses quick release to lower the oxygen level to 7.0 vol%.

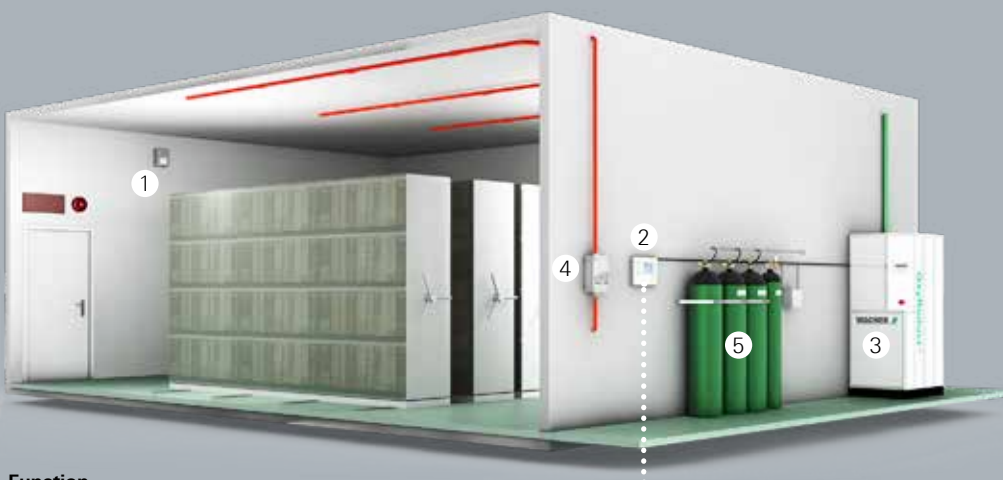
The sensitivity and great value of the artworks to be protected precluded using a conventional extinguishing system in the fire protection planning phase. The objects on exhibition required the most extensive fire protection possible. This is what led to the decision for WAGNER's complete fire prevention concept, which consists of the OxyReduct® fire prevention system, earliest possible smoke detection with the TITANUS® air sampling system and a quick release unit. And the final touch to the concept: the VisuLAN® risk management system.

Active fire prevention

Four depot and storage rooms in the art gallery's basement (with a volume of roughly 500 m³) are protected by WAGNER's fire protection solution since they store the most valuable works of art in a very confined space.

The OxyReduct® fire prevention system reduces the oxygen content in the protected area to a constant 17.0 vol% by adding nitrogen to the rooms atmosphere. This creates a protective atmosphere which drastically reduces a fire's ability to sustain itself. The rooms remain accessible to personnel in

INSTALLATION LAYOUT OF THE ARCHIVE IN THE LENBACHHAUS



Function

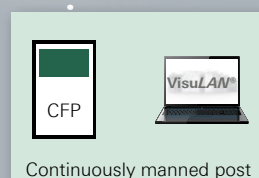
The OxyReduct® fire prevention system reduces the oxygen content in the protected area to a constant 17.0 vol% and maintains it at this level.

If the TITANUS® air sampling smoke detection system detects signs of fire, the control panel is notified and nitrogen cylinders are used to initiate quick release to an oxygen level of 7.0 vol%.

Fire protection solution with OxyReduct® fire prevention system and TITANUS® air sampling smoke detection system

The OXY-SENS® oxygen sensor (1) continuously monitors the oxygen content in the protected area and transmits this information to the control panel. (2) This controls the oxygen concentration maintained by the OxyReduct® fire prevention system. (3)

The TITANUS® air sampling smoke detection system (4) detects the earliest signs of a fire forming. Nitrogen for the quick release process is supplied from cylinders. (5)



The central fire panel (CFP) is connected directly to the VisuLAN® risk management system, providing a combined overview of all information a single central location.

the process. Oxygen sensors continuously monitor the concentration of oxygen in the room and send the information to the OxyReduct® system's control panel. This maintains a constant residual oxygen level of 17.0 vol%.

Very early smoke detection without false alarms

The TITANUS *PRO-SENS*® air sampling smoke detection system monitors the archives and utility rooms in accordance with EN 54-20 Class A to detect a fire in its very earliest stages of forming. A piping system installed in the ceiling takes continuous samples of the air and sends them to a detection unit, where they are analysed to register the tiniest particle of smoke. TITANUS® thus provides a crucial time advantage in smoke detection: Two grams of material undergoing pyrolysis are all it takes to successfully detect a fire in its earliest stages of forming. The system reacts up to 2,000 times more quickly than conventional smoke alarms. TITANUS® is exceptionally immune to false alarms thanks to LOGIC-SENS technology, which makes it extremely unlikely that an alarm will be raised unless an actual fire is present.

Automatic quick release unit

If the TITANUS® air sampling smoke detection system detects a fire, the smoke alarm system's control panel immediately initiates quick release. This reduces the residual oxygen level from 17.0 vol% to a maximum protection level of 7.0 vol% within 240 seconds. Initiating fire control measures at this early state keeps the fire from spreading and minimises the damage it could cause. OxyReduct® is



also able to maintain the reduced oxygen concentration for as long as is desired after quick release has already been carried out. WAGNER and VdS have conducted special joint fire tests with the quick release unit to document the system's reliability. This led VdS to test the system installed in the Lenbachhaus and approve it.

Safety at a glance

The individual security systems in the Lenbachhaus are all linked together by the VisuLAN® risk management system. This efficiently combines the fire and burglar alarm systems, escape route control, building management and video surveillance into a single system.

Summary

Reducing a room's oxygen content to 17.0 vol% effectively creates a protective atmosphere which suppresses fires without rendering the room inaccessible to personnel. The air sampling smoke detection system picks up the very earliest signs of a fire forming so that quick release can be initiated immediately. Reducing the oxygen concentration to the very low level of 7.0 vol% suffocates fires while they are just beginning to form, thus minimising damage.

The combination of oxygen reduction, earliest possible smoke detection and quick release provides the works of art stored with effective protection from fire.



S 6040001

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



E 1905001

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

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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®)