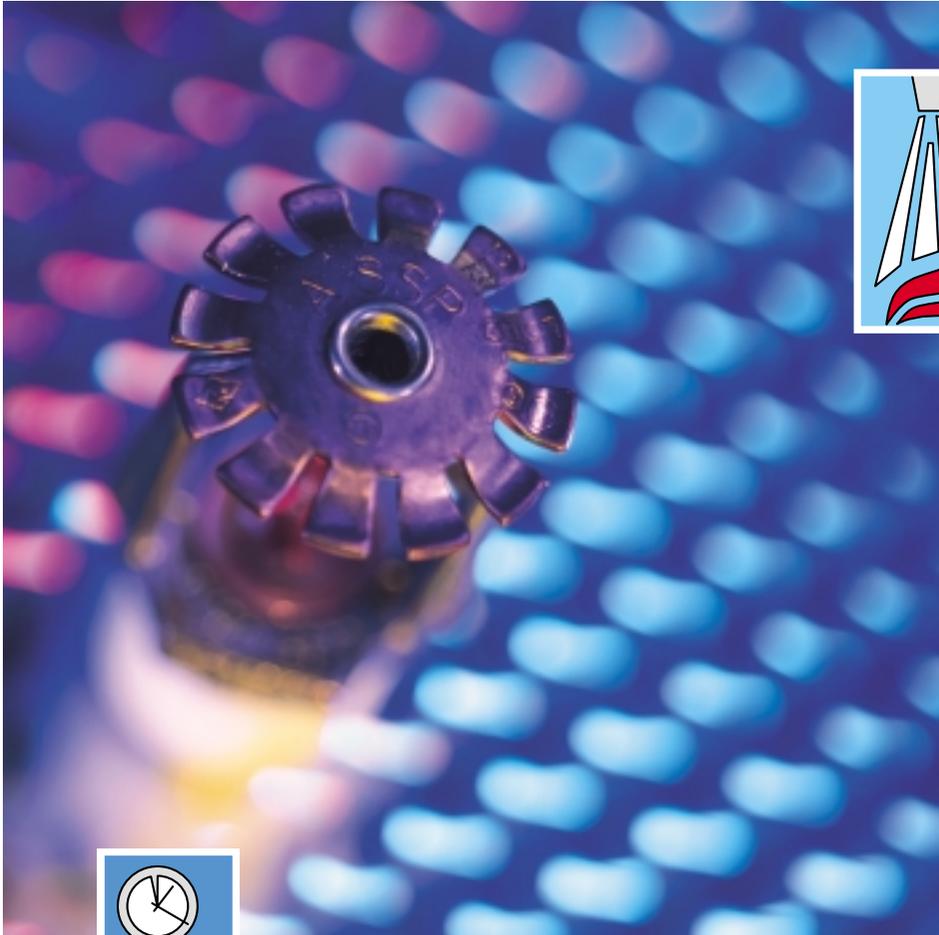


AUTOMATIC SPRINKLER SYSTEMS



WATER: FIRE PROTECTION FROM A NATURAL SOURCE



The intricate supporting structure of the hall at Stuttgart Airport is protected by sprinkler systems from TOTAL WALTHER.

People have used water as an extinguishing agent since the dawn of history, and today it is still the preferred choice for modern fire protection. It is reasonably priced, and is always available in adequate volumes. Since water is compatible with most other substances, it is extremely versatile when used as an extinguishing agent.



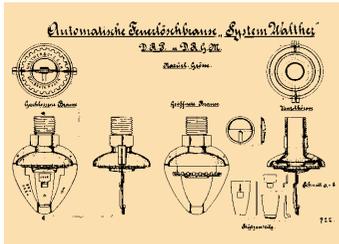
The progressive modernization of industry and commerce not only calls for structural fire protection and assistance from fire brigades; there is also a need for automatic fire protection systems which can operate on the machinery or in the factory.

Continuous innovation from the earliest times until today...

It was the engineer Wilhelm Walther who developed the very first automatic sprinkler system in Germany, as long ago as 1884. His revolutionary extinguishing concept was based on the idea of fighting the fire quickly, reliably and comprehensively as soon as it developed. Today's modern sprinkler systems from TOTAL WALTHER GmbH are still based on this principle – all through the range, from special fast-response sprinklers to highly sensitive life safety sprinklers.

TOTAL WALTHER sprinkler systems are successfully used as an alternative to passive fire protection, and they allow enormous freedom of design for commercial and industrial buildings. In addition, special fast response sprinklers are used to protect people and property in hotels and hospitals.

SPRINKLER SYSTEMS FOR FIRST CLASS EXTINGUISHING



Innovative from the very start: the "Walther System" automatic fire extinguishing sprinkler.

The special extinguishing action of a sprinkler system is based on the principle of selective activation. Sprinkler systems only operate where they are needed.

Finely sprayed water

Because the water which emerges from the sprinklers is separated into a fine spray, it vaporizes quickly, ensuring high cooling by absorbing the heat from hot fire gases. This intensive vaporization displaces some of the oxygen needed to "feed" the fire, giving rise to an "inerting" effect.

Targeted protection – successful extinguishing

TOTAL WALTHER sprinkler systems reliably confine fires to the initial location where they arise. Materials which have not yet been affected by the fire are moistened in advance so that they are less likely to ignite. In addition, the water cools the structural elements of the building, making them heat-resistant. Without sprinkler systems from TOTAL WALTHER, the striking

architectural design of the hall at Stuttgart Airport would have been impossible to implement. Modern high-bay storage units also call for special sprinkler protection. The addition of film forming foam concentrates can extend the use of sprinkler systems to virtually every risk area in industry and large-scale commerce.

The natural choice for the environment

The high water solubility of smoke and fire gases in the fine water spray reduces harmful emissions. The volume of extinguishing water used in sprinkler systems is optimized: a sprinkler will only go into action if it is heated to its actuation temperature. This ensures that unnecessary extinguishing water and residues are avoided. There are also environment benefits from sprinkler protection: harmful emissions can largely be prevented by confining a fire to the location where it first arises, and by bonding toxic gases to the extinguishing water.

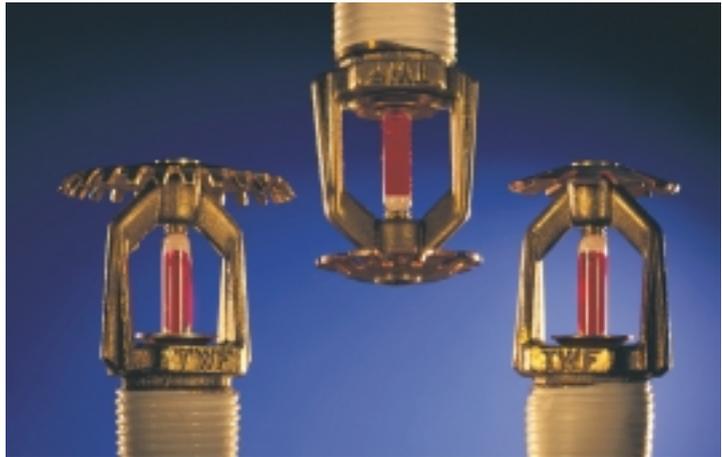


PLAYING SAFE ...

Sprinklers are specially developed spray nozzles: they are sealed by a glass bulb, and they react automatically to the heat of a fire.

Sprinklers go into action when the glass bulb bursts and the nozzle closure is released. Water immediately emerges from the nozzle, and a spray plate effectively distributes it over the entire seat of the fire in the form of a fine shower of water droplets. Depending on the particular risk, the area protected by each sprinkler varies between 9, 12 and 21m². The choice of spray plate depends on the type and position of the sprinkler installation. The experts at TOTAL WALTHER GmbH attach particular importance to the optimal ratio of drop sizes for effective extinguishing and uniform moistening of the ground. Thanks to its wide range of sprinklers, TOTAL WALTHER can offer the correct sprinkler for every location.

When the actuation temperature of the sprinkler is reached, the bulb bursts, the sealing element is pushed out by the water pressure, and the water flows onto the deflector and is distributed over the seat of the fire.



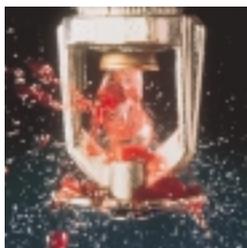
Spray sprinklers

can be mounted "upright" or "pendent". For normal risks in industry and commerce, one sprinkler is used for every 12 m². In warehouses, 9 m² are protected by one sprinkler. Low hazard spray sprinklers can protect a maximum area of 21m².

Conventional sprinklers

are fitted with a deflector which can be installed both "upright" and "pendent". Since they spray as much as 40% of the extinguishing water upwards, they are especially suitable for installation under combustible ceilings.

Upright and pendent spray sprinklers and a conventional sprinkler.



... WITH THE RIGHT TYPE!

Side-wall sprinkler

This type of sprinkler is specially for applications where for example overhead clearance needs to be ensured for vehicles. It can be installed "upright" or "pendent", with different deflectors. For installation purposes, the maximum permitted room width (both walls) is 7.5 m.

Horizontal extended coverage side-wall sprinkler

A sprinkler which has been specifically developed to protect people in hotels, hospitals, senior citizens' homes and nursing establishments. The sprinkler's special design enables it to be installed at a later stage, while keeping the building costs down. This life safety sprinkler is fitted with a fast response element.

ESFR sprinkler

A special sprinkler to protect high bay warehouses where only the ceiling can be equipped with sprinklers. Its distinguishing feature is a particularly high extinguishing performance. ESFR stands for Early Suppression Fast Response.

Optimal protection on your side

The effectiveness of sprinkler systems has been analysed over a period of more than 100 years. Regular investigations by the Federal German Association for Fire Extinguishing Equipment and Systems (known as the BVFA) confirm that in most cases, only a few sprinklers are needed to fight a fire effectively.

An investment

that brings multiple benefits

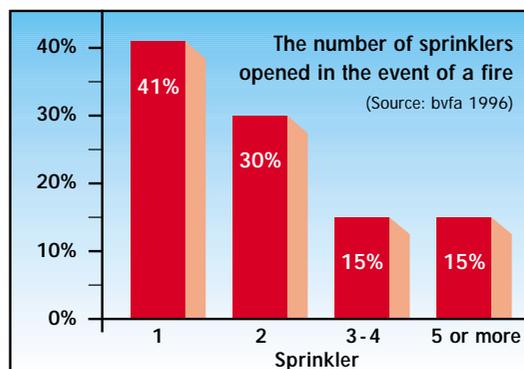
TOTAL WALTHER's sprinkler systems offer reliable protection against damage to property, and also against the resultant production stoppages and losses of business in industry and commerce. Furthermore, insurers will grant discounts of up to 65% on premiums for fire insurance and business interruption insurance. And thanks to sprinkler systems, it is possible to depart from the tight restraints of the conditions imposed for structural fire protection.



This horizontal side-wall sprinkler was specifically developed to protect people. It can also be retrofitted, with low costs for building work.



The ESFR sprinkler is specially designed for warehouse risks which can only be protected from the ceiling.



INTELLIGENT TECHNOLOGY FOR SUCCESSFUL FIRE PROTECTION

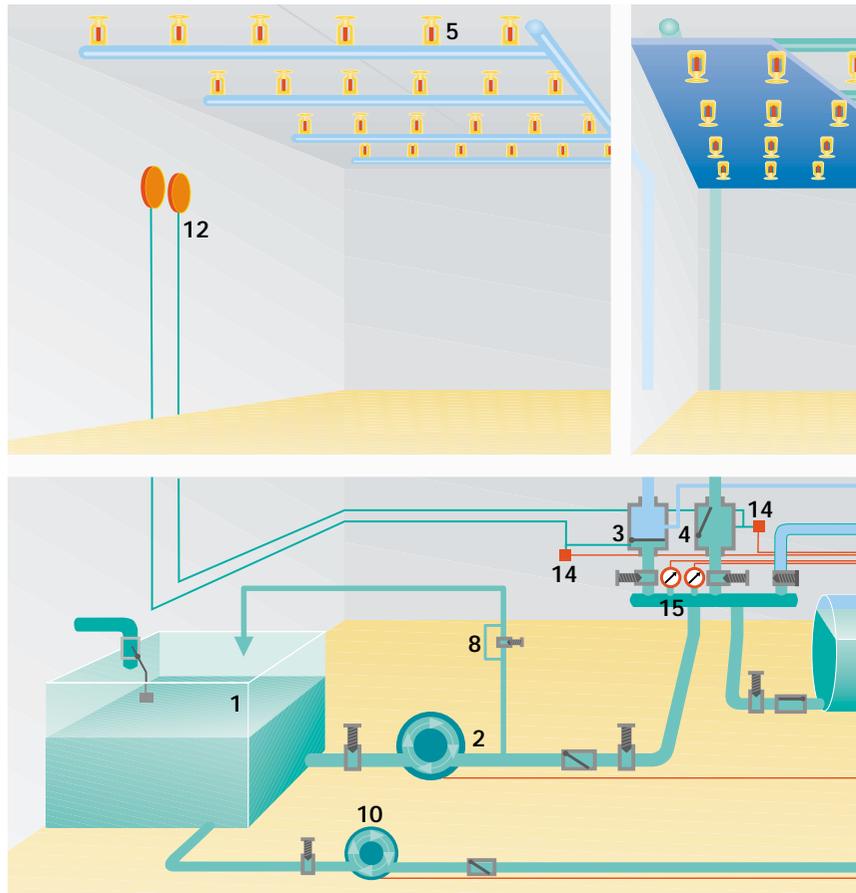
The structure and handling of a complex sprinkler system are based on TOTAL WALTHER's expertise and know-how in the development of water extinguishing systems. Our specialists will give you professional advice on selecting the correct sprinkler, and on how to choose the sprinkler system which meets your particular requirements for protection.

Wet systems

are suitable for fire protection in rooms which are safe from frost. Branchpipes with sprinklers are arranged on the ceilings of the rooms to be protected, and above any locations at particular risk. The pipe network is filled with water up to the sprinklers. If the glass bulb bursts, water will flow out immediately. In wet systems, up to 1.000 sprinklers can be connected to one alarm valve.

Dry systems

are used in rooms exposed to the risk of frost. In the dry system, the pipe network is pressurized from compressed air upstream of the alarm valve. If a sprinkler opens in the dry system, the pressure is released. The alarm valve opens and water flows to the open sprinkler. In dry systems, up to 250 sprinklers can be connected to one alarm valve.



If the dry valve station has a fast opening device, 500 to 700 sprinklers can be used, depending on the particular risk.

After a sprinkler has opened and the alarm valve has opened, between 100 and 150 litres of water per minute flow to the alarm bell and the alarm pressure switch via a bypass.

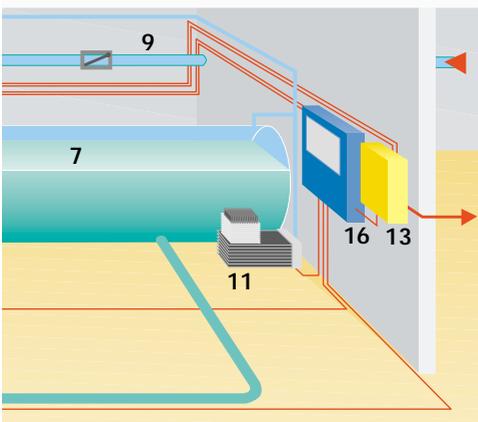
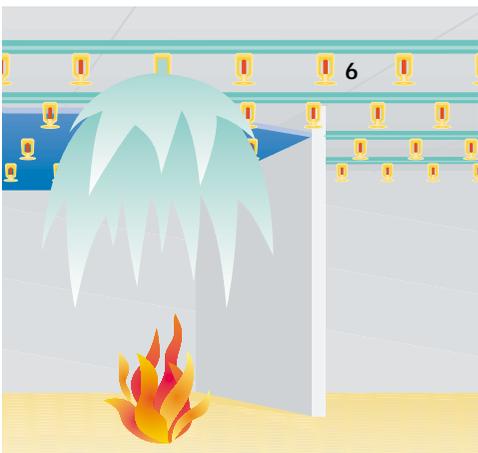


Diagram of a sprinkler system

with an exhaustible water supply (pressure tank) and an inexhaustible water supply (pump and tank with automatic in-fill)

- 1 Extinguishing water tank
- 2 Sprinkler pump
- 3 Dry alarm valve set
- 4 Wet alarm valve set
- 5 Dry pipe network for sprinklers (upright sprinklers, exposed pipe network)
- 6 Wet pipe network for sprinklers (pendent sprinklers, concealed pipe network)
- 7 Pressure tank
- 8 Pump test line with measurement device
- 9 Fire brigade hose connection
- 10 Tank filling pump
- 11 Compressor
- 12 Mechanical alarm bells
- 13 Fire detection panel
- 14 Alarm pressure switch
- 15 Pressure switch to start pump
- 16 Electrical switch cabinet



Pre-action control valve set

From the water supply to the point of use

Before a sprinkler system can be commissioned, it must be connected to an industrial or public water supply. The necessary volume of water may be taken from a pressure tank or a pump which draws water from storage or intermediate tanks.

Pre-Action: double protection for better performance

Pre-action systems combine a fire detection system with a sprinkler system. They are used to ensure reliable protection against false alarms – for example, to protect EDP systems against water damage. The pre-action valve is only opened by a signal from the fire detection system, not by a fall in pressure after a sprinkler has opened. If there is a fault on the fire detection system, a pre-action system is switched over to operate as a normal dry system.

The specialist engineers and experts at TOTAL WALTHER GmbH will give you professional advice all the way through from the design of your sprinkler system to commissioning and maintenance - a reliable team for every aspect of fire protection.

AND OUR MAINTENANCE AND SERVICE TECHNICIANS ARE AT YOUR DISPOSAL ALL DAY, EVERY DAY



Branches all over Germany make it easy for you: our specialists and technicians are nearby ready to help you personally on site.

With its team of approximately 150 service employees TOTAL WALTHER GmbH is on hand to look after your safety and security right 24 hours a day. You can reach us on our Hotline day and night and at week-ends for immediate service assistance.

**Fire extinguishing and security systems have a name:
TOTAL WALTHER GmbH.**



FEUERSCHUTZ UND SICHERHEIT

TOTAL WALTHER GmbH
Feuerschutz und Sicherheit
Telephone 0049/2 21/67 85- 427
Telefax 0049/2 21/67 85- 207
Waltherstraße 51
D – 51069 Köln

Please contact:

A **tyco** International Ltd. Company